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bc: Mark Stoll - Cambridge



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466901

Emerson & Cuming

Dewey and Almy Chemical Division

W. R. Grace & Co.

Canton, Mass. 02021

(617) 828-3300

January 10, 1984

Mr. Wayne T. Grandin
Chief Engineer of Industrial Waste
Metropolitan District Commission
Sewage Division
20 Somerset Street
Boston, MA 02108

Subject: Permit No. 10-005724

Dear Sir:

Enclosed you will find an analysis of our microballoon washing process effluent. Per a November 15 conversation that I had with a Ms. O'Shea from your office, our past sampling technique had been incorrect. Per Ms. O'Shea our sample should be representative of our microballoon washing process only. It should be free of any uncontaminated water and/or sanitary waste.

The organic solvents detected in our July sample, and referred to in your September 26 letter, were a result of sampling the total effluent stream. At the point where we originally sampled, the effluent was a combination of our total sewer effluent as well as an upstream neighbor (reference my August 22 letter to MDC). Although taken incorrectly, the sample did indicate the presence of organic solvents. Through some further sampling, we feel the source of these contaminants was the upstream user.

Other than the microballoon washing process, the only other discharges from our facility are sanitary.

Sincerely,
EMERSON & CUMING

Robert R. Marshall
Plant Manager

RRM:pg



**Arnold Greene
Testing Laboratories
Incorporated**

East Natick Industrial Park
6 Huron Drive • Natick, MA 01760
(617) 235-7330, 653-5950
Telex 948459 GREENELAB NTIK

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Inspection • Evaluation • Analysis
Research • Development



Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

To: Emerson & Cuming, Inc.
Div. of W.R. & Co.
869 Washington Street

Canton, MA 02184

Date: 12/22/83

Job No. 43013-1

Lab No. 0579

Material: Water sample

Heat No. None

Specifications: None

Attn: Order No. 1-48164

Sample ID: 1 Water sample	Date received 12/14/83
pH	1.9
Total Suspended Solids (mg/l)	479
Total Solids (mg/l)	9,257
Settleable Solids, (ml/l/hr)	1.1
Total Cyanide, (mg/l)	<0.02
Cyanide, Amen to Cl (mg/l)	<0.02
Silver (mg/l)	0.03
Total Kjeldahl-Nitrogen (mg/l)	2.45
Ammonia (mg/l)	1.6

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
22nd DAY OF DECEMBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril
James J. Baril, Manager



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To: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street

Canton, MA 02184

Date 12/30/83

Job No. 43013-1

Lab No. 0579

Material:

Heat No. None

Specifications: None

Attn:

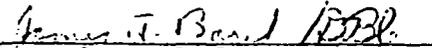
Order No. 1-48164

Purpose: To determine the concentration of Dioctyl-phthalate.

Method: Extraction with methylene chloride and the analysis of that extract
by Gas Chromatography/Mass Spectrometer.

Results: <0.05 mg/l.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
30th DAY OF DECEMBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.



James J. Baril, Manager



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Client: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street

Canton, MA 02184

Date 12/30/83

Job No. 43013-1

Lab No. 0579

Material:

Heat No. None

Specifications: None

Order No. 1-48164

Purpose: To determine the concentration of any Volatile Organic Contaminants present in one water sample submitted in a non-approved sampling container.

Method: Method 624

Results:	ug/l
Trichloroethane	27.4
Toluene	12.7
Methylene Chloride	7.0

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
30th DAY OF DECEMBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril
James J. Baril, Manager

RECEIVED
JAN - 3 1984
EMERSON & CUMING
CANTON, MASS. 02021

OCT 6 1983

GRACE MEMO

to: Al Jeroma, Brooks Adhesives

date: October 5, 1983

from: Bob Marshall, Emerson & Cuming

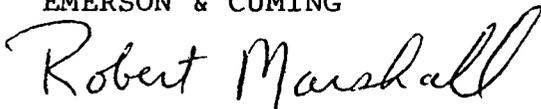
cc:

subject: Our Telephone Conversation October 3

To confirm our telephone conversations of October 3, we will be sampling our sewer effluent on Friday, October 7. Due to our inability to obtain a discreet sample representing Emerson & Cuming's discharge without including Brooks Adhesives's discharge, we will be sampling your effluent at the point that it enters our sewer main and also sampling the combined flows further downstream prior to the point where the combined flows enter the MDC system.

We plan on presenting the two samples to the MDC with the argument that our contribution to the combined effluent is the difference between the two.

Respectfully,
EMERSON & CUMING



Robert R. Marshall
Plant Manager

RRM:pg

bcc: W. A. Mischel
M. Stoler (Cambridge)
G. F. Winterson



PLANT I - CANTON, MASSACHUSETTS

EMERSON & CUMING, INC. FACILITIES DATA										
PLANT I										
LINE NO.	(1) PLANT I	(2) PRODUCTS MANUFACTURED	(3) INS. APPRAISAL (a) REPRODUCTION COST	(4) SITE SIZE IN ACRES	(5) PROPERTY PURCHASE DATE	(6) BUILDING CONSTRUCTION DATE	(7) TOTAL BLDG. FLOOR SPACE (SQ. FT.)	(8) NUMBER OF STORIES	(9) BLDG. GROUND FLOOR SPACE (SQ. FT.)	(10) BLDG. SPACE UTILIZATION (SQ. FT.)
(01) (02) (03) (04)	865 Washington St. Canton, Mass. Building 1	Resin Based Eccostock Eccoshield Eccosorb-(HLD)	\$ 239,600	1	1952	1880's	12,500	1 + part basement	7,500 first floor	Mfg. - 5,000 Maint. - 5,600 Storage - 1,000 Lab - 900
(05) (06) (07) (08)	Building 2	Eccospheres	224,200		1955	1880's	11,400	1 + basement	5,700	Mfg. - 2,900 Storage - 2,800 Labs - 4,200 Office - 1,500
(09) (10) (11)	Building 3	Resin Based	359,100		1955	1880's	16,800	3 + basement	4,200	Mfg. - 6,300 Storage - 8,400 Ship/Rec - 2,100
(12)	Building 4	Eccospheres	7,400		1955	1965	1,200	1 + basement	600	Mfg. - 1,200
(13) (14) (15) (16)	Building 5	Eccoshield	404,300		1961	1948	15,300	2 + basement	5,600	Mfg. - 800 Storage - 5,600 Lab - 1,200 Office - 7,700
(17)	Building 6	Eccospheres	153,900		1961	1900's	5,200	1-3	2,500	Mfg. - 5,200
(18) (19) (20) (21) (22)	Totals Plant I		\$1,388,500	3.3	N.A.	N.A.	62,400	N.A.	26,100	Mfg. - 21,400 Maint. - 5,600 Storage - 17,800 Office/Lab - 15,500 Ship/Rec - 2,100

(a) Appraisal by Marshall & Stevens Inc. in August, 1974 adjusted to reflect subsequent inflation.

Checked by: RSH
Date: 10/27/77

The Plant I property is approximately one mile from the center of Canton, Massachusetts, a town located twenty-five miles south of Boston. Contained on this site is an irregular shaped, multi-storied building consisting of plant buildings 1 through 5, and a separate irregular storied building (#6).

This property was the first purchased by E&C, with the various buildings being acquired over a nine year period. With the exception of buildings 4 & 5, a major portion of this facility predates the early 1900's and is of a wood and timber structure with rubble stone footings and foundations. Buildings 4 & 5 are concrete block structure on poured concrete footings and foundations.

Fire protection for this facility, with the exception of buildings 4 & 6, is provided by an automatic sprinkler system; and the heating, lighting and plumbing facilities appear to be in adequate repair. This facility has an unrestricted access for truck traffic, but, as with all E&C plants, does not have railroad facilities.

This facility appears to be structurally sound and has been maintained in an adequate condition. However, due to the age of several buildings, there is a need for upgrading its interior and exterior appearance, its electrical facilities, its restroom facilities and the site parking facilities. The RCA projections include incremental expenses averaging \$45,000 (pre-tax) per year to improve the condition of this plant. Also, the capital forecast (Section VI-G) includes \$285,000 over the five year period 1978-1982 for plant improvements.

The following two pages present the facilities data and plot plan for Plant II in Canton, Massachusetts.

(See Table and Plot Plan on the Following Pages)

VI. MANUFACTURING**A. EMERSON & CUMING MANUFACTURING PROCESSES**

Emerson & Cuming (E&C) presently has available for sale a minimum of 300 standard products. This number dramatically increases when specially formulated products are taken into account. However, these products can be grouped by method of manufacture, resulting in the following nine manufacturing process descriptions.

DIELECTRIC MATERIALS

Resin Based Products and Catalysts

ECCOSORB High-Loss Dielectric Absorbers

ECCOSHIELD

✓ ECCOSPHERES (Micro and Macroballoons)

Molding Powders

Plastic Rod & Sheet Stock

MICROWAVE PRODUCTS

✓ ECCOSORB Free Space Absorbers

✓ Lenses and Reflectors

FLOTATION PRODUCTS

✓ Riser Pipe Modules & General Oceanographic

1. Dielectric Materials

a) Resin Based Products and Catalysts

Those products classified as resin-based materials include: casting resins (STYCAST), surface coatings (ECCOCOAT), adhesives and sealants (ECCOBOND), impregnating resins (ECCOSEAL), ceramic dielectrics (ECCOCERAM), silicone resins (ECCOSIL), and plastic and ceramic foams (ECCOFOAM).

The manufacture of an individual resin-based product is essentially a formulated mixing operation. Pre-weighed amounts of from four to twelve different raw materials are loaded into a mixing vessel, ranging in size from a gallon container to a two-hundred-fifty gallon kettle; the most frequent size being a fifty-five gallon drum. The materials are mixed utilizing a drill press and adjusted to final product specifications, primarily viscosity, based on quality control testing. E&C is presently using approximately two-hundred-fifty different raw materials in their resin-based material formulations. However, the primary base ingredients for these products consist of liquid epoxy resins, silicone resins, and powdered fillers; such as, aluminum, silica, iron, zinc, and titanium.

Following manufacture, the material is packaged into containers ranging in size from one-ounce tubes to gallon cans; the most common size being quart cans. Within this product grouping there are two types of materials: one component products; and two component products, which require the addition of a catalyst or the mixing of two components prior to use in the field.

The catalysts are used as curing agents with various E&C epoxy formulations reacting with those products and forming thermo-setting solids or foams.

The manufacture of catalysts consists of mixing two to four different raw materials utilizing a drill press. The mixing vessel can range in size from a quart container to a fifty-five gallon drum, with a five-gallon pail being used most frequently. Following the mixing process, the catalyst is packaged into containers ranging in size from two-ounce jars to quart cans, with the most common size being four-ounce jars. In addition to manufacturing catalyst products, E&C also purchases standard epoxy catalysts and repackages those materials under their own label.

b) ECCOSORB

The ECCOSORB name is applied to both "free space" microwave absorbers and "high-loss dielectric" microwave absorbers. Described here is the manufacturing procedure for "high-loss dielectrics" which are produced and sold as casting resins, flexible sheets, and machinable bar and rod stock.

Rod and bar stock are manufactured by mixing epoxy resins, fillers, and iron particles in a gallon container using a drill press. The material is deaerated, poured into a mold, and oven cured. Following curing, the mold is disassembled and the material is machined to final customer specifications. Sheet stock is manufactured by mixing iron or graphite particles with resins and fillers in a small container utilizing a drill press. These products cure at room temperature and, after being deaerated, are formed into sheets by passing the material between an adjustable roller and a flat surface. Casting resins are manufactured utilizing the identical process as resin-based products.

c) ECCOSHIELD

The ECCOSHIELD product line is composed of conductive plastic materials available in the form of sheets, gaskets, liquid adhesives, lacquers, and pressure sensitive tapes. The manufacturing of all ECCOSHIELD products involves pre-mixing formulated amounts of silver particles, resins, fillers, and, in some cases, catalysts. The pre-mix solution is formed into sheets by passing the material between an adjustable roller and a flat surface, followed by air or oven drying. Gaskets are punched from the sheets using a die specially constructed to customer specifications. Pressure sensitive tape is produced by passing the pre-mixed material through an extruder.

d) ECCOSPHERES

E&C manufactures three basic types of ECCOSPHERES: hollow glass and ceramic spheres, referred to as microballoons; and plastic spheres, referred to as macroballoons.

The hollow glass microballoons are manufactured from either a purchased feedstock manufactured to E&C specifications or from feedstock which E&C manufactures themselves. The feedstock is manufactured by producing a slurry using silicate, boric acid, and a blowing agent (UREA), which is then metered into a spray dryer; the dried material is collected and packaged utilizing cyclones. E&C is presently increasing their in-house spray dryer capacity which will eliminate the need to purchase manufactured feedstock.

The feedstock is later added to a blender/feeder which dispenses it into gas furnaces where the particle passes across an open gas flame to form the microballoons which are subsequently collected by the use

of a cyclone. Certain types of microballoon products are packaged directly from the cyclone and sold. Other types of microballoons are treated in order to upgrade their performance characteristics.

The treating of glass microballoons is accomplished through successive washings and steamings of the balloons in one of seven 700-gallon mixing vessels. During this process, depending on the desired type of treated balloon, chemicals are added periodically during the washing process to increase the strength of the microballoon. The repeated washings also eliminate those balloons which are not complete spheres, since they sink to the bottom of the tank. Following the washing cycles, the microballoons are centrifuged, dried, and packaged for sale or for internal use in the manufacture of resin-based materials, or Flotation Products.

Ceramic microballons are manufactured from fly ash purchased from England. The particular type of fly ash used, a by-product of coal burning, is available from only one location in England due to the type of coke used at that power facility. The fly ash is in the form of a hollow sphere when purchased. A batch size of approximately 1100 pounds is loaded into one of two 350^oF gas-fired tumbling drying ovens for a drying period of five hours and is then packaged into shipping containers.

Macroballoons are manufactured by expanding purchased polystyrene beads using steam. The beads are then placed in tumblers where they receive up to fourteen coats of an epoxy resin and glass fiber slurry in order to create a specific bead density and crush strength. Following quality control testing for density and crush strength, the beads are screened to eliminate agglomerates and packaged for shipping, or stored for later use in the manufacture of Flotation Products.

e) Molding Powders

E&C molding powders (ECCOMOLD) are manufactured utilizing silica, resins, and catalysts. The first step involves the treating of purchased silica with a material which activates the silica surface providing increased adhesion to resins. Purchased resin is granulated into a fine powder and, together with the treated silica, is added to a blender along with other materials, depending upon the product to be manufactured. This blended material is fed into a twin screw helical extruder; the operation of which is time and temperature controlled. Extruded material is discharged onto cooling rolls and subsequently granulated into a fine powder. Following a screening operation and the removal of metal particles utilizing magnets, the material is packaged into bags for sale.

f) Plastic Rod and Sheet Stock

Plastic rod and sheet stock products (ECCOSTOCK) are manufactured from purchased fillers and resins which are mixed in gallon and five-gallon containers utilizing small drill presses. The mixture is deaerated and poured into a mold of any shape. The mold is then oven cured with cycle times of one to three days at 100°F to 380°F. Following curing the material is removed from the mold and machined to final customer specifications.

2. Microwave Productsa) ECCOSORB Free Space Absorbers

There are four different manufacturing processes used in the manufacture of microwave absorbers as described below.

VHP's and WG's

These solid, pyramidal (VHP) and wedge-shaped (WG) absorbers are manufactured from purchased polyether foam buns to heights of from 4" to 150". The buns are band-sawed into blocks, into which pyramids are cut using a hot wire cutter. Each block is compressed, submerged, and then expanded in a tank containing a solution mainly consisting of carbon black, water, and latex; thereby distributing the solution throughout the piece. They are removed from the tank, compressed again to remove excess solution, and placed in a drying oven for two days at 220^oF. If a fire retardant absorber is desired, the blocks are dipped for a second time in a fire retardant solution, air-dried for twenty hours, and oven dried for three days. Following drying the absorbers are trimmed, painted with a waterbase paint, checked for weight, and boxed for shipping.

HPY's

These hollow, pyramidal absorbers are manufactured in heights of 12" to 80" from purchased sheets of polyester foam. The sheets are passed through a roller dip tank containing a carbon black, latex and water solution and are air or oven dried. If a fire retardant absorbent is being produced, the sheets are then dipped and dried for a second time. The sheets are cut to a particular length (depending upon product being manufactured), sprayed on one side with an adhesive, and two sheets are hand laminated. The laminated sheets, now called blankets, are joined along the edges with either one or two more blankets, depending upon the height of absorber being produced. For those absorbers larger than 40" in height, the blanket is laminated with styrofoam for increased strength, prior to grooving. These blankets

are either cut into a circle and placed on a circular grooving machine, or are cut on their diagonal and placed on a special grooving machine. Grooves are cut into the blankets to permit later folding, and the blankets are cut completely through along every fourth groove, forming a triangle. The bottom edges are trimmed square. This triangular shaped blanket is then hand formed into a pyramid and from one to sixteen pyramids (depending on size) are attached to a pre-cut polyester foam base. The absorber is spray painted and, if weatherproofing is desired, will be sprayed with an adhesive then covered with a special cloth.

CV's

These solid, convoluted absorbers are manufactured from purchased polyester buns to heights up to 6". The polyester buns are cut into slabs on a horizontal slicer and passed through a convoluter which imparts the tapered shape of the absorber to the foam. The convoluted slabs are then passed through a roller dip tank containing a carbon black, water and latex solution. Following this impregnation step the slabs are oven dried and trimmed to final size. If weatherproofing is desired, a carbon impregnated absorber will be mated to a convoluted piece of raw foam and covered with special cloth. Both the weatherproofed and non-weatherproofed absorbers are spray painted with a waterbase paint and packaged for shipping.

AN's and LS's

These multi-layered absorber sheets (AN's) and single-layer absorber sheets (LS's) are manufactured from either purchased polyester foam sheets, or from pieces trimmed from purchased polyester buns. As in HPY manufacturing, these sheets, or pieces, are passed through a

roller dip tank containing a carbon black solution and are subsequently dried. The sheets, or pieces, are cut into squares and checked for performance. Based on the thickness and the performance, the sheets are inventoried for later use as AN absorbers.

AN absorbers are composed of multi-layered stacks of sheets which have been glued and pressed together, tested for reflectivity, weather-proofed if desired, and painted for identification.

b) Lenses/Reflectors

Spherical lenses and reflectors are manufactured to any nominal diameter size in the range of three to forty-eight inches.

Purchased polystyrene beads are expanded through the use of heaters and are screened and separated, according to size. Density is determined and the beads are placed into the female portion of a hollow semi-spherical mold, in a formulated density mixture. The mold is closed, live steam is injected for a period of twenty minutes, thus creating a permanent bond amongst the beads. The shells, now approximately one-half inch thick, are removed, dried overnight, and lightly sanded. Shells of different diameters are hand assembled in layers building up to the final lens or reflector diameter. Following anechoic chamber testing, the lenses are packaged and the reflectors are fitted with a reflecting cap. The reflector is then encapsulated in a steam cured epoxy coating which provides physical protection. Following additional anechoic chamber testing, the reflector is then packaged.

3. Flotation Products

ECCOFLOAT - Riser Pipe Modules

Since each riser pipe is of a different configuration, prior to commencing the manufacture of buoyancy modules, it is necessary to design and construct two-piece molds to be used to form the desired buoyancy module. E&C has historically manufactured the frames for these molds and contracted the interior construction to a professional mold maker. The average mold costs between \$3,000 to \$5,000, and the number purchased would depend upon the particular module order size.

Mold preparation includes the stapling together of pre-cut glass cloth and mat, which is then cemented to the interior surface of both the male and female section of the mold. The two sections are clamped together, hoisted into a vertical position on a vibrating table, and filled with macroballoons while the mold is being vibrated.

Next, the mold is placed into a vacuum tank and filled, under vacuum, with a solution of resin, microballoons, diluent, and a curing agent which is added to the resin solution immediately prior to the vacuuming operation.

Once filled, the molds are removed from the tanks and are either air-cured, or oven-cured, at 200^oF. The mold is opened, the riser module is removed, trimmed, sand-blasted, patched, and painted. Buoyancy and core sample checks are periodically performed. The modules are stenciled, weighed and crated for shipping.

Utilizing similar manufacturing procedures, E&C manufactures Flotation Products in a wide variety of shapes and performance ranges, with each application requiring a different material formulation.

VI-B PROPERTY AND FACILITIES

E&C has seven manufacturing facilities: two in Canton, Massachusetts, which also house their central administrative and research facilities; and one each in Gardena, California; Northbrook, Illinois; Oevel, Belgium; Scunthorpe, England; and Hokkaido, Japan. In addition, they also own a two-story facility in London, England, which is utilized as European headquarters, and an office area is leased in Yokohama, Japan, housing Japanese headquarters. Also, several small sales office facilities are being rented throughout the world at the following locations: Silver Spring, Maryland; Philadelphia, Pennsylvania; Richardson, Texas; Paris, France; Cologne, Germany; and Milan, Italy.

The following pages describe each of the manufacturing facilities, including a summary table of pertinent data and a plot plan on each one. The first facility discussed is Plant I in Canton, Massachusetts.

(See Table and Plot Plan on the Following Pages)

VI-E EMERSON & CUMING - PURCHASING/RAW MATERIALS

Emerson & Cuming (E&C) utilizes a minimum of 380 different raw materials in the manufacture of their 300 standard products, with 90% being used in the manufacture of dielectric materials. As a general practice, E&C purchases most individual raw materials from a single source, primarily because of the low volumes used, number of different materials required, and technical time necessary to qualify additional sources. However, the majority of these raw materials are available from other suppliers who could be qualified in the event that E&C's primary source was unable to supply. Further, Dewey and Almy already has excellent relationships with most of E&C's suppliers.

The following discussion includes charts detailing the major raw materials used by E&C by product group, accounting for a minimum of 65% of the total E&C raw material purchase costs. The charts include only those materials whose procurement significantly affect a total product group and whose costs/volume warrants inclusion. In addition, E&C management maintains that the effects of an inability to procure those other raw materials could be minimized through reformulating the products, whereas an inability to procure materials on these charts would have a more significant effect on E&C's business.

The table on the following page shows key raw materials data for E&C's Dielectric Materials business and is followed by a discussion of the data.

(See table on following page)

EMERSON & CUMING
RAW MATERIAL DATA

DIELECTRIC MATERIALS

<u>Line No.</u>	<u>Material</u>	<u>Primary Suppliers</u>	(1) <u>1977 Quantity Purchased</u>	(2) <u>1977 Price/Unit</u>	(3) <u>1977 Total (\$000)</u>	(4) <u>1975-1977 Price Incr. Avg. Annual Inc./ (Dec.)</u>
	Epoxy Resins	Shell -				
(01)		U. S.	365,000 lbs.	\$.72	\$262.8	9.5%
(02)		Europe	160,000 lbs.	.92	147.2	3.4
(03)		Japan	15,000 lbs.	1.05	15.8	(0.2)
		Ciba-Geigy -				
(04)		U. S.	67,000 lbs.	.75	50.3	9.1
(05)		Japan	29,000 lbs.	1.10	31.9	1.6
		Dow -				
(06)		Europe	21,000 lbs.	1.12	23.5	0.6
(07)	Silver Silflake	Handy-Harmon	65,000 Tr.Oz.	5.27	342.6	(1.1)
(08)	135	Others	4,200 Tr.Oz.	6.29	26.4	(4.5)
(09)	Tabula Alumina	Alcoa	275,000 lbs.	.30	82.5	5.4
(10)	Carbonyl Iron Powder	GAF	40,000 lbs.	1.57	62.8	5.4
(11)	Silicone Resins	Stauffer	35,000 lbs.	3.85	134.8	2.7
(12)		Gen. Elec.	3,900 lbs.	3.85	15.0	2.7
(13)	PMDA	DuPont	7,000 lbs.	7.50	52.5	-
(14)	Polyglycol Diamine	Union Carbide	21,000 lbs.	3.02	63.4	1.9
(15)	TEPA	Union Carbide	53,000 lbs.	1.16	61.5	10.5
(16)		Bayer	19,000 lbs.	1.23	23.4	(11.9)
(17)	Pleogein 4050	Amer. Petrochem.	19,000 lbs.	1.15	21.9	7.2
(18)	BGE	Ciba-Geigy	22,000 lbs.	1.19	26.2	9.9

Checked By: JBN
Date: 11/4/77

Since most of the dielectric materials are specially formulated, there are many raw materials which are important in the formulation of a particular product, but whose cost and quantity used is quite small and, therefore, do not appear on the chart. However, we have not attempted to research the availability and possibility of substituting for such materials since inability to procure such an item would not dramatically affect a total product group.

Epoxy Resins

As will also be discussed in the Flotation Products section, the types of epoxy resins used by E&C are readily available from many sources, with at least two sources of supply expanding their liquid epoxy capacities.

Silver Silflake 135

This flaked 99% silver material is used throughout the ECCOSHIELD and ECCOBOND product lines. E&C U. S. is presently purchasing 100% of their requirements from Handy and Harmon Company in Canton, Massachusetts. The European and Japanese divisions purchase their silver requirements from local suppliers.

In the event that Handy and Harmon were no longer able to supply this product, other flaked silver manufacturers in the U. S., such as Alcoa, would be available. This situation is unlikely based on discussions with Handy and Harmon personnel who presently offer this material for delivery within twenty-four hours of order placement.

Tabula Alumina

This low iron content, 325 mesh, aluminum powder is used as a filler in the manufacture of STYCAST and ECCOBOND products to enhance their thermal conductivity. E&C presently purchases this material from Alcoa, who is the only world supplier of this type of aluminum. Other higher iron content, harder mesh aluminum powders are available from Kaiser and Alcoa and could be utilized in these dielectric material formulations in the event that this particular type was not available.

Carbonyl Iron Powder

This 99.9% pure iron powder is formulated into ECCOSHIELD and ECCOSORB products providing those items with specific microwave properties. E&C presently purchases this material from GAF, the existing sole source of supply. However, identical material is available from specialty formulators such as Belmont Metals, Inc. in New York.

Silicone Resins

E&C presently uses three different types of silicone resins in their dielectric material formulations, purchasing 90% from Stauffer and 10% from General Electric. These low viscosity, unfilled resins become the formulation building blocks for the ECCOSIL product line. Substitute materials are available from Dow Corning in addition to General Electric and Stauffer. In fact, Stauffer is the smallest manufacturer of the three available suppliers. E&C is not a large user of silicone resins and no future supply problems are anticipated.

PMDA

PMDA (pyromellitic dianhydride) is available in the United States only from DuPont Chemical and is a component used in the manufacture of two E&C catalysts. This material can be obtained in Europe from Merck and Veba Chemie AG; however, the quantities used by E&C are such that alternate sources should not be necessary in the foreseeable future.

Polyglycol Diamine

This material, used in the manufacture of one E&C catalyst, is purchased from Union Carbide, which is the only known source of supply for this material. However, in the event this material was unavailable from Union Carbide, a replacement could be formulated using readily available amines.

TEPA

TEPA (tetraethylenepentamine) is an epoxy resin catalyst sold as a catalyst by E&C. This material is purchased in the U. S. from Union Carbide and in Europe from Bayer Chemical. In addition, two English sources of supply are also available for this material.

Pleogein 4050

This low water content polyester resin is used as a coreactant in the manufacture of ECCOFOAM, a urethane foam. E&C purchases this material from Mor Rez Division of American Petrochemical Co.

BGE

BGE (butylglycidol ether) is an epoxy resin diluent used in the manufacture of STYCAST products. E&C presently purchases this material from Ciba-Geigy, however, other similar epoxy resin diluents are available from Shell Chemical and Reichhold Chemical.

The following table shows key raw materials data for E&C's Microwave Products business and is followed by a discussion of the data.

<u>EMERSON & CUMING</u> <u>RAW MATERIAL DATA</u>						
<u>MICROWAVE PRODUCTS</u>						
Line No.	Material	Primary Suppliers	(1) 1977 Quantity Purchased	(2) 1977 Price/Unit	(3) 1977 Total (\$000)	(4) 1975-1977 Price Increase/ Avg. Annual Inc./Decrease
(01)	Pliobond 2014	Goodyear	12,000 gal.	\$ 6.55	\$ 78.6	13.67
(02)	Neoprene Latex	DuPont-				
		U. S.	75,000 lbs.	.57	42.8	17.9
(03)		Europe	35,000 lbs.	.52	18.2	-
(04)		Japan	30,000 lbs.	.73	21.9	-
(05)	Oncor 23-A	N.L. Industries	9,500 lbs.	1.60	15.2	(1.7)
(06)	Vulcan XC-72 Pellets	Cabot Corp.	20,000 lbs.	.40	8.0	4.0
(07)	Polyurethane Foam	General Felt	340 pcs.	135.00	45.9	6.0
(08)		United Foam	2,450 rolls	11.00	27.0	N.A.
(09)		Alleluia Cushion	78,000 lbs.	.90	70.2	N.A.
(10)		PRB - Europe	27,000 lbs.	1.17	31.7	4.9
(11)		Bridgestone KK	54 pcs.	168.50	9.1	-
(12)			Japan	1,600 rolls	15.69	25.1

(a) While neoprene latex has increased 17.9% per year during the three year period 1975-1977, the price has been stable during the past two years.

Microwave Products

Pliobond 2014

Pliobond is an adhesive, manufactured by Goodyear Tire & Rubber Co., used throughout the microwave absorber manufacturing process for such things as; bonding polyester foam sheets together in the HPY manufacturing process, bonding finished absorbers to their bases, and bonding weatherproofing cloth to absorbers. Goodyear is the only available supplier for this material; however, similar types of adhesives are available from Goodyear and other manufacturers, such as Goodrich.

Neoprene Latex 400

This latex is one material used in the carbon black dipping solution for impregnating microwave absorbers. DuPont is the sole source of supply for this material however, E&C is a relatively small consumer and DuPont does not anticipate any future supply problem.

Oncor 23-A

Oncor is a fire retardant used in the dipping solution for impregnating fire retardant microwave absorbers. This material is a combination of antimony oxide and inert silica which imparts a flame resistance to the foam. N. L. Industries is the only known source for this material; however, in the event that Oncor 23-A was unavailable, E&C could accomplish the same purpose using antimony trioxide, a readily available substitute.

Vulcan XC-72 Pellets

These conductive carbon black pellets are one of the components used in the microwave absorber dipping solution and are presently being purchased from Cabot Corporation. Other similar types of carbon black are readily available from suppliers such as Cities Service.

Polyurethane Foam

E&C presently purchases polyester and polyether foam in the form of rolls or buns at a specific foam density. The rolls are converted into hollow microwave absorbers (HPY's) and the buns into solid microwave absorbers (VHP's). E&C presently has several foam sources available at the three microwave manufacturing locations. These sources include General Felt Co., United Foam, Alleluia Cushion, and PRB. There are several other sources who supply these types of foam and the utilization of a new source would only require the establishment of mutually agreeable quality control procedures to insure a continuing supply of foam at a proper density.

The following table shows key raw materials data for E&C's Flotation Products business and is followed by a discussion of the data.

		<u>EMERSON & CUMING RAW MATERIAL DATA</u>				
<u>FLOTATION PRODUCTS</u>		(1)	(2)	(3)	(4)	
<u>Line No.</u>	<u>Material</u>	<u>Primary Suppliers</u>	<u>1977 Quantity Purchased</u>	<u>1977 Price/Unit</u>	<u>1977 Total (\$000)</u>	<u>1975-1977 Price Incr Avg. Annual Inc./Dec</u>
	Epoxy Resins	Shell -				
(01)		U. S.	390,000 lbs.	\$.72	\$ 280.8	9.5%
(02)		Europe	331,000 lbs.	.92	304.5	3.4
		Ciba-Geigy -				
(03)		U. S.	60,000 lbs.	.75	45.0	9.1
✓(04)	Versamid 140	General Mills	180,000 lbs.	1.00	180.0	-
(05)		Union Camp	10,000 lbs.	1.00	10.0	-
/(06)	Epoxide 8	Proctor & Gamble	70,000 lbs.	.94	65.8	5.2
/(07)	Milled Fibers	Ferro Div. Reichhold	188,000 lbs.	.53	99.6	4.0
	Microballoons					
✓(08)	B-23/500	3M	182,000 lbs.	.95	172.9	5.7
/(09)	KFP-524	Arco Polymers	38,000 lbs.	.78	29.6	2.0
✓(10)	Enkamat	American Enka	115,000 sq ft.	.23	26.5	(12.4)
✓(11)	Glass Cloth	Owens Corning	24,000 lbs.	.75	18.0	8.3

Flotation Products

Epoxy Resins

By far, the most important large volume raw materials used by E&C are the epoxy resins. E&C is presently purchasing four similar types of epoxy resin from Shell Chemical (90%) and from Ciba-Geigy (10%). These resins are used in virtually all the dielectric and flotation products formulations.

In addition to Shell and Ciba-Geigy, similar types of epoxy resins are available from Dow Chemical, Celanese, General Mills, and Reichhold Chemical. At the present time, Reichhold is actively pursuing a portion of E&C's epoxy resin re-

130 million pounds per year. In addition, Shell Chemical presently has plans to double their liquid epoxy capacity from 52 million pounds per year to 100 million pounds per year by the second quarter of 1978. It is also rumored that Ciba-Geigy is planning an expansion providing an additional 26 million pounds per year. No future supply problems are anticipated and if the two expansions do take place, there is a possibility of an overcapacity situation.

Versamid 140

This polymerized amine is used in flotation riser module formulations as an epoxy curing agent. While E&C presently procures 95% of their requirements from General Mills, substitute materials are available from several customers such as Union Carbide, Ciba-Geigy, Reichhold, and Humko Chemical. In addition, Reichhold is actively pursuing a portion of E&C's polyamid business.

Epoxide 8

This epoxy diluent is used in the formulation of flotation products. Procter & Gamble (P&G) is the only known source of supply for the Epoxide 8 material; however, other epoxy diluents could be used in the event that P&G was unable to supply this material.

Milled Fibers

These 1/32" long fiberglass fibers are used in the coating of expanded polystyrene beads which are then formulated into flotation products. E&C purchases these fibers from the Ferro Division of Reichhold Chemical. Reichhold has indicated that the Ferro manufacturing capacity for these fibers will be expanded in the future and no supply problems are anticipated. In addition,

similar acceptable fibers could be obtained from Henry and Frick, a distributor for Owens Corning.

Microballoons B-23/500

These microballoons, purchased exclusively from 3M, are used in the formulation of riser pipe modules intended to operate at a depth of 2,000 feet or less. E&C presently manufactures microballoons used in riser module formulations for applications at depths greater than 2,000 feet. 3M is presently the only source of supply for this particular type of microballoon. However, if necessary, E&C could use their own microballoon in place of the 3M microballoons in the riser module formulation. However, E&C has found that it is economically advantageous to purchase this type of microballoon for the particular module application, as opposed to manufacturing a substitute.

KFP-524

This gasoline resistant polystyrene bead is purchased exclusively from Arco Chemicals. These beads are expanded and coated with milled fibers to be used in flotation product formulations. Arco is the only manufacturer of a polystyrene bead which will expand to approximately 3/8" diameter when subjected to steam. Discussions with Arco reveal that E&C is a small consumer of these beads and continued supply should not be a problem. Foster Grant and BASF manufacture polystyrene beads, however, these beads are a smaller size and reformulation of E&C's flotation product would be required to utilize these beads.

Enkamat

This spongy nylon material is used to line the riser module molds prior to their filling with a resin, microballoon, and polystyrene bead formulation. After

filling and curing, the enkamat becomes a protective integral exterior layer of the riser module providing a physical separation between the seawater and the microballoon components contained within a riser module. The American Enka Company is the sole source of supply for this material which is manufactured in Europe. In the event this material would be unavailable, E&C management feels that substitutes are available.

Glass Cloth

This fiberglass cloth material is also used to line the riser module molds prior to their filling with a resin, microballoon, and polystyrene bead formulation. After filling and curing the fiberglass cloth also becomes a protective exterior layer of the riser module. This material is presently purchased from Henry and Frick, a distributor for Owens Corning Co. and acceptable substitutes can be purchased from Owens Illinois.

The table on the following page shows the key raw materials used in the manufacture of E&C's Microballoons and is followed by a discussion.

(See table on following page)

EMERSON & CUMING
RAW MATERIAL DATA

<u>MICROBALLOONS</u>			(1)	(2)	(3)	(4)
<u>Line No.</u>	<u>Material</u>	<u>Primary Suppliers</u>	<u>1977 Quantity Purchased</u>	<u>1977 Price/Unit</u>	<u>1977 Total (\$000)</u>	<u>1975-1977 Price Incr Avg. Annual Inc./Dec.</u>
(01)	Sodium Silicate	Diamond Shamrock	500,000 lbs.	\$.03	\$ 15.0	13.0%
(02)	Boric Acid	New England Chem.	48,000 lbs.	.24	11.5	22.5
(03)	Urea	New England Chem.	5,300 lbs.	.14	.7	24.7
(04)	Genospheres	Hargraves	450,000 lbs.	.015	6.8	-

Microballoon Products

As discussed in the Manufacturing Process section, E&C manufactures their microballoon feedstock, using a spray dryer, in Canton, as well as utilizing Custom Processing, Inc. in New Jersey to manufacture about 50% of their feedstock. E&C has recently increased their spray drying capacity and anticipates manufacturing 100% of their microballoon feedstock at their Canton, Mass., facility. In the event that the E&C spray drying manufacturing operation is taken out of operation, the total feedstock requirements can be manufactured by Custom Processing, insuring a continuing feedstock source of supply.

Sodium Silicate

This raw material used in the manufacture of microballoon feedstock is presently being purchased almost exclusively (95%) from Diamond Shamrock. Several other sources of supply are available for this material, such as Allied Chemical, DuPont, Philadelphia Quartz, the Davison Division of W. R. Grace & Co.

Available industry capacity is such that no future supply problems are anticipated.

Boric Acid

This component of microballoon feedstock is a borate derivative purchased almost exclusively from New England Chemical. Other sources of supply are available, such as Kerr McGee, Stauffer, and U. S. Borax. The present supply for borates, and hence boric acid, is quite tight; however, based on E&C quantities used, no future supply problems are anticipated.

Urea

This third component of microballoon feedstock is also being purchased almost exclusively from New England Chemical. Many other sources of supply are available with the E&C quantities used being miniscule in comparison to the urea availability.

Cenospheres

As discussed in the Microballoon Manufacturing Process section, this material is converted into ceramic microballoons by E&C through a drying operation. The material is a microballoon purchased from Hargraves in London, England. This material is fly ash, a by-product of coal burning, and is available from only one location in England due to the type of coke used at that power facility. Discussion with Hargraves by E&C management has revealed that there exists an abundance of this fly-ash at this location ensuring a continuing supply for at least 10 years.

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Listing to Schedule
to Section 7.36

LISTING OF MATERIAL SAFETY DATA SHEETS AND OTHER PERTINENT INFORMATION.

ECCOSPHERES FA-A	Radiobiology Laboratory, University of Calif. Davis 95616, Report of possible Mutagenic properties.
ECCOSORB	Material Safety Data Sheets.
STYCAST	Material Safety Data Sheets.
ECCOSHIELD	Material Safety Data Sheets.
ECCOCOAT	Material Safety Data Sheets.
ECCOSPHERES, EPOXY RESIN-	Material Safety Data Sheets.
ECCOSPHERES, GLASS	Material Safety Data Sheets.
CATALYSTS	Material Safety Data Sheets.
ECCOFOAM	Material Safety Data Sheets.
ECCOSIL	Material Safety Data Sheets.
ECCOMOLD	Material Safety Data Sheets.
ECCOBOND	Material Safety Data Sheets.

*7/11/82
J. J. ...
1/29/85*

Mutagenicity of Filtrates from Respirable Coal Fly Ash

Abstract. Incubation of histidine-requiring auxotrophs of the bacterium *Salmonella typhimurium* with cyclohexane-, saline-, and serum-soluble surface components of respirable fly ash particles produced an increased number of revertants in two frameshift tester strains. The results are consistent with the hypothesis that both organic and inorganic mutagens are present in coal fly ash.

Coal combustion for electric power generation is predicted to increase dramatically throughout the remainder of this century. It can be estimated that in 1974 a total of 2.4×10^6 metric tons of fly ash was released to the atmosphere from all coal-burning facilities in the United States (1). As part of our studies of the potential health impacts of electrical energy-producing coal combustion technologies, we evaluated the mutagenicity of soluble components of respirable coal fly ash. Recent studies have shown a high positive correlation between carcinogenicity of substances for animals or man and mutagenic activity in a bacterial test system (2).

Kilogram quantities of size-fractionated fly ash were collected downstream of the electrostatic precipitator from the smokestack breeching of a large modern power plant burning pulverized low sulfur, high ash coal (3). Of the four sized fractions obtained, the finest fraction, with a mass median diameter (MMD) of $2.2 \mu\text{m}$ and geometric standard deviation (σ_g) of 1.8, is the most biologically important since particles of this size have the longest atmospheric residence time, are most efficiently deposited in deep lung, and are least efficiently removed (4). Five strains of histidine-requiring (*his*⁻) auxotrophs of the bacterium *Salmonella typhimurium* (supplied by B. N. Ames) were used. The testing methods and mutations involved have been described (2). Briefly, strains TA100 and TA1538 have been used to detect base-pair substitution mutagens; TA1537, TA1538, and TA98 are strains that are susceptible to frameshift mutagens. Strains TA98 and TA100 have an ampicillin-resistant R factor not present in the other strains. Sufficient histidine was added to agar plates to allow the histidine-requiring bacteria to replicate several times in the presence of the test substance. After incubation, the histidine-synthesizing (*his*⁻ revertant) bacteria colonies were counted.

Two media were selected for mutagenicity studies with fly ash. Dulbecco's phosphate-buffered saline was used because it has the pH and tonicity of physiological fluids, and horse serum was used because serum has a chemical constituency similar to lung alveolar fluid and forms soluble complexes with some

carcinogenic heavy metals (5). Fly ash samples were incubated separately with each of these media for 2 weeks at 37°C. After incubation, the fly ash mixtures were centrifuged at 35,000g, and the supernatants were passed through a 0.45- μm membrane filter to remove particulate matter. Media controls of serum or saline were treated in the same fashion as the fly ash mixtures. Filtrates were added to filter paper disks in the standard spot test and also added to soft, top agar pour plates. No mutagenic activity was found with the spot test, but revertants were seen with the plate technique. This was evidence that the mutagen or mutagens did not diffuse into the media from the paper disks. Of the five strains tested, TA98 and TA1538 showed his⁺ revertants, whereas TA1535, TA1537, and TA100 did not. Because strain TA1538 showed two to three times the number of revertants as TA98, TA1538 was used in subsequent tests with varying concentrations of fly ash. Serum filtrate had approximately tenfold greater activity than the saline filtrate (Fig. 1). Solubility of substances responsible for mutagenic activity in saline, a polar solvent, suggested the presence of polar organic or inorganic mutagens. Although these tests confirmed the presence of direct mutagens, many mutagens require metabolic conversion by cellular microsomal enzymes to active mutagens (2). In further experiments, addition of optimal concentrations of rat liver homogenates from rats treated with polychlorinated biphenyl (Arochlor 1254) (2) did not significantly increase the number of revert-

ants in either the saline or serum filtrate (Table 1).

Further work was designed to evaluate the chemical nature of the active fly ash components. Fly ash was extracted directly with cyclohexane, a nonpolar, nonmutagenic organic solvent. The extract was evaporated to dryness and reconstituted with dimethyl sulfoxide, and this mixture was tested for mutagenicity. About 40 percent of the mutagenic activity of the serum filtrate was present, and metabolic activation increased the number of revertants 2.2-fold (Table 1). At least a portion of the activity thus can probably be attributed to mutagenic nonpolar organic compounds. In contrast, after extraction of the saline filtrate with cyclohexane, mutagenic activity was found only in the aqueous fraction. This confirmed the polar nature of the activity of the saline-soluble fraction and suggested the presence of at least two mutagenic compounds.

To further assess the chemical specification of the mutagenic activity in the serum filtrate, 2 mM disodium ethylenediaminetetraacetic acid (EDTA), a metal chelator, was added to serum filtrate. The number of his⁺ revertants was increased by about 60 percent compared to the untreated filtrate (Table 2). In order to test the hypothesis that EDTA had chelated mutagenic metals complexed with serum proteins, EDTA-treated and untreated serum filtrates were fractionated on a Sephadex PD-10 column with a cutoff at 25,000 daltons. EDTA (2 mM) was added to one portion of serum filtrate and stirred overnight at 4°C before elution on the column. A second portion was prepared in the same manner without prior treatment with EDTA. Each of these two filtrates was eluted with three void volumes of double-distilled water. The first fraction contained more than 95 percent of the total serum protein. The second had the remaining protein and a

Table 1. Number of TA1538 His⁺ revertants per plate with and without metabolic activation. The concentration of fly ash incubated with serum and saline before filtration was 78 mg/ml; the cyclohexane extract was evaporated under nitrogen and reconstituted with dimethyl sulfoxide to the equivalent of 78 mg/ml. All controls were treated in a manner analogous to the test materials. Spot tests were positive with 4-nitro-quinoline-N-oxide without S-9 (the supernatant fraction of rat liver homogenate, centrifuged at 4000g) and with 2-aminofluorene and S-9 added. Mean values \pm the standard error of the mean (S.E.M.) were for three replicate determinations. The number of spontaneous revertants per plate was 7 ± 1 . The number of revertants with addition of S-9 alone was 20 ± 1 .

Test media	S-9 not added		S-9 added	
	Fly ash	Control	Fly ash	Control
Serum filtrate*	154 \pm 32	10 \pm 2	202 \pm 18	12 \pm 5
Saline filtrate*	17 \pm 3	4 \pm 1	40 \pm 9	16 \pm 2
Cyclohexane extract	62 \pm 2	5 \pm 2	151 \pm 8	27 \pm 5

*The mutagenic activity of serum and saline filtrates in these studies was somewhat less than that observed in the earlier dose-response experiments (Fig. 1).

small amount of low-molecular-weight compounds, while the third fraction contained only low-molecular-weight components. Each of the three fractions was lyophilized and reconstituted with double-distilled water before testing. Regardless of prior treatment with EDTA, the total mutagenic activity in the fractions was lower than that in the original filtrate (Table 2). Of the total net activity after subtraction of background revertants (5.0 ± 1.0 percent), 79, 18, and 3 percent were present in the first, second, and third untreated fractions, respectively. Of the total net activity after subtraction of appropriate control values (Table 2) 83, 0, and 17 percent were found in the three EDTA-treated fractions, respectively. The significant increase ($P < .001$) in the activity of the low-molecular-weight fraction of the EDTA-treated serum filtrate lends credence to the hypothesis that EDTA acted by chelating mutagenic metals from serum proteins. The mutagenic activity was predominantly associated with the fraction of higher molecular weight, with or without EDTA treatment. This activity may be due to organic compounds postulated, as a result of the cyclohexane extraction studies, to be present on fly ash surfaces. Mutagenic organic compounds—for example, polynuclear aromatic hydrocarbons—have been shown to bind to proteins (6). Additional explanations for the relative enhancement of the mutagenicity of the serum filtrates compared to the saline filtrates include the possible presence of (i) enzymes in serum capable of converting promutagens to mutagens or (ii) protein-mutagen complexes that are more available to the bacterial cells.

We have studied the trace element composition of the fractionated fly ash. The respirable fly ash fraction, relative to the other sized fractions, has the highest concentration of many elements (7) that in some chemical forms have been reported to be mutagenic (8-13) or carcinogenic (14). In order of decreasing concentration enhancement, relative to the coarsest fraction (MMD = $20 \mu\text{m}$; $\sigma_g = 1.9$), the following elemental concentrations (micrograms per gram) for some mutagenic or carcinogenic metals analyzed by instrumental neutron activation analysis or atomic absorption spectrophotometry (15) in the finest fraction have been determined: Cd(4.6), Se(198), As(132), Sb(20.6), Mo(50), Pb(278), Co(21), Cu(137), Be(10.3), Ni(40), Mn(309), and Fe(32,000). The inverse dependence of concentration on particle size has been explained, for the most part, as being due to condensation of vol-

Table 2. Effect of EDTA treatment and serum fractionation on the number of TA1538 His⁺ revertants per plate. The concentrations of fly ash incubated with serum was 78 mg/ml (as in Table 1). The mean values \pm S.E.M. were for five determinations. The number of spontaneous revertants per plate was 5 ± 1 . Controls were serum samples with EDTA added and treated in a manner analogous to the test materials. Abbreviation: UF, unfractionated.

Serum filtrate fraction	Fly ash	Fly ash + EDTA	Control
UF	162 ± 18	261 ± 25	8 ± 2
Fraction 1	79 ± 11	94 ± 10	7 ± 1
Fraction 2	21 ± 4	11 ± 4	11 ± 2
Fraction 3	7 ± 2	22 ± 3	4 ± 1

atile metals and their oxides on the surface of fly ash particles (16). Therefore, although average concentrations of potentially toxic materials on the surface of these aluminosilicate spheres (17) may be on the order of tens or hundreds of micrograms per gram, surface concentrations may be as high as 1 to 5 percent (18). Of the metals found in fly ash, a number have been demonstrated to be mutagenic in the *Salmonella* reversion assay (8). These include compounds of chromium (10, 11), iron (12), manganese (13), and selenium (10). Sirover and Loeb have suggested that the mechanism of damage by many mutagenic and carcinogenic metals is due to decreased fidelity of DNA synthesis (19). Sodium bi-

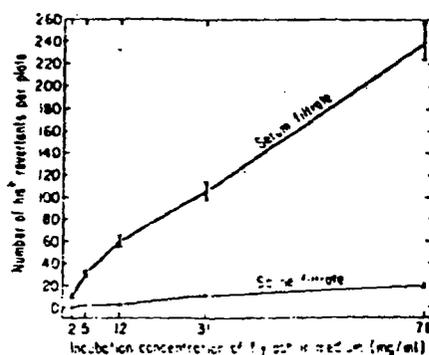


Fig. 1. Dose response curves for mutagenicity of fly ash filtrates with strain TA1538. The number of his⁺ revertants per plate is the mean of 5 to 20 replicate determinations minus the mean of the appropriate background revertants (serum or saline). The background reversion was defined as the group mean of the spontaneous revertants and the appropriate media control after it was determined that the number of his⁺ revertants in all negative controls was not significantly different from that of spontaneous revertants. The means (\pm S.E.M.) of the background revertants were $5.8 (\pm 0.4)$, $6.9 (\pm 0.9)$, $4.0 (\pm 0.6)$ for the spontaneous revertants, serum controls, and saline controls, respectively. Filtrate (100 μl) was added to 2 ml of soft top agar before plating. Plates were incubated for 2 days at 37°C. The vertical bars are 1 S.E.M.

sulfite, which may be present on the surface of fly ash (20), has also been shown to be mutagenic (21).

Although we have not analyzed for organic compounds, they (particularly polynuclear aromatic hydrocarbons) have been reported to be present on the surface of fly ash (22). Studies of suspended particulates in urban aerosol have also resulted in the identification of polynuclear aromatic hydrocarbons, as well as oxidized species, including polycyclic quinones (23). Although most polynuclear aromatic hydrocarbons require metabolic activation, some of the oxides do not (24). It has been postulated (25) that, in addition to polynuclear aromatic hydrocarbons, urban aerosols contain other extractable organic components that are mutagenic in the Ames test system. Since our fly ash samples were collected at 100°C from the power plant smokestack, concentrations of organic compounds were probably lower than would be present if the fly ash were cooled rapidly to ambient temperatures as occurs in the smokestack plume; however, the organic compounds may be altered by interaction with effluent gases or light and other environmental constituents (22).

In summary, evidence has been presented that filtrates from a respirable fraction of coal fly ash collected from a power plant over a 30-day period contain substances that cause frameshift mutations in a bacterial strain lacking normal excision repair. These substances apparently include both organic and inorganic compounds. Increased mutagenicity of the serum filtrate compared to the other filtrates may indicate that extraction with serum increases the sensitivity of the Ames technique for detecting mutagenicity of complex mixtures. It may be expected that substances on the surface of fly ash deposited in the deep lung should be similarly soluble in alveolar fluid. The prospect of a large increase in the amount of coal burned for energy production warrants specific identification of these mutagenic substances and a careful assessment of the possible carcinogenic properties of respirable fly ash.

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17 June 1977; revised 15 August 1977

oles; in later isolations, inoculum was obtained by expressing sap from petioles with forceps. The inoculum was blotted directly from the petioles onto the media. Colonies on the JD-1 medium appeared after 2 to 3 weeks of aerobic incubation at 28°C. Progressive refinements in the culture medium shortened the necessary incubation period. On the JD-3 medium (Table 1), small but distinct colonies are visible without magnification within 6 days. Colonies are circular with entire margins, white, smooth, and convex, and reach a diameter up to 1.0 mm within 2 weeks.

We have consistently isolated the PD bacterium from diseased grapevines. In one isolation experiment, single petioles from 195 rooted cuttings of eight European grapevine varieties (Pinot Noir, Mission, Ruby Cabernet, Flora, Cabernet Sauvignon, White Riesling, Barbera, and Thompson Seedless) were used. Pierce's disease had been transmitted with leafhopper vectors to 116 plants. Of the 79 remaining plants categorized as healthy, 52 had been subjected to feeding by leafhoppers but did not develop PD, and 27 were noninoculated controls. Positive isolations on the JD-2 medium (Table 1) of the PD bacterium determined on the basis of colony characteristics were obtained from 97.4 percent (111/116) of the diseased plants. Only one plant in each group of healthy plants, or a total of 2.5 percent (2/79), yielded bacteria with colonies resembling those of the PD bacterium. Other bacteria were rarely isolated from diseased or healthy plants.

The pathogenicity of the PD bacterium was tested by inoculating green stem cuttings of the grapevine varieties Pinot Noir, Mission, and Ruby Cabernet. The upper end of each two- or three-node cutting with leaves intact was attached to a vacuum pump, and 0.1 to 0.2 ml of a turbid suspension of the PD bacterium (approximately 5×10^8 bacteria per milliliter) in sterile tap water was drawn into each cutting. Controls consisted of noninoculated cuttings and cuttings inoculated with sterile tap water alone, or with suspensions of *Erwinia amylovora* (8×10^8 bacteria per milliliter). After inoculation, the cuttings were rooted on a heated bench under intermittent mist for 14 days and transplanted. Typical PD symptoms (1) developed in 86 percent (43/50) of the cuttings inoculated with the PD bacterium within 2 to 4 months, and many of these plants died within 5 months. All 47 of the control plants remained healthy throughout the study. Colonies characteristic of the PD bacterium were reisolated from 35 of 36 in-

Pierce's Disease of Grapevines: Isolation of the Causal Bacterium

Abstract. A Gram-negative, rod-shaped bacterium has been consistently isolated from grapevines with Pierce's disease. Grapevines inoculated with the bacterium developed Pierce's disease, and the bacterium was reisolated from the plants. The bacterium was serologically and ultrastructurally indistinguishable from the one in naturally infected plants, and also indistinguishable from a bacterium isolated from almonds with almond leaf scorch disease.

The etiological agent of Pierce's disease (PD), an important and often devastating disease of grapevines (*Vitis vinifera* L.) (1), is also considered to cause alfalfa dwarf (2) and almond leaf scorch diseases (3). Prior to 1971, PD was considered to be a viral disease (4), but chemotherapy, thermotherapy, and electron microscopy subsequently implicated the "rickettsia-like" organism seen in the xylem vessels of diseased grapevines as the etiological agent (2, 5, 6). Many investigators have reported failure to isolate the PD pathogen from diseased plants using artificial media (2, 6, 7). Similar insect-vectored bacteria have recently been associated with a number of other plant diseases, and although determination of their pathogenicity and taxonomic position has been delayed by the inability of investigators to culture these bacteria, they apparently

constitute a new group of plant pathogenic bacteria (8).

Recently, a Gram-positive, catalase-negative bacterium that could be isolated from infectious leafhopper vectors but not from diseased plants was reported to be the etiological agent of PD (7). However, this bacterium did not infect healthy plants following direct inoculation, and contradictory evidence as to its causal role has been reported (9).

We now report the consistent culture of a Gram-negative, catalase-positive bacterium from grapevines with PD, and evidence that this bacterium causes PD.

A rod-shaped, Gram-negative bacterium was first isolated on our JD-1 medium (Table 1) from grapevines experimentally inoculated by the leafhopper vector, *Hurdia circellata* (Baker). Initially, the inoculum was collected by centrifugation of sap from surface-sterilized peti-

Listing to Schedule
to Section 7.36

Listing of Raw Materials used by Emerson & Cuming, Inc.

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INVENTORY MASTER LISTING AS OF 2/01/78

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INRASC

7.36

JD CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FIRM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/W
20 00 00	SILFLAKE 135	LB	49.500	78.000	78.000			8/31/77			1
20 00 00	SILFLAKE 135	LB	49.500	78.000	78.000			8/31/77			4
20 00 00	SILFLAKE 135	LB	49.500	78.000	78.000			8/31/77			0
20 00 00	SILFLAKE 135	LB	49.500	78.000	78.000			8/31/77			8
11 00 00	SILFLAKE METZ #7	GM	.109	.185	.172			8/31/77			1
3 00 00	ACCELERATOR 062 (BDMA)	LB	5.840	5.840	.000					C	6
3 00 00	ACCELERATOR 062 (BDMA)	LB	5.840	5.840	.000			10/31/76		C	0
5 00 00	ACTIVATOR 23	LB	5.040	5.040	.000					C	
5 00 00	ACTIVATOR - 23	LB	5.040	5.040	.000						
5 00 00	ADHESIVE 401 HOT MELT	LB	3.250	3.250	.000						4
0 00 00	4 X MICA	LB	.040	.058	.048			8/31/77			6
0 00 00	4 X MICA	LB	.040	.058	.048			8/31/77			5
0 00 00	4 X MICA	LB	.040	.058	.048			8/31/77			0
0 00 00	4X MICA	LB	.040	.058	.048			8/31/77			
0 00 00	A BUTON A 500	LB	.190	.195	.000						6
0 00 00	ABUTON A 500	LB	.190	.195	.000					C	2
0 00 00	ACCELERATOR C 5100	LB	1.210	1.210	.000					C	6
0 00 00	ACCELERATOR C 5100	LB	1.210	1.210	.000						0
0 00 00	ACCELERATOR C5100	LB	1.210	1.210	.000						
5 00 00	ACETONE	LB	.130	.310	.000			10/24/77		C	6
5 00 00	ACETONE	LB	.130	.310	.235			6/08/77		C	4
5 00 00	ACETONE	LB	.130	.310	.235			6/08/77			
5 00 00	ACETONE	LB	.130	.310	.235			6/08/77			
5 00 00	ACETONE	LB	.130	.310	.235			6/08/77			
0 00 00	ACHESON 39	LB	.190	.368	.330			8/31/77			6
0 00 00	ACHESON 39	LB	.190	.368	.000			10/24/77			6
0 00 00	ACHESON 39	LB	.190	.368	.330			12/20/76			5
0 00 00	ACHESON 39	LB	.190	.368	.330			12/20/76			0
0 00 00	ACHESON 39	LB	.190	.368	.330			12/20/76		C	
0 00 00	ACRYLOID B 7	LB	.540	.540	.000					C	6
0 00 00	ACRYLOID B-7	LB	.540	.540	.000						
0 00 00	ACRYLOID B 7	LB	.540	.540	.000						
00 00	ACRYLOID B 44	LB	.310	.525	.000			10/24/77		C	6
00 00	ACRYLOID B 44	LB	.310	.525	.420			12/20/76		C	4
00 00	ADIPRENE L 167	LB	1.120	1.320	.000						6
00 00	ADIPRENE L 167	LB	1.120	1.320	.000					C	6
00 00	ADIDRENE L 167	LB	1.120	1.320	.000						
00 00	ADX 52	LB	.940	2.000	.000						
00 00	ADIPRENE LW-520	LB	1.370	2.160	1.730			6/08/77			
00 00	ADIPRENE LW520	LB	1.370	2.160	1.730			6/08/77			6

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INVENTORY MASTER LISTING AS OF 2/01/78

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NO	CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A	AREA C	USER STA R/M
54	00 00	ADIPRINE LW 520	LB	1.370	2.160	1.730			6/08/77		0	
65	00 00	AD X 80	LB	2.880	4.000	3.400			6/08/77			
76	00 00	AGERITE RESIN D	LB	1.060	1.160	.000			8/31/77		0	
76	00 00	AGERITE RESIN D	LB	1.060	1.160	1.060			4/14/77		1	
00	00 00	ALSILATE W	LB	.060	.065	.000					C 6	
00	00 00	ALSILATE W	LB	.060	.065	.000						
00	00 00	ALSILATE W	LB	.060	.065	.000						
44	00 00	AMMONIUM CHLORIDE	LB	.090	.205	.189			6/08/77		2	
50	00 00	ALUMINUM FOIL .0015X36	LB	.730	.730	.000					2	
50	00 00	ALUMINUM FOIL .0015X36	LB	.730	.730	.000			4/14/77		0	
50	00 00	ALUMINUM FOIL .0015X36	LB	.730	.730	.000					0	
51	00 00	ALUMINUM FOIL 50"	LB	.500	.790	1.500			8/31/77		0	
60	00 00	ALUMINUM POWDER 101	LB	.440	.660	.000			10/24/77		6	
60	00 00	ALUMINUM POWDER 101	LB	.440	.660	.590			12/20/76		4	
60	00 00	ALUMINUM POWDER 101	LB	.440	.660	.590			12/20/76		0	
60	00 00	ALUMINUM POWDER 101	LB	.440	.660	.590			12/20/76		C	
70	00 00	ALUMINUM POWDER 422	LBS	1.510	1.510	.000			10/31/76		0	
70	00 00	ALUMINUM POWDER 422	LB	1.510	1.510	.000			10/24/77		6	
70	00 00	ALUMINUM POWDER 422	LB	1.510	1.510	.000					4	
70	00 00	ALUMINUM POWDER 422	LB	1.510	1.510	.000					C 0	
70	00 00	ALUMINUM POWDER 422	LB	1.510	1.510	.000						
82	00 00	AMERCUAT PRIMER 86	GAL	4.880	4.880	.000					C	
20	00 00	ANTIFDAM A	LB	3.690	7.900	5.930			8/31/77		6	
20	00 00	ANTIFDAM A	LB	3.690	7.900	5.930			12/20/76		C 6	
20	00 00	ANTIFDAM A	LB	3.690	7.900	5.930			12/20/76		0	
20	00 00	ANTIFDAM A	LB	3.690	7.900	5.930			12/20/76			
21	00 00	ANTIFDAM 74 4 OZ.	LB	2.250	2.250	.000			10/31/76		C	
45	00 00	AQUA WA-0	LB	.240	.380	.000						
55	00 00	ARALDITE 506 -EPON 815-	LB	.430	.585	.000						
60	00 00	ARALDITE 507	LB	.450	.880	.000			10/24/77		6	
60	00 00	ARALDITE 507	LB	.450	.880	.880			2/25/77		4	
60	00 00	ARALDITE 507	LB	.450	.880	.880			2/25/77		0	
60	00 00	ARALDITE 507	LB	.450	.880	.880			2/25/77		5	
170	00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		6	
170	00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	.000			10/24/77		4	
170	00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		1	
170	00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		0	
170	00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		0	
170	00 00	ARALDITE 9381 -6005-	GAL	3.780	7.190	6.790			6/08/77		4	

CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FURN TIME	PACK TIME	LAST UPDATE	A	AREA	USER
00 00	ARALDITE 9382 -6010-	GAL	3.780	6.980	6.490	6/08/77		6/08/77	6		
00 00	ARALDITE 9382 -6010-	GAL	3.780	6.980	6.490	6/08/77		6/08/77	4		
00 00	ARALDITE 9382 -6010-	GAL	3.780	6.980	6.490	6/08/77		6/08/77	0		
00 00	ARALDITE 9382 -6010-	GAL	3.780	6.980	6.490	6/08/77		6/08/77	4		
00 00	LEKUTHERM X50	LB	1.550	1.650	.000	8/31/77			0		
00 00	ARALDITE 6020	LB	.450	.795	.795	2/25/77		2/25/77	6		
00 00	ARALDITE 6020	LB	.450	.795	.795	2/25/77		2/25/77	6		
00 00	ARALDITE 6020	LB	.450	.795	.795	2/25/77		2/25/77	0		
00 00	ARALDITE 6020	LB	.450	.795	.795	2/25/77		2/25/77	4		
00 00	ARALDITE RD 1 -RGF-	LB	.660	1.115	.000	10/24/77			6		
00 00	ARALDITE RD 1 -RGF-	LB	.660	1.115	1.115	2/25/77		2/25/77	4		
00 00	ARALDITE RD 1 -RGF-	LB	.660	1.115	1.115	2/25/77		2/25/77	0		
00 00	ARALDITE RD 1 -RGF-	LB	.660	1.115	1.115	2/25/77		2/25/77	4		
00 00	ASHURY GRAPHITE #6322	LB	.470	.470	.000	10/31/76			6		
00 00	ASHURY GRAPHITE #6322	LB	.470	.470	.000	10/31/76			0		
00 00	AMURPHOUS GRAPHITE	LBS	.470	.470	.000	10/31/76			0		
00 00	ASBESTOS 1422-7-T-5	LB	.050	.056	.000				6		
00 00	ATOMITE	LB	.020	.047	.000	8/31/77			0		
00 00	ATOMITE	LB	.020	.047	.000	10/24/77			6		
00 00	ATOMITE	LB	.020	.047	.000	8/31/77			5		
00 00	ATOMITE	LB	.020	.047	.000	4/04/77			0		
00 00	RAYUL 35	GAL	.870	.870	.000	10/24/77			4		
00 00	RAYUL 35	GAL	.870	.870	.000	10/24/77			6		
00 00	WIDA MESH FINE	LB	2.300	3.000	3.000	8/31/77		8/31/77	6		
00 00	WIDA MESH FINE	LB	2.300	3.000	3.000	8/31/77		8/31/77	0		
00 00	WIDA MESH FINE	LB	2.300	3.000	3.000	8/31/77		8/31/77	0		
00 00	WIDA MESH FINE	LB	2.300	3.000	3.000	8/31/77		8/31/77	0		
00 00	BARIUM NITRATE	LB	.280	.400	.000				2		
00 00	BAGS 216X50 W/POLYLINERS	EACH	.470	.470	.000				2		
00 00	BETTLF 216 8	LB	.550	.570	.000				6		
00 00	BETTLF 216 8	LB	.550	.570	.000				6		
00 00	BETTLF 216 8	LB	.550	.570	.000				0		
00 00	BETTLF 216 8	LB	.550	.570	.000				0		
00 00	BENTONE 3H	LB	.750	1.053	.000	6/08/77		6/08/77	6		
00 00	BENTONE 3H	LB	.750	1.053	.000	6/08/77		6/08/77	6		
00 00	BMDA	LB	5.840	5.840	.000				6		
00 00	BMDA	LB	5.840	5.840	.000				6		
00 00	CF 3 COMPLEX	LB	2.600	3.900	2.900	6/08/77		6/08/77	5		
00 00	CF 3 COMPLEX	LB	2.600	3.900	.000	10/24/77		10/24/77	6		
00 00	CF 3 COMPLEX	LB	2.600	3.900	2.900	6/08/77		6/08/77	0		

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INVENTORY MASTER LISTING AS OF 2/01/78

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INRMSL

MD CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FIRM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER SIA R/M
00 00 00	BF 3 COMPLEX	LB	2.600	3.800	2.900			6/08/77	C		
05 00 00	BLASTING SAND NO 1	LB	.011	.011	.000				C	6	
00 00 00	BLUF WHITENER PEROX 3-B	LB	10.210	10.210	.000				C		
00 00 00	BORAX	LB	.120	✓.117	.160			8/31/77	C	0	
01 00 00	BORAX POWDER	LB	.106	.152	.000			5/18/77		1	
05 00 00	BORIC ACID	LB	.120	.210	.160			6/08/77		2	
05 00 00	BORIC ACID	LB	.120	.210	.160			6/08/77		1	
05 00 00	BORIC ACID	LB	.120	.210	.160			6/08/77			
05 00 00	BOXES LITHO-FAA	EA	.595	.625	.000			10/06/76		0	
00 00 00	BRIJ 35	LB	.570	1.065	.775			12/20/76		1	
00 00 00	BROXTNEX 160P	LB	1.800	2.000	.000					6	
00 00 00	BRP 553B	LB	.655	.655	.000						
00 00 00	BUSAN 11 M1	LB	.365	.365	.000				C	6	
00 00 00	BUSAN 11 M1	LB	.365	.365	.000					0	
01 00 00	BUTVAR 876	LB	1.240	1.240	.000						
05 00 00	BUTYL ACETATE	LB	.210	.390	.000			10/24/77		6	
05 00 00	BUTYL ACETATE	LB	.210	.390	.000			10/24/77		4	
05 00 00	BUTYL ACETATE	LB	.210	.390	.340			6/08/77		1	
05 00 00	BUTYL ACETATE	LB	.210	.390	.340			6/08/77			
05 00 00	BUTYL ACETATE	LB	.210	.390	.340			6/08/77	C		
00 00 00	BUTYL CELLULOSE ACETATE	LB	.240	.245	.000				C	4	
00 00 00	BUTYL CELLULOSE ACETATE	LB	.240	.245	.000			10/24/77	C	6	
00 00 00	BUTYL CELLULOSE ACETATE	LB	.240	.245	.000					0	
00 00 00	BUTYL CELLULOSE ACETATE	LB	.240	.245	.000						
05 00 00	CABOLITE P4	LB	.020	.073	.054			8/31/77		5	
05 00 00	CABOLITE P4	LB	.020	.073	.054			8/31/77		6	
05 00 00	CABOLITE P4	LB	.020	.073	.054			8/31/77			
05 00 00	CABOLITE P4	LB	.020	.073	.054			8/31/77			
06 00 00	CABOLITE C-6	LB	.020	.034	.000						
06 00 00	CABOLITE C-6	LB	.020	.034	.000						
00 00 00	CABOSIL M5	LB	1.300	1.650	2.000			8/31/77			
00 00 00	CABOSIL M5	LB	1.300	1.650	2.000			8/31/77		6	
00 00 00	CABOSIL M5	LB	1.300	1.650	1.650			8/31/77		5	
00 00 00	CABOSIL M5	LB	1.300	1.650	2.000			12/20/76			
00 00 00	CABOSIL M5	LB	1.300	1.650	2.000			12/20/76		1	
00 00 00	CABOSIL M5	LB	1.300	1.650	2.000			12/20/76		0	
00 00 00	CABOSIL M5	LB	1.300	1.650	1.650			8/31/77		9	
00 00 00	CABOSIL M5	LB	1.300	1.650	1.650			8/31/77			

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FORMSC

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
3 00 00	CALCIUM CARBONATE WHITE	LB	.020	.044	.033			8/31/77		6	
5 00 00	CALICO DRANGE	LBS	2.650	2.650	.000			10/31/76		0	
6 00 00	CALICO RED N1700	LB	4.350	4.350	.000					6	
6 00 00	CALICO RED N1700	LB	4.350	4.350	.000						
6 00 00	CALICO RED N1700	LB	4.350	4.350	.000						C
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		4	
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		0	
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		2	
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		0	
0 00 00	CANS LITH 5 GALLONS	EACH	1.440	1.790	1.691			8/31/77		0	
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77		4	
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77		4	
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77		2	
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77		0	
0 00 00	CANS LITH GALLONS	EACH	.290	.580	.497			6/08/77		0	
0 01 00	CANS LITH GALLONS 13LB	EACH	.032	.045	.000			9/22/77		4	
0 02 00	CANS LITH GALLONS 8LB	EACH	.051	.073	.000			9/22/77		4	
0 03 00	CANS LITH GALLONS 18LB	EACH	.022	.032	.000			9/22/77		4	
5 00 00	CANS 1/2 GAL LITH	EACH	.240	.558	.322			8/31/77		4	
5 00 00	CANS 1/2 GAL LITH	EACH	.240	.558	.322			8/31/77		4	
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			10/24/77		6	
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			6/08/77		4	
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			6/08/77		0	
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			6/08/77		0	
0 00 00	CANS QUART LITH	EACH	.120	.255	.155			6/08/77		0	
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77		6	
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77		4	
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77		0	
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77		0	
1 00 00	CANS PINT LITH	EACH	.100	.190	.127			8/31/77		0	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		0	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		6	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		0	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		0	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		0	
0 00 00	CARBONYL IRON POWDER GRADE TH	LB	1.570	1.500	1.350			8/31/77		5	
0 00 00	CARDURA E	LB	.450	.800	.000					4	
0 00 00	CARDURA E	LB	.450	.800	.000					0	
0 00 00	CARDURA E	LB	.450	.800	.000					0	
0 00 00	CARNAUBA WAX	LB	.950	2.200	.000					C	5

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DD CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FIRM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
00 00 00	CARNAUBA WAX	LB	.950	2.200	.000						
00 00 00	CASFIN AC230	LB	.740	.825	.945			10/06/76		1	
00 00 00	CAUSTIC SODA	LB	.100	.105	.000					3	
00 00 00	CELITE 270	LB	.220	.420	.380			8/31/77		6	
00 00 00	CELITE 270	LB	.220	.420	.380			8/31/77		5	
00 00 00	CELITE 270	LB	.220	.420	.380			8/31/77	C	4	
00 00 00	CELITE 270	LB	.220	.420	.380			8/31/77			
01 00 00	KOPSTL 48X64X172	SHT	5.550	14.960	5.550			4/14/77		0	
00 00 00	CELLOFLEX FR 2	LB	.850	.850	.000					6	
00 00 00	CELLOFLEX FR2	LB	.850	.850	.000				C	5	
00 00 00	CELLOFLEX FR 2	LB	.850	.850	.000						
50 00 00	CELOGEN	LB	1.950	1.950	.000					C	5
00 00 00	CHEM O SIL BLACK R 1152	LB	.640	1.100	.900			6/08/77		6	
00 00 00	CHEM O SIL BLACK R 1152	LB	.640	1.100	.900			6/08/77		4	
00 00 00	CHEM O SIL BLACK R 1152	LB	.640	1.100	.900			6/08/77		0	
00 00 00	CHEM O SIL BLACK R 1152	LB	.640	1.100	.900			6/08/77	C		
00 00 00	CHEM-O-SIL R-6813 UNPIG	LB	.660	.660	.000					C	6
40 00 00	CHEMUSOL UNPIG R8029	LB	.640	1.000	.000					4	
40 00 00	CHEMUSOL UNPIG R8029	LB	.640	1.000	.000			10/24/77		6	
50 00 00	CHEMUSOL X5495 GRAY	LB	.850	.850	.000			10/24/77	C	6	
50 00 00	CHEMUSOL X5495 GRAY	LB	.850	.850	.000					C	4
10 02 00	STYCAST 2651	LB	.292	.470	.000			10/24/77		7	
00 00 00	CHLORENDIC ANHYDRIDE	LB	.650	.650	.000						
00 00 00	CLSE	LB	.167	.380	.000					6	
00 00 00	CLSF	LB	.167	.380	.000					0	
00 01 00	CLSE SOLUTION 5%	LB	.180	.440	.000			9/23/76		1	
00 02 00	CLSE SOLUTION 6%	LB	.187	.430	.000			9/23/76		1	
00 03 00	CLSE SOLUTION 7%	LB	.185	.430	.000			9/23/76		1	
00 04 00	CLSE SOLUTION 7.5%	LB	.184	.430	.000			9/23/76		1	
00 05 00	CLSE SOLUTION 8.5%	LB	.162	.420	.000			9/23/76		1	
00 06 00	CLSE SOLUTION 10%	LB	.180	.420	.000			9/23/76		1	
00 07 00	CLSE SOLUTION 11%	LB	.178	.410	.000			9/23/76		1	
00 08 00	CLSE SOLUTION 12.5%	LB	.175	.400	.000			9/23/76		1	

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FIRM TIME	PACK TIME	LAST UPDATE	A AREA C	USER STA R/M
0 09 00	CLSE SOLUTION 13.5%	LB	.174	.400	.000			9/23/76	1	
0 10 00	CLSE SOLUTION 15.0%	LB	.170	.390	.000			9/23/76	1	
0 11 00	CLSE SOLUTION 17.5%	LB	.167	.380	.000			9/23/76	1	
0 12 00	CLSE SOLUTION 20%	LB	.160	.370	.000			9/23/76	1	
0 13 00	CLSE SOLUTION 22.5%	LB	.154	.360	.000			9/23/76	1	
0 14 00	CLSE SOLUTION 25%	LB	.150	.350	.000			8/15/77	0	
0 14 00	CLSE SOLUTION 25%	LB	.150	.350	.000			9/23/76	1	
0 15 00	CLSE SOLUTION 27.5%	LB	.151	.340	.000			9/23/76	1	
0 16 00	CLSE SOLUTION 30%	LB	.148	.330	.000			9/23/76	1	
0 17 00	CLSE SOLUTION 33%	LB	.140	.320	.000			9/23/76	1	
1 01 00	CARBON SUSPENSION SOLUTION #1	LB	.189	.270	.250			4/14/77	1	
1 02 00	FIRE RETARDANT SOLUTION #2	LB	.119	.150	.150			8/31/77	1	
0 00 00	COAL TAR CP 524	GAL	.540	1.160	.000				4	
0 00 00	COAL TAR CP 524	GAL	.540	1.160	.000			10/24/77	6	
0 00 00	COAL TAR CP 524	GAL	.540	1.160	.000				0	
0 00 00	COAL TAR CP 524	GAL	.540	1.160	.000				4	
1 00 00	CONVERTOR CHEMFAST	PINT	1.600	1.600	.000				C	
4 00 00	COLD ROLL STEEL 3/4X1/8X12'	BAR	2.500	2.500	.000			11/30/76	0	
5 00 00	COLD ROLL STEEL 3/4X1/2X12'	BAR	4.160	4.160	.000			11/30/76	0	
7 00 00	COLD ROLL STEEL 1 1/4X3/8X12'	BAR	3.800	3.800	.000			11/30/76	0	
7 01 00	STYCAST 2057 BLACK	LB	.420	.490	.459			8/31/77	6	
7 00 00	STEEL PLATE 2X1/8X12'	PC	4.740	6.360	4.950			4/14/77	0	
7 00 00	STEEL TUBING 3/16X3/8X12'	PC	21.840	29.000	.000			4/14/77	0	
0 00 00	PG PANELS 4'X8'	EACH	27.520	27.520	.000				0	
0 01 00	PG PANELS 4'X12'	EACH	48.160	68.800	.000			8/31/77	0	
0 02 00	CP PANELS 3/4X48X96	EACH	25.634	36.620	.000			8/31/77	0	
0 03 00	CP PANELS 1/2X48X96	EACH	21.280	30.400	.000			8/31/77	0	
0 00 00	COPPER 8 QUINOLINOLET	LB	.430	.435	.000				C 6	
0 00 00	COPPER 8 QUINOLINOLET	LB	.430	.435	.000					
0 00 00	COPPER 8 QUINOLINOLET	LB	.430	.435	.000					0

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ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FIRM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
3 00 00	COVERLITE 86 H TAPE 1 INCH	YARD	.110	.110	.000					3	
4 00 00	COVERLITE 86B TAPE 2 INCH	YARD	.110	.110	.000					3	
5 00 00	COVERLITE 86B TAPE 3 INCH	YARD	.110	.160	.110			4/14/77		3	
6 00 00	COVERLITE 86B TAPE 4 INCH	YARD	.110	.200	.110			4/14/77		3	
7 00 00 00	COVERLITE 39" /MIL-C-20696/	YARD	1.570	2.420	.000					3	
8 00 00 00	COVERLITE 60"	YARD	2.400	3.750	3.220			12/20/76		3	
8 00 00 00	COVERLITE 60 IN	YARD	2.400	3.750	3.220			12/20/76			
8 01 00	COVERLITE 24 IN	YARD	.672	.960	.000			7/21/77		3	
8 02 00	COVERLITE 30 IN	YARD	.840	1.200	.000			7/21/77		3	
8 03 00	COVERLITE 32 IN	YARD	.889	2.420	1.270			8/31/77		3	
8 04 00	COVERLITE 36 IN	YARD	1.008	2.420	1.440			8/31/77		3	
8 05 00	COVERLITE 40 IN	YARD	1.127	2.420	1.610			8/31/77		3	
8 06 00	COVERLITE 48 IN	YARD	1.344	1.920	.000			7/21/77		3	
8 07 00	COVERLITE 54 IN	YARD	1.512	2.160	.000			7/21/77		3	
5 00 00	CS 4152 - SILICONE	LB	1.490	2.370	.000			10/24/77		6	
5 00 00	CS 4152 -SILICONE-	LB	1.490	2.370	.000					4	
5 00 00	CS 4152 -SILICONE-	LB	1.490	2.370	.000					0	
5 00 00	CS 4152 -SILICONE-	LB	1.490	2.370	.000					5	
5 00 00	DAVONITE P 12	LB	.110	.110	.000					6	
5 00 00	DAVONITE P 12	LB	.110	.110	.000				C		
5 00 00	DAVONITE P 12	LB	.110	.110	.000					4	
0 00 00	D.O.P PLASTIZER	LB	.205	.405	.360			6/08/77	C		
0 00 00	D.O.P. PLASTIZER	LB	.200	.405	.360			6/08/77	C	6	
0 00 00	D.O.P. PLASTIZER	LB	.200	.405	.360			6/08/77			
0 00 00	D.O.P. PLASTIZER	LB	.200	.405	.360			6/08/77			
5 00 00	DAAA0	LB	.336	.540	.480			4/14/77		1	
3 00 00	DB V111 28 4	LB	1.250	1.350	1.100			8/31/77	C	6	
0 00 00	DB V111 28 4	LB	1.250	1.350	1.100			8/31/77		0	
0 00 00	DB V111 28 4	LB	1.250	1.350	1.100			8/31/77			
5 00 00	DC 3 COMPLEX	LB	4.350	9.400	7.800			8/31/77		6	
5 00 00	DC 3 COMPLEX	LB	4.350	9.400	7.800			8/31/77		0	
5 00 00	DC 3 COMPLEX	LB	4.350	9.400	7.800			8/31/77			
4 00 00	DECHLORANE 25	LB	.750	1.450	1.150			8/31/77	C	6	
4 00 00	DECHLORANE 25	LB	.750	1.450	1.150			8/31/77	C	4	
4 00 00	DECHLORANE 25	LB	.750	1.450	1.150			8/31/77			

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER SIA K/M
4 00 00	DECHLORANE 25	LB	.750	1.450	1.150			8/31/77		1	
0 00 00	DEFOAMER PC-1244	LBS	2.250	2.250	.000			10/31/76		0	
0 00 00	DLFOAMER PC 1244	LB	2.250	2.250	.000				C	6	
0 00 00	DEFOAMER PC1244	LB	2.250	2.250	.000					0	
0 00 00	DEFOAMER PC 1244	LB	2.250	2.250	.000					0	
0 00 00	DEFOAMER PC 1244	LB	2.250	2.250	.000					0	
0 00 00	DEFOAMER PC 1244	LB	2.250	2.250	.000					0	
3 00 00	DE-83	LB	1.400	1.400	2.000			8/31/77		6	
3 00 00	DE-83	LB	1.400	1.400	2.000			8/31/77		0	
5 00 00	DEH-29	LB	.360	.780	.000					4	
5 00 00	DEH - 29	LB	.360	.780	.000			10/24/77		6	
5 00 00	DEH 29	LB	.360	.780	.000				C		
5 00 00	DEH 29	LB	.360	.780	.000						
5 00 00	DEH - 31	LB	1.592	1.990	.000					6	
5 00 00	DEH-31	LBS	1.592	1.990	.000			10/31/76		0	
5 00 00	DEH-31	LB	1.592	1.990	.000				C		
3 00 00	DER 330	LB	.450	.455	.000						
3 00 00	DER 330	LB	.450	.455	.000					6	
5 00 00	DRM 201	LB	.520	.520	.000						
5 00 00	D I CASTOR OIL	LB	.450	.715	.000					6	
5 00 00	D I CASTOR OIL	LB	.450	.715	.000			10/24/77		6	
5 00 00	D I CASTOR OIL	LB	.450	.715	.000					4	
5 00 00	D I CASTOR OIL	LB	.450	.715	.000						
5 00 00	D I CASTOR OIL	LB	.450	.715	.000				C		
3 00 00	DI-CUP	LB	2.520	2.790	.000			6/08/77	C		
3 00 00	DICUP	LB	2.520	2.790	.000			6/08/77	C	3	
1 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			8/31/77		6	
1 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			12/20/76	C	6	
1 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			12/20/76			
1 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			12/20/76		0	
1 00 00	DICY ANDIAMIDE	LB	.350	.510	.720			12/20/76			
1 00 00	DIETHANOLAMINE	LB	.365	.521	.000			5/18/77		1	
1 00 00	DETA	LB	.200	.295	.000					C	
1 00 00	DETA	LB	.200	.295	.000					C	
1 00 00	DIMETHYLE FORMAMIDE	GAL	4.700	8.400	.000					6	
1 00 00	DIMETHYLE FORMAMIDE	GAL	4.700	8.400	.000				C		
1 00 00	DIMETHYLE FORMAMIDE	GAL	4.700	8.400	.000						
1 00 00	DPM 3 800 LC	LB	1.500	2.240	1.750			10/06/76		4	
1 00 00	DPM 3 800 LC	LB	1.500	2.240	.000			10/24/77		6	
1 00 00	DPM 3 800 LC	LB	1.500	2.240	1.750			10/06/76			
1 00 00	DPM 3 800 LC	LB	1.500	2.240	1.750			10/06/76		5	

ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
05 00 00	DIURON	LB	2.240	2.800	.000			10/24/77		6	
05 00 00	DIURON	LB	2.240	2.800	.000			10/24/77		9	
05 00 00	DIURON	LB	2.240	2.800	.000					4	
05 00 00	DIURON	LB	2.240	2.800	.000						
05 00 00	DIURON	LBS	2.240	2.800	.000			10/31/76		0	
06 00 00	DLUENT 65	LB	4.850	4.850	.000			10/31/76		6	
00 00 00	DMP 10	LB	.790	.790	.000				C	4	
00 00 00	DMP 10	LB	.790	.790	.000			10/24/77	C	6	
00 00 00	DMP 10	LB	.790	.790	.000					0	
00 00 00	DMP 10	LB	.790	.790	.000						
00 00 00	DMP 30	LB	.790	1.860	.000				C	4	
00 00 00	DMP 30	LB	.790	1.860	.000			10/24/77	C	6	
00 00 00	DMP 30	LB	.790	1.860	.000				C		
00 00 00	DMP 30	LB	.790	1.860	.000					0	
00 00 00	DMP 30	LB	.790	1.860	.000						
00 00 00	DP 116	LB	1.860	1.860	.000					6	
00 00 00	DP-116	LB	1.860	1.860	.000						
00 00 00	DP 116	LB	1.860	1.860	.000				C		
05 00 00	DURCAL #5	LB	.020	.020	.000			9/31/77		6	
00 00 00	DVB 55	LB	1.000	.91	.000					6	
00 00 00	DVB 55	LB	1.000	.91	.000					6	
00 00 00	DVB 55	LB	1.000	.91	.000					0	
00 00 00	DVB 55	LB	1.000	.91	.000				C		
00 00 00	DYLENE #8	LB	.170	.175	.000				C	6	
00 00 00	DYLENE #8	LB	.170	.175	.000						
00 00 00	DYLENE #8	LB	.170	.175	.000						
05 00 00	DYLITE M57-A BEADS	LB	.400	.620	.550			6/08/77		0	
05 01 00	COATED M57A BEADS	GAL	.319	.399	.344	.340		8/31/77		0	
05 02 00	EXPANDED M57A BEADS	GAL	.082	.101	.103	.100		8/31/77		0	
06 00 00	DYLITE F40 RAW	LB	.450	.51	.500			6/08/77		0	
06 00 00	DYLITE F 40 RAW	LB	.450	.51	.500			6/08/77		0	
07 00 00	SK DYLITE KEP 524 BEADS	LB	.460	.74	.780			8/31/77		3	
03 00 00	DYNFL CLOTH	LB	2.200	2.200	.000					6	
05 00 00	ECN 1273	LB	.950	2.00	1.650			6/08/77			
06 00 00	EC-182R	LB	.694	.870	.000			8/31/77		6	
00 00 00	EMULPHOR 719	LB	.960	1.00	.000				C	6	
00 00 00	EMULPHOR 719	LB	.960	1.00	.000					0	
00 00 00	EMULPHOR 719	LB	.960	1.00	.000						

1 00 00 EPI CURE 841	LB	2,200	2,200	2,500		
1 00 00 EPI CURE 841	LB	2,200	2,500	2,500	2/21/77	4
1 00 00 EPI CURE 841	LB	2,200	2,500	2,500	2/21/77	4
00 00 EPI CURE 845	LB	.710	.710	.000		
00 00 EPI CURE 855	LB	.670	1,030	.670	6/06/77	4
00 00 EPI CURE 855	LB	.670	1,030	.670	6/06/77	5
00 00 EPI CURE 855	LB	.670	1,030	.670	6/06/77	4
00 00 EPI-CURE 856	LB	1,500	1,500	.000		C 6
00 00 EIP CURE 874	LB	1,500	1,500	.000		C 6
00 00 EIP CURE 874	LB	1,500	1,500	.000		
00 00 EPI CURE 8494	LB	.980	2,300	2,700	8/31/77	C 6
00 00 EPI REZ 508	LB	1,450	1,450	.000		C 6
1 00 00 EPI REZ 508	LB	1,450	1,450	.000		0
1 00 00 EPI REZ 508	LB	1,450	1,450	.000		6
1 00 00 EPI REZ 5085	LB	.620	.620	.000		C 4
1 00 00 EPI REZ 5085	LB	.620	.620	.000	10/24/77	C 6
1 00 00 EPI REZ 5085	LB	.620	.620	.000		0
1 00 00 EPI REZ 5085	LB	.620	.620	.000		
2 00 00 EPI-REZ 5063	LB	2,500	3,100	.000		6
12 00 00 EPI-REZ 5063	LB	2,500	3,100	.000		
13 00 00 EPI REZ-5163	LB	1,030	1,510	.000	10/31/76	6
15 00 00 EPI REZ 5011	LB	1,500	1,500	.000		6
15 00 00 EPI REZ 5011	LB	1,500	1,500	.000		0
15 00 00 EPI REZ 5011	LB	1,500	1,500	.000		C
17 00 00 EPI REZ 504	LB	1,270	2,000	.000		0
18 00 00 EPI REZ 509	LB	.390	.775	.000	10/24/77	6
18 00 00 EPI REZ 509	LB	.390	.775	.775	2/25/77	4
00 00 00 EPI REZ 510	LB	.390	.745	.745	2/25/77	6
00 00 00 EPI REZ 510	LB	.390	.745	.745	2/25/77	6
0 01 00 EPI REZ 510 SP-393	LB	.650	.650	.000		C 6
2 00 00 EPI REZ 5109	LB	.660	.660	.000	10/31/76	6
3 00 00 EPI-REZ 5183	LB	1,365	1,565	1,565	2/25/77	6
3 00 00 EPI-REZ 5183	LB	1,365	1,565	1,565	2/25/77	
0 00 00 EPI REZ 508	LB	.940	2,070	.000		

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA 1/4
1 00 00	EPL REF-50124	LB	.660	.995	.995			2/25/77		6	
0 00 00	EPON 1031	LB	1.590	2.900	.000				C	5	
0 00 00	EPON 1031	LB	1.590	2.900	.000			10/24/77	C	6	
0 00 00	EPON 1031	LB	1.590	2.900	.000					0	
0 00 00	EPON 1031	LB	1.590	2.900	.000					0	
0 00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		6	
0 00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		4	
0 00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		0	
0 00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		0	
0 00 00	EPON 828	GAL	3.780	6.980	6.490			6/08/77		0	
5 00 00	EPON 052	LB	.740	.740	.000						
0 00 00	EPON SD 298	GAL	4.268	4.268	.000					0	
0 03 00	EPON CS 217	GAL	4.150	4.365	.000						
0 03 00	EPON CS 217	GAL	4.150	4.365	.000						
1 00 00	EPON 1001 T 75	LB	.410	.615	.000					4	
1 00 00	EPON 1001 T 75	LB	.410	.615	.000						
1 00 00	EPON 1001 T 75	LB	.410	.615	.000				C	4	
2 00 00	EPONAL 55-L-32	LB	1.350	2.480	.000			10/24/77	C	6	
2 00 00	EPONAL 55-L-32	LB	1.350	2.480	2.180			6/08/77	C	4	
2 00 00	EPONAL 55-6-32	LB	1.350	2.480	2.180			6/08/77			
2 00 00	AKALDITE 488 E 32	LB	1.350	2.480	.000			8/31/77		0	
3 00 00	EPON 1001-B-80	LB	.440	.660	.000				C	4	
3 00 00	EPON 1001-B-80	LB	.440	.660	.000			10/31/76		0	
3 00 00	EPON 1001-B-80	LB	.440	.660	.000					0	
3 00 00	EPON 1001-B-80	LB	.440	.660	.000					0	
7 00 00	EPON 1001	LB	.520	.655	.795			8/31/77	C	5	
7 00 00	EPON 1001	LB	.520	.655	.660			8/31/77		0	
7 00 00	EPON 1001	LB	.520	.655	.795			8/31/77	C	7	
7 00 00	EPON 1001	LB	.520	.655	.795			8/31/77	C	5	
0 00 00	EPON 1001 T 75	LB	.410	.615	.000			10/24/77		6	
0 00 00	EPOTUF FD 37 200	LB	1.030	2.015	.000			10/24/77		6	
0 00 00	EPOTUF FD 37 200	LB	1.030	2.015	1.800			6/08/77		4	
0 00 00	EPOTUF ED 37 200	LB	1.030	2.015	1.800			6/08/77		0	
0 00 00	EPOTUF FD 37 200	LB	1.030	2.015	1.800			6/08/77		6	
0 01 00	EPOTUF 37-611	LB	1.880	1.880	.000			11/30/76		0	
0 02 00	EPOTUF 37-620	LB	.434	.620	.000			8/31/77		0	
0 00 00	EPOTUF 8	GAL	4.798	6.800	6.800			8/31/77		0	

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOUR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A AREA C	USER STA R/M
0 00 00	EPOXY BLACK 2055	LB	1.250	1.750	.000					6
0 00 00	EPOXY BLACK 2055	LB	1.250	1.750	.000				C	3
0 00 00	EPOXY BLACK 2055	LB	1.250	1.750	.000					
0 00 00	EPOXY BLUE 20427	LB	2.600	3.500	3.150			12/20/76		6
0 00 00	EPOXY BLUE 20427	LB	2.600	3.500	3.150			12/20/76	C	4
0 00 00	EPOXY BLUE 20427	LB	2.600	3.500	3.150			12/20/76		
0 00 00	EPOXY BROWN 2127	LB	1.250	2.000	1.800			8/31/77		6
0 00 00	EPOXY BROWN 2127	LB	1.250	2.000	1.800			8/31/77	C	
0 00 00	EPOXY BROWN 2127	LB	1.250	2.000	1.800			8/31/77		
5 00 00	EPOXY BROWN 20380	LB	1.100	1.100	.000					6
5 00 00	EPOXY BROWN 20380	LB	1.100	1.100	.000					
0 00 00	EPOXY ERL 4221	LB	.920	1.260	.925			12/20/76		4
0 00 00	EPOXY ERL 4221	LB	.920	1.260	.000			10/24/77		6
0 00 00	EPOXY ERL 4221	LB	.920	1.260	.925			12/20/76	C	
0 00 00	EPOXY ERL 4221	LB	.920	1.260	.925			12/20/76		
0 00 00	EPOXY GRAY 2154	LB	1.250	1.900	1.600			6/08/77		6
0 00 00	EPOXY GRAY 2154	LB	1.250	1.900	1.600			6/08/77		0
0 00 00	EPOXY GRAY 2154	LB	1.250	1.900	1.600			6/08/77	C	
0 00 00	EPOXY GREEN 2053	LB	2.400	3.000	2.400			12/20/76	C	6
0 00 00	EPOXY GREEN 2053	LB	2.400	3.000	2.400			12/20/76		0
0 00 00	EPOXY GREEN 2053	LB	2.400	3.000	2.400			12/20/76		
0 00 00	EPOXY OLIVE DRAB 2155	LB	1.900	1.900	.000					6
0 00 00	EPOXY OLIVE DRAB 2155	LB	1.900	1.900	.000					0
0 00 00	EPOXY OLIVE DRAB 2155	LB	1.900	1.900	.000				C	
0 00 00	EPOXY ORANGE 2050	LB	2.650	2.650	.000					6
0 00 00	EPOXY ORANGE 2050	LB	2.650	2.650	.000					0
0 00 00	EPOXY ORANGE 2050	LB	2.650	2.650	.000				C	
0 00 00	EPOXY PURPLE	LB	2.950	2.950	.000					6
0 00 00	EPOXY PURPLE	LB	2.950	2.950	.000				C	
0 00 00	EPOXY PURPLE	LB	2.950	2.950	.000					
0 00 00	EPOXY RED 2051	LB	2.900	4.550	2.900			8/31/77		6
0 00 00	EPOXY RED 2051	LB	2.900	4.550	2.900			8/31/77	C	4
0 00 00	EPOXY RED 2051	LB	2.900	4.550	2.900			8/31/77		
0 00 00	EPOXY STRIP T 251 E	LB	2.950	.553	.703			8/31/77		6
0 00 00	EPOXY STRIP T 251 C	LB	2.950	.553	.703			8/31/77		4
0 00 00	EPOXY STRIP T 251 C	LB	2.950	✓.553	.703			8/31/77		0
0 00 00	EPOXY STRIP T 251 C	LB	2.950	.553	.703			8/31/77		0
0 00 00	EPOXY WHITE 2047	LB	1.050	1.750	1.050			6/08/77	C	6
0 00 00	EPOXY WHITE 2047	LB	1.050	1.750	1.050			6/08/77		0
0 00 00	EPOXY WHITE 2047	LB	1.050	1.750	1.050			6/08/77		
0 00 00	EPOXY YELLOW 2049	LB	1.250	3.750	1.250			6/08/77		6

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0 00 00	EPOXY YELLOW 2049	LB	1.250	3.750	1.250			6/08/77		0	
0 00 00	EPOXY YELLOW 2049	LB	1.250	3.750	1.250			6/08/77	C		
7 00 00	ERRE 0100	LB	.920	.920	.000						
8 00 00	ERRA 0163	LB	1.430	1.430	.000						
0 00 00	ETHYL ACETATE	LB	.160	.335	.000			10/24/77	C	4	
0 00 00	ETHYL ACETATE	LB	.160	.335	.000					1	
0 00 00	ETHYL ACITATE	LB	.160	.335	.000						
0 00 00	ETHYL ACETATE	LB	.160	.335	.000						
3 00 00	ETHYLENE GLYCOL	LB	.105	.105	.000			10/24/77		6	
3 00 00	ETHYLENE GLYCOL	LB	.105	.105	.000					4	
3 00 00	ETHYLENE GLYCOL	LB	.105	.105	.000						
5 00 00	ETHYL SILICATE 40	LB	.720	2.000	.000					0	
5 00 00	ETHYL SILICATE 40	LB	.720	2.000	.000					6	
5 00 00	ETHYL SILICATE 40	LB	.720	2.000	.000						
5 00 00	ETHYL SILICATE 40	LB	.720	2.000	.000					C	
0 00 00	EXPANDED SARAN BEADS	LB	3.250	3.250	.000			10/31/76		6	
2 00 00	ESPERES FA-A WET	LB	.060	.077	.077			8/31/77		0	
5 00 00	FYBEX	LB	.500	.530	.000						
5 00 00	FYBEX	LB	.500	.530	.000			8/31/77		0	
5 01 00	FEBD STOCK P.G.	LB	.160	.168	.000					2	
5 03 00	FEBD STOCK -CUSTOM-	LB	.210	.260	.310			10/10/76		2	
5 04 00	FEBD STOCK CUSTOM -SH73114-	LB	.210	.260	.310			10/08/76		2	
0 00 00	FERRAMIC 0	LB	3.500	4.400	4.400			8/31/77		6	
0 00 00	FERRAMIC 0	LB	3.500	4.400	5.750			8/31/77		6	
0 00 00	FIBERGLASS MAT 50" W	LB	.580	.580	.000						
1 00 00	FIBERGLASS MAT 60" WIDTH	LB	.510	.510	.000						
1 02 00	FIBERGLASS MAT 30Z, 72"	SOFT	.097	.110	.000			10/06/76		0	
1 02 00	FIBERGLASS MAT 3 0Z 72 IN WIDE	LB	.510	.580	.000						
5 00 00	FIBERGLASS CLOTH 60" W	YARD	1.330	1.330	.000						
5 01 00	FIBERGLASS CLOTH #700 60 IN W	SOFT	.150	.150	.000						
2 00 00	FIBERGLASS MAT 2 0Z 60 IN WIDE	LB	.510	.580	.000						
3 00 00	CONFURMAT 2 0Z, 60" W	SOFT	.064	.092	.000			4/04/77		0	
4 00 00	DOUMAT 1	SOFT	.130	.185	.183			8/31/77			

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CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A AREA C	USER STA R/M
02 00	FIBERGLASS TAPE 1	ROLL	2,080	2,080	.000				0	
03 00	FIBERGLASS 1.5 TAPE	ROLL	3,410	3,410	.000				0	
04 00	FIBERGLASS TAPE 2 INCH	ROLL	5,780	5,780	.000				0	
05 00	FIBERGLASS TAPE 2 1/2"	ROLL	6,220	6,220	.000				0	
00 00	FIBRE DRUMS 78-127	EACH	2,080	2,990	.000					
01 00	FIBRE DRUM -F55SF2-	EACH	4,890	5,840	.000				2	
00 00	FIBRE CARTONS 19"X19"X30"	EA	.890	1,050	5,840			9/22/77	0	
00 00	FOAM POLYST EXP 20X48X96	BUN	42,880	48,000	.000			2/18/77	0	
01 00	FOAM POLYSTYRENE EXPAND	BDFI	.067	.075	.000			2/18/77	0	
00 00	FOAM POLYETHER 38X28X75	BUN	37,333	55,400	42,260			8/31/77	0	
01 00	FOAM POLYETHER	BDFI	.080	.100	.100			8/31/77	0	
00 00	FOAM POLYEST FR 54X20X80	BUN	98,400	171,000	.000			2/18/77	0	
01 00	FOAM POLYESTER FR	BDFI	.164	.285	.000			2/18/77	0	
00 00	FOAM POLYEST 174X27X50	ROLL	4,613	9,350	8,200			6/08/77	0	
02 00	FOAM POLYEST 378X27X50	ROLL	6,919	12,220	.000			2/18/77	0	
06 00	FOAM POLYEST 172X27X50	ROLL	9,225	16,250	.000			2/18/77	0	
00 00	FOAM STYROFM 18 2X24X96	BLK	3,360	7,020	.000			2/18/77	0	
02 00	FOAM STYROFM 18 3X24X96	BLK	5,040	10,560	.000			2/18/77	0	
04 00	FOAM STYROFM 18 4X24X96	BLK	6,720	14,040	.000			2/18/77	0	
05 00	FOAM STYROFOAM 18	BDFI	.105	.220	.000			2/18/77	0	
00 00	FOAM SCOT 10PPI 12X40X80	BUN	239,900	391,760	265,860			3/24/77	0	
01 00	FOAM SCOTT 10PPI	BDFI	.900	1,180	.997			3/24/77	0	
00 00	FOAM 2185 54X81X13	BUN	64,750	77,000	.000				0	
01 00	FOAM 2185 54X81X13	BUN	64,750	77,000	.000				0	
00 00	FOAM 2214	BDFI	.175	.250	.000				0	
00 00	FOAM POLYPROPYLENE 1/16X30X55	PC	1,274	1,820	.000			8/15/77	0	
01 00	FOAM POLYPROPYLENE 1/8X30X55	PC	2,660	3,800	.000			8/15/77	0	

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ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
15 02 00	FOAM POLYPROPYLENE 1/4X30X55	PC	4.830	6.900	.000			8/15/77	0		
10 00 00	FOSTER GRANT 1375 BEADS	LB	.395	.395	.000						
15 00 00	FREON 1F	LB	.480	1.310	.600			6/08/77	4		
15 00 00	FREON 1F	LB	.480	1.310	.600			6/08/77 C			
15 00 00	FREON 1F	LB	.480	1.310	.600			6/08/77			
22 00 00	FYROL HB-32	LB	.860	1.800	.000				6		
22 00 00	FYROL HB-32	LB	.860	1.800	.000			10/31/76	0		
24 00 00	FYROL DMP	LBS	.860	1.800	.000			10/31/76	6		
27 00 00	GACO GRAY N-700A	GAL	8.820	18.700	10.200			6/08/77	6		
28 00 00	GELVAMP 263	LB	.630	.855	.775			8/31/77	6		
28 00 00	GELVAMP 263	LB	.630	.855	.775			8/31/77			
28 00 00	GELVAMP 263	LB	.630	.855	.775			8/31/77 C			
29 00 00	GF 397-1123A	LBS	3.500	4.000	.000			10/31/76	6		
30 00 00	GENAMID XR 2000	LB	.890	1.290	.000				4		
30 00 00	GENAMID XR 2000	LB	.890	1.290	.000			10/24/77	6		
30 00 00	GENAMID XR 2000	LB	.890	1.290	.000				0		
30 00 00	GENAMID XR 2000	LB	.890	1.290	.000				4		
31 00 00	GALV. METAL 4' X 8' X .026	SHT	6.380	6.380	.000						
31 00 00	GALV. METAL 4' X 8' X .026	SHT	6.380	6.380	.000			11/30/76	0		
40 00 00	GLASSBUBBLES B23/500	LB	.800	.950	.680			8/31/77	1		
45 00 00	GLASS ROCK GP-71	LB	.170	.170	.000						
70 00 00	GLYCERINE SHELL	GAL	4.100	9.000	4.600			8/31/77	6		
70 00 00	GLYCERINE SHELL	GAL	4.100	9.000	4.600			8/31/77	0		
70 00 00	GLYCERINE SHELL	GAL	4.100	9.000	4.600			8/31/77	5		
71 00 00	GOLD POWDER 325 MESH	TRDZ	128.415	183.450	.600			8/15/77 C	1		
80 00 00	HARDNER 830	LB	1.950	1.950	.000				6		
80 00 00	HARDNER 830	LB	1.950	1.950	.000						
81 00 00	HARDNER 850	LB	1.950	1.950	.000				6		
81 00 00	HARDNER 850	LB	1.950	1.950	.000						
85 00 00	HARDENER 955	LB	.630	.635	.000				C	6	
80 00 00	HARDENER 972	LB	.580	1.160	.000						
15 00 00	VERSAMID 140	LBSM	.020	.995	.000			10/31/76	0		
15 00 00	VERSAMID 140	LB	.720	.995	.000			8/31/77	6		
15 00 00	VERSAMID 140	LB	.720	.995	.000				0		
15 00 00	VERSAMID 140	LB	.720	.995	.000						
15 00 00	VERSAMID-140	LB	.720	.995	.000			10/31/76	0		

CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A AREA C	U.F.R STA K/M
5 00 00	VERSAMID 140	LB	.720	.995	.000				0	
5 00 00	VERSAMID 140	LB	.720	.995	.000			10/31/76	0	
3 00 00	H-85	GAL	8.470	8.470	.000				C	
3 00 00	HB 40	LB	.260	.555	.000			10/24/77	C	6
3 00 00	HB 40	LB	.260	.555	.475			6/08/77	C	4
3 00 00	HB 40	LB	.260	.555	.475			6/08/77		0
3 00 00	HB 40	LB	.260	.555	.475			6/08/77		0
5 00 00	HELASTIC 1030	GAL	3.820	7.100	.000					4
5 00 00	HELASTIC 1030	GAL	3.820	7.100	.000					0
5 00 00	HELASTIC 1030	GAL	3.820	7.100	.000				C	
7 00 00	HELTUGEN BLUE	LB	.581	.830	.000			8/31/77		0
3 00 00	HET ANHYDRIDE	LB	.850	1.750	.000				C	6
3 00 00	HET ANHYDRIDE	LB	.850	1.750	.000					
3 00 00	HET ANHYDRIDE	LB	.850	1.750	.000					
3 00 00	METRON 92	LB	.490	.955	.490			8/31/77		4
3 00 00	METRON 92	LB	.490	.955	.490			8/31/77		6
3 00 00	METRON 92	LB	.490	.955	.490			8/31/77	C	3
3 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000			10/24/77		5
3 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000			10/24/77		6
3 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000					4
3 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000					0
3 00 00	HEXAHYDRE PHTHALIC ANHYDRIDE	LB	.660	1.130	.000					6
3 00 00	HEXANE	GAL	.500	1.080	.905			12/20/76		4
3 00 00	HEXANE	GAL	.500	1.080	.905			12/20/76		0
3 00 00	HEXANE	GAL	.500	1.080	.905			12/20/76		4
3 00 00	ECCOSHIELD HINGES COMPLETE	SET	18.410	18.410	.000					
3 00 00	ECCOSHIELD HINGES COMPLETE	SET	18.410	18.410	.000			11/30/76		0
3 00 00	HTH CHLORINE GRANULAR	LB	.378	.700	.414			8/31/77		3
3 00 00	HYDROCHLORIC ACID	LB	.046	.046	.000					
3 00 00	HYDROCAL WHITE FLATD	LB	.050	.060	.052			12/20/76		6
3 00 00	HYDROCAL WHITE FLATD	LB	.050	.060	.052			12/20/76		0
3 00 00	HYDROCAL WHITE FLATD	LB	.050	.060	.052			12/20/76		0
3 00 00	HYDROCAL WHITE FLATD	LB	.050	.060	.052			12/20/76		0
3 00 00	HYDROSPHERES HALVES 30F -4000-	BOX	78.000	107.000	.000					3
3 00 00	HYDROSPHERES HALVES 40F -4000-	BOX	116.000	116.000	.000					3
3 00 00	HYDROSPHERES HALVES 50F -4000-	BOX	122.000	122.000	.000					3
3 00 00	HYDROSPHERES HALVES 60F -4000-	BOX	100.000	124.000	.000					3

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U CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A AREA C	USER STA R/M
8 00 00	HYDROSPHERES HALVES 90F -4000-	BOX	156.000	190.000	.000				3	
9 00 00	HYDROSPHERES HALVES 120F -4000-	BOX	180.000	180.000	.000				3	
0 00 00	ISOPROPYL ALCOHOL	GAL	.990	1.085	.000				3	
1 00 00	IRON POWDER SF	LB	1.570	1.570	.000			10/31/76	C 0	
5 00 00	JEFFAMINE D-1000	LB	.850	.850	.000					
6 00 00	JEFFAMINE D-2000	LB	.800	.870	.000				4	
6 00 00	JEFFAMINE D-2000	LB	.800	.870	.000			10/24/77	6	
6 00 00	JEFFAMINE D-2000	LB	.800	.870	.000					
6 00 00	JEFFAMINE D-2000	LB	.800	.870	.000			8/31/77	0	
7 00 00	JEFFAMINE D-230	LB	1.100	1.190	.000				4	
7 00 00	JEFFAMINE D 230	LB	1.100	1.190	.000			10/24/77	6	
7 00 00	JEFFAMINE D-230	LB	1.100	1.190	.000					
7 00 00	JEFFAMINE D-230	LB	1.100	1.190	.000			8/31/77	0	
8 00 00	JEFFAMINE D-400	LB	.800	.990	.870			12/20/76	4	
8 00 00	JEFFAMINE D-400	LB	.800	.990	.870			12/20/76		
8 00 00	JEFFAMINE D-400	LB	.800	.990	.000			8/31/77	0	
0 00 00	LAMINATE .031	SQFT	.540	.540	.000				2	
5 00 00	LIGHT FIXTURE RINGS	EACH	5.600	8.000	.000			8/31/77	0	
5 01 00	LIGHT FIXTURES	EACH	18.200	26.000	.000			8/31/77	0	
10 00 00	LINSEED OIL	GAL	1.950	1.950	.000				4	
10 00 00	LINSEED OIL	GAL	1.950	1.950	.000			10/24/77	6	
10 00 00	LINSEED OIL	GAL	1.950	1.950	.000				C 1	
10 00 00	LINSEED OIL	GAL	1.950	1.950	.000					
15 00 00	LIGROINE	LB	.460	1.250	.793			6/08/77	C 6	
0 00 00	LP 2	LB	1.880	1.880	.000				6	
0 00 00	LP 2	LB	1.880	1.880	.000				C 4	
0 00 00	LUBOX LS	LB	.230	.693	.230			12/20/76	4	
0 00 00	LUBOX LS	LB	.230	.693	.230			12/20/76	0	
0 00 00	LUBOX LS	LB	.230	.693	.230			12/20/76	C	
5 00 00	LUBRICA ANT CAT 10	LB	2.000	2.000	1.760			8/31/77	0	
0 00 00	LUSTREX CRYSTAL STYRENE	LB	.250	.460	.360			12/20/76	6	
0 00 00	LUSTREX CRYSTAL STYRENE	LB	.250	.460	.360			12/20/76		
1 00 00	MAS DOOR NAMEPLATE	PC	1.500	3.500	1.500			4/14/77	0	
12 00 00	MEMBRANE	LB	1.084	1.084	.000			4/14/77	0	
13 00 00	DOOR IVES PULLS BRONZE 26 FIN.	EACH	8.400	8.400	.000					

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
4 00 00	MAS DOOR LEAF	PC	146.750	226.600	.000			4/14/77		0	
5 00 00	MAS DOOR HANDLE	PC	11.000	11.000	.000			4/14/77		0	
7 00 00	METHANOL	GAL	.660	.665	.000						
1 00 00	MPDA	LB	.940	1.400	1.200			8/31/77		4	
1 00 00	MPDA	LB	.940	1.400	1.200			8/31/77	C	9	
1 00 00	MPDA	LB	.940	1.400	1.200			8/31/77			
1 00 00	M PYROL	LB	.570	.970	.878			8/31/77		4	
1 00 00	M PYROL	LB	.570	.970	.878			8/31/77			
1 00 00	M PYROL	LB	.570	.970	.878			8/31/77		4	
1 00 00	MAGNESIUM CHLORIDE FLAKE	LB	.070	.171	.108			8/31/77		2	
1 00 00	MAGNESIUM OXIDE	LB	.320	.590	.000					5	
1 00 00	MAGNESIUM OXIDE	LB	.320	.590	.000						
1 00 00	MAGNORITE 70	LB	.310	.360	.000						
1 00 00	MAGNORITE 70	LB	.310	.360	.000				C	5	
1 00 00	MARVELSEAL	YARD	.560	.800	.000			7/21/77		3	
1 00 00	MD 153 A COPPER SHOT	LB	1.200	1.430	1.140			12/20/76		3	
1 00 00	MD 180 COPPER GRANULAR	LB	.920	.923	.000					3	
1 00 00	325 SILVER COATED COPPER	LB	1.000	1.000	.000						
1 00 00	MEK	LB	.180	.360	.310			8/31/77	C		
1 00 00	MEK	LB	.180	.360	.310			8/31/77	C	4	
1 00 00	MEK	LB	.180	.360	.310			8/31/77	C	6	
1 00 00	MEK	LB	.180	.360	.310			8/31/77		0	
1 00 00	MEK	LB	.180	.360	.310			8/31/77		0	
1 00 00	MEK	LB	.180	.360	.310			8/31/77		0	
1 00 00	MEK PEROXIDE	LB	2.400	2.500	.000					C	
1 00 00	MEK PEROXIDE	LB	2.400	2.500	.000			10/31/76	C	0	
1 00 00	MENTHANE DIAMINE	LB	1.700	3.365	.000					C	4
1 00 00	MENTHANE DIAMINE	LB	1.700	3.365	.000			10/24/77	C	6	
1 00 00	MENTHANE DIAMINE	LB	1.700	3.365	.000					0	
1 00 00	MENTHANE DIAMINE	LB	1.700	3.365	.000						
1 00 00	METALLIC SILVER 15	LB	4.900	8.500	.000					1	
1 00 00	METALLIC SILVER 15	LB	4.900	8.500	.000					0	
1 00 00	METALLIC SILVER 15	LB	4.900	8.500	.000					8	
1 00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.550	1.460			8/31/77		6	
1 00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.460	1.460			8/31/77		6	
1 00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.460	1.550			8/31/77		4	
1 00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.550	1.460			12/20/76			
1 00 00	METHYL NADIC ANHYDRIDE 906	LB	1.050	1.460	1.550			8/31/77		0	

QTY	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A	AREA C	USER STA	R/Y/M
1 00	METHYL NAIDIC ANHYDRIDE 906	LB	1.050	1.460	1.550			8/31/77		4		
1 00	METHYLENE CHLORIDE	LB	.120	.293	.210			6/06/77		6		
1 00	METHYLENE CHLORIDE	LB	.120	.293	.210			6/08/77		4		
1 00	METHYLENE CHLORIDE	LB	.120	.293	.210			6/08/77		0		
1 00	METHYLENE CHLORIDE	LB	.120	.293	.210			6/06/77		4		
1 00	MIBK	LB	.150	.380	.000			10/24/77		6		
1 00	MIBK	LB	.150	.380	.000					4		
1 00	MIBK	LB	.150	.380	.000					0		
1 00	MIBK	LB	.150	.380	.000					C 4		
1 00	MICRON MINUSIL 5	LB	.100	.200	.123			8/31/77	C	6		
1 00	MICRON MINUSIL 5	LB	.100	.200	.123			8/31/77	C	5		
1 00	MICRON MINUSIL 5	LB	.100	.200	.123			8/31/77		0		
1 00	MINUSIL 15 MICRON	LB	.050	.066	.056			8/31/77	C	6		
1 00	MINUSIL 15 MICRON	LB	.050	.066	.056			8/31/77	C	5		
1 00	MINUSIL 15 MICRON	LB	.050	.066	.056			8/31/77				
1 00	MICROGLASS 1/32 INCH	LB	.490	.570	.500			8/31/77		6		
1 00	MICROGLASS 1/32 INCH	LB	.490	.570	.500			8/31/77				
1 00	MICROGLASS 1/32 INCH	LB	.490	.570	.500			8/31/77		2		
1 00	MICROGLASS 1/32 INCH	LB	.490	.570	.500			8/31/77		5		
1 00	R.P.A.-60 TOLUENE	LB	.560	.760	.000					C 6		
1 00	MOD EPOX	LB	.390	.395	.000			10/24/77	C	6		
1 00	MOD EPOX	LB	.390	.395	.000					C 4		
1 00	MOLD RELEASE WAX 334	GAL	8.200	9.300	.000							
1 00	MOLD RELEASE 225	GAL	7.500	7.500	.000							
1 00	MOLD RELEASE 1225	LBSK	5.040	5.040	.000			10/31/76		0		
1 00	MONTAN WAX	LB	.490	1.000	.650			8/31/77				
1 00	MOBIL OIL	GAL	.900	1.080	.000					C 4		
1 00	MOBIL OIL	GAL	.900	1.080	.000			10/24/77	C	6		
1 00	MOBIL OIL	GAL	.900	1.080	.000							
1 00	MEDICAL VO	LB	.276	.395	.000			8/31/77		0		
1 00	NAPHTHA	LB	.275	1.110	.000					4		
1 00	N METHYL MORPHOLINE	LB	2.050	2.630	.000					6		
1 00	N METHYL MORPHOLINE	LB	2.050	2.630	.000					0		
1 00	N METHYL MORPHOLINE	LB	2.050	2.630	.000					C		
1 00	RED SPECTRA MARK III CARB BLK	LB	.730	1.540	1.085			12/20/76				
1 00	GEOPRENE SPONGE CORD 1/4 OD	FT	.060	.130	.060			6/08/77		4		

FORM

FORM

FORM

FORM

CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/M
00 00	NEOPRENE 400	WP	.250	.565	.490			10/06/76		2	
00 00	NEOPRENE 400	WP	.250	.565	.490			10/06/76		1	
02 00	NEOPRENE TUBING 1/8 ID	FT	.030	.035	.000					4	
03 00	NEOPRENE TUBING 1/16 IN	FT	.035	.035	.000						
00 00	NEOZONE D SPECIAL	LB	1.380	1.380	.000			10/31/76		1	
00 00	NITROCELLULOSE LACQUER	GAL	3.500	4.250	.000			10/24/77		6	
00 00	NITROCELLULOSE LACQUER	GAL	3.500	4.250	.000					1	
00 00	NITROCELLULOSE LACQUER	GAL	3.500	4.250	.000						
00 00	NITROCELLULOSE LACQUER	GAL	3.500	4.250	.000					C	
00 00	NON FER AL	LB	.060	.070	.000					6	
00 00	NON FER AL	LB	.060	.070	.000					0	
00 00	NON FER AL	LB	.060	.070	.000						
00 00	NOVACITE - 325	LB	.020	.026	.000						
00 00	NOVACITE 1250	LB	.333	.475	.000			4/04/77		0	
00 00	NUOCURE 28	LB	2.500	3.000	.000					6	
00 00	NUOCURE 28	LB	2.500	3.000	.000						
00 00	NUOCURE 28	LB	2.500	3.000	.000					C	
00 00	NUODEX	LB	.490	.590	.000					6	
00 00	NUODEX	LB	.490	.590	.000					6	
00 00	NUODEX	LB	.490	.590	.000					0	
00 00	NUODEX	LB	.490	.590	.000					C	
00 00	UNCOR 23A	LB	.560	1.665	.000			10/24/77		6	
00 00	UNCOR 23A	LB	.560	1.665	1.510			6/08/77		5	
00 00	UNCOR 23A	LB	.560	1.665	1.510			6/08/77			
00 00	UNCOR 23A	LB	.560	1.665	1.540			6/08/77		1	
00 00	UNCOR 23A	LB	.560	1.665	1.510			6/08/77		0	
00 00	UNCOR 23 A	LB	.560	1.665	1.510			6/08/77		5	
00 00	OAK 1/2"X4"X8'	EACH	4.500	4.500	.000						
00 00	OAK THRESHOLD 3 1/2X4'	PC	2.300	4.600	.000			4/14/77		0	
00 00	PAINT GOLD	GAL	8.950	17.740	10.250			6/08/77		3	
00 00	PAINT GULD	GAL	8.950	17.740	10.250			6/08/77		0	
01 00	PAINT BLUE	GAL	3.300	3.750	3.750			8/31/77		0	
01 00	PAINT WHITE CHEMFAST	GAL	9.750	9.750	.000					C	
02 00	PAINT URANGE CHEMFAST	GAL	10.850	10.850	.000					C	
03 00	PAINT YELLOW CHEMFAST	GAL	13.500	13.500	.000					C	
05 00	PAINT BLACK CHEMFAST	GAL	9.750	9.750	.000					C	

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D CODE	PRODUCT DESCRIPTION	U/H	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FIRM TIME	PACK TIME	LAST UPDATE	A APLA C	USER STA R/A
1 06 00	PAINT RED CHEMFAST	GAL	10.850	10.850	.000				C	
3 00 00	PAINT SHER-WILL GLO CERISE	GAL	19.030	19.030	.000				C	
4 00 00	WHITE GLUCKING COAT (SHER-WILL)	GAL	6.550	6.550	.000				C	
0 00 00	PARAPLEX P-13	LB	.730	1.725	.940			6/31/77		6
0 00 00	PARAPLEX P-13	LB	.730	1.725	.940			12/20/76		6
0 00 00	PARAPLEX P-13	LB	.730	1.725	.940			12/20/76	C	6
0 00 00	PARAPLEX P 43	LB	.350	.700	.000					6
0 00 00	PARAPLEX P 43	LB	.350	.700	.000					4
0 00 00	PARAPLEX P 43	LB	.350	.700	.000			10/24/77		6
0 00 00	PARAPLEX P 43	LB	.350	.700	.000					0
0 00 00	PARAPLEX P 43	LB	.350	.700	.000				C	
9 00 00	PARATEX W/BACK 24"X50"X2' UND	ROLL	18.540	43.020	25.250			4/14/77		0
3 00 00	PARATEX W/BACK 24"X75"X1' UND	ROLL	18.450	27.840	22.130			4/14/77		0
0 00 00	PENSALT S 2	LB	.690	.690	.000				C	6
0 00 00	PENSALT 52	LB	.690	.690	.000					
1 00 00	PENSALT NONIC 218	LBS	.690	.690	.000			10/31/76		6
0 00 00	PENTAMID 825	LB	.660	1.090	.000					4
0 00 00	PENTAMID 825	LB	.660	1.090	.000			10/24/77		6
0 00 00	PENTAMID 825	LB	.660	1.090	.000					0
0 00 00	PENTAMID 825	LB	.660	1.090	.000					4
0 00 00	PENTAMID 840	LB	.720	1.080	.000					
0 00 00	PENTAMID 840	LB	.720	1.080	.000					4
0 00 00	PENTAMID 840	LB	.720	1.080	.000			10/24/77		6
0 00 00	PENTAMID 840	LB	.720	1.080	.000					0
0 00 00	PENTAMID 840	LB	.720	1.080	.000					4
5 01 00	PINE #3 1"X8"X12'	EACH	1.840	✓ 1.640	.000			4/21/77		6
5 02 00	PINE ROUGH 1"X4"X12'	EACH	.920	✓ .820	.000			4/21/77		0
5 00 00	PROPLEX TR 520	LB	.635	✓ .343	.000					
0 00 00	PHOS CHEK P-30	LB	.520	1.210	.000			10/24/77		6
0 00 00	PHOS CHEK P-30	LB	.520	1.210	1.090			6/08/77		5
0 00 00	PHOS-CHECK P-30	LB	.520	1.210	1.090			6/08/77		1
0 00 00	PLASTIFLASE 512B MOLD RELEASE	GAL	9.500	9.500	.000				C	
0 00 00	PHOSPHORIC ACID NF 7140	PINT	5.800	5.800	.000			10/24/77	C	6
0 00 00	PHOSPHORIC ACID NF 7140	PINT	5.800	5.800	.000				C	4
0 00 00	PLASTIC MAGNETS 1/2X1/4X2'	PC	.700	.814	.000			11/30/76		0

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D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USR SIA R/M
0 00 00	PLEOGEN 4050	LB	.600	1.150	.000			10/24/77		6	
0 00 00	PLEOGEN 4050	LB	.600	1.150	1.000			6/08/77		4	
0 00 00	PLEOGEN 4050	LB	.600	1.150	1.000			6/08/77		0	
0 00 00	PLEOGEN 4050	LB	.600	1.150	1.000			6/08/77		4	

5 00 00	PLEOGEN 4074	LB	1.020	1.020	.000					C	2
5 00 00	PLEOGEN 4074	LB	1.020	1.020	.000						

7 00 00	PLYWOOD AC EXT 4' X 8' X 1/2	EACH	9.980	9.980	.000						

0 00 00	PLYWOOD AC EXT 4' X 8' X 3/4	EACH	12.000	19.200	.000						

0 00 00	PHENYL GLYCIDYL ETHER (PGE)	LB	2.000	2.205	2.205			2/25/77		4	
0 00 00	PHENYL GLYCIDYL ETHER (PGE)	LB	2.000	2.205	.000			10/24/77		6	
0 00 00	PHENYL GLYCIDYL ETHER -PGF-	LB	2.000	2.205	2.205			2/25/77		0	
0 00 00	PHENYL GLYCIDYL ETHER (PGE)	LB	2.000	2.205	2.205			2/25/77			

0 00 00	PHTHALIC ANHYRIDE RD 901	LB	.160	.280	.000					6	
0 00 00	PHTHALIC ANHYRIDE RD 901	LB	.160	.280	.000					0	
0 00 00	PHTHALIC ANHYRIDE RD 901	LB	.160	.280	.000						

5 00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		5	
5 00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		2	
5 00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		3	
5 00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		2	
5 00 00	PLIOBOND 2014	GAL	3.750	6.550	6.550			8/31/77		1	

0 00 00	PMDA	LB	5.000	7.500	.000					5	
0 00 00	PMDA	LB	5.000	7.500	.000					0	
0 00 00	PMDA	LB	5.000	7.500	.000					5	

1 00 00	POLYCIN 52	LB	.830	.835	.000					6	
1 00 00	POLYCIN 52	LB	.830	.835	.000					C	

2 00 00	POLYLITE 33-057	GAL	2.270	4.180	.000						

4 00 00	POLYLITE 33-031	LB	.250	.420	.000						
4 00 00	POLYLITE 33-031	LB	.250	.420	.000						

5 00 00	POLYPRFP	GAL	4.250	4.680	.000					C	6
5 00 00	POLYPRFP	GAL	4.250	4.680	.000						

0 00 00	POLYESTER PIGMENT ORANGE	QT	15.000	15.000	.000						

7 00 00	POLYESTER PIGMENT BLUE	QT	4.750	4.750	.000						

4 00 00	POLYESTER PIGMENT YELLOW	QT	9.400	9.400	.000						

2 00 00	POLYSTY. 16IN X 3IN X 9FT	EACH	10.040	10.040	.000						0

3 00 00	POLYSTYRENE SPHERES 3"	EACH	.021	.021	.000						0

5 00 00	POLYESTER RESIN P11016	LB	.240	.460	.000					6	
5 00 00	POLYESTER RESIN P11016	LB	.240	.460	.000					4	

U CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST (UPDATE	A C	AREA	USER STA R/M
5 00 00	POLYESTER RESIN P11016	LB	.240	.460	.000						
5 00 00	POLYESTER RESIN P11016	LB	.240	.460	.000						
7 00 00	POLYESTER RESIN 7340 F-S	LB	.240	.460	.000			10/31/76		6	
0 00 00	ANTIMONY TRIOXIDE	LB.	6.450	6.450	.000					6	
0 00 00	POTASSIUM CARBONATE	LB	.300	✓ .215	.000					3	
0 00 00	POTASSIUM CYANIDE	LB	.460	.776	.000					3	
5 00 00	PRIMERS 511	GAL	22.000	22.000	.000					6	
5 00 00	PRIMERSWS403	GAL	22.000	22.000	.000					C	
0 01 00	PLYWOOD 3/8X4'X8'	PC	8.490	11.320	.000			4/21/77		0	
0 02 00	PLYWOOD 3/8X4'X10'	PC	15.584	19.480	.000			4/21/77		0	
0 03 00	PLYWOOD 1/2X4'X8'	PC	9.980	13.730	.000			4/21/77		0	
0 04 00	PLYWOOD 1/2X4'X10'	PC	17.984	22.480	.000			4/21/77		0	
0 05 00	PLYWOOD 3/4X4'X8'	PC	12.000	18.140	.000			4/21/77		0	
0 06 00	PLYWOOD 3/4X4'X10'	PC	22.840	26.550	.000			4/21/77		0	
0 00 00	RAM 66-114 GEL COAT	GAL	7.560	7.560	.000					C	
0 00 00	KAROLITE SP 700 RED	LB	1.420	1.520	.000					C 6	
0 00 00	KAROLITE SP 700 RED	LB	1.420	1.520	.000					0	
0 00 00	KAROLITE SP 700 RED	LB	1.420	1.520	.000					0	
0 00 00	KAROLITE SP 700 RED	LB	1.420	1.520	.000					0	
0 00 00	REGAL 300R	LB	.170	.348	.300			8/31/77		0	
0 00 00	REGAL 300R	LB	.170	.348	.300			8/31/77		5	
0 00 00	REGAL 300 R	LB	.170	.348	.300			8/31/77		6	
0 00 00	REGAL 300R	LB	.170	.348	.300			8/31/77		0	
0 00 00	REGAL 300R	LB	.170	.348	.300			8/31/77		0	
0 00 00	REGAL 300R	LB	.170	.348	.300			6/31/77		C	
0 00 00	RED IRON OXIDE	LB	.280	.520	.000			10/24/77		6	
0 00 00	RED IRON OXIDE	LB	.280	.520	.000					5	
0 00 00	RED IRON OXIDE	LBS	.280	.520	.000			10/31/76		0	
15 00 00	RELEASE PAPER	LB	.530	.604	.000					4	
30 00 00	RESODUR 22	LB	4.600	8.480	.000					6	
30 00 00	RESODUR 22	LB	4.600	8.480	.000					0	
30 00 00	RESODUR 22	LB	4.600	8.480	.000					C	
35 00 00	CAT 37 REICHOUD 37-610 C ITEM	LB	.830	.835	.000					6	
35 00 00	CAT 37 REICHOUD 370610 C ITEM	LB	.830	.835	.000					C 0	
38 00 00	RHOPEX	LB	.302	.431	.000			5/18/77		1	

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7/17/78

INVENTORY MASTER LISTING AS OF 2/01/78

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INRASC

D CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOK UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/A
1 01 00	SHIELD CORNER CAPS COMP.	SET	3.700	✓ 2.830	2.420			8/31/77		0	
1 03 00	SHIELD DOOR NAME PLATES	EACH	1.500	3.500	.000			4/21/77		0	
1 04 00	SHIELD CHAMBER NAME PLATES	EACH	1.500	4.000	.000			4/21/77		0	
1 05 00	SHIELD VENTS HV-1 W/FLANGE	SF	40.960	51.200	.000			10/24/77		0	
0 00 00	SI 02	LB	.060	.060	.000					C	
1 00 00	SILASTIC 6 126	LB	3.000	5.130	.000					C 6	
0 00 00	SILICA 325 MESH	LB	.020	.022	.000						6
0 00 00	SILICA 325 MESH	LB	.020	.022	.000			10/24/77			6
0 00 00	SILICA 325 MESH	LB	.020	.022	.000						5
0 00 00	SILICA 325 MESH	LB	.020	.022	.000						5
0 00 00	SILICA 325 MESH	LB	.020	.022	.000					C	9
1 00 00	SILICA NJ 28	LB	.031	.044	.000			8/31/77			0
0 00 00	SODIUM SILICATE POWDER	LB	.160	.169	.000					C	6
5 00 00	SODIUM SILICATE	LB	.050	✓ .035	.031			6/08/77			
0 00 00	SILICONE DEFOMER 60 (AF-60)	LB	1.660	2.590	1.660			8/31/77	C		6
0 00 00	SILICONE DEFOMER 60 -AF-60-	LB	1.660	2.590	1.660			4/14/77			1
0 00 00	SILICANE A-187	LB	.090	.110	8.250			8/31/77	C		6
0 00 00	SILICANE A-187	LB	.090	.110	8.250			9/22/77			0
5 00 00	SILICON CE-1013	LB	4.100	5.150	.000						
6 00 00	SILICONE SWS 804 -04341-	LB	3.500	4.000	.000						6
6 00 00	SILICONE SWS 804 (04341)	LB	3.500	4.000	.000						4
6 00 00	SILICONE SWS 804 (04341)	LB	3.500	4.000	.000			10/24/77			6
6 00 00	SILICONE SWS 804 -04341-	LB	3.500	4.000	.000						4
6 00 00	SILICONE SWS 804 -04341-	LB	3.500	4.000	.000					C	
7 00 00	SW S-801 SILICONE (04340)	LB	3.500	3.850	.000						4
7 00 00	SW S-801 SILICONE (04340)	LB	3.500	3.850	.000			10/24/77			6
7 00 00	SW S-801 SILICONE -04340-	LB	3.500	3.850	.000						
7 00 00	SW S-801 SILICONE (04340)	LB	3.500	3.850	.000					C	
8 00 00	SILICONE X-67 (04343)	LB	3.250	3.250	.000					C	6
8 00 00	SILICONE X-67 -04343-	LB	3.250	3.250	.000						4
8 00 00	SILICONE X-67 -04343-	LB	3.250	3.250	.000						
5 00 00	S3000S POTTERS BEADS	LB	4.650	10.020	8.850			8/31/77	C		6
5 00 00	S3000S POTTERS BEADS	LB	.000	10.020	8.850			8/31/77			4
5 00 00	S3000S POTTERS BEADS	LB	4.650	10.020	8.850			8/31/77			
5 00 00	S3000S POTTERS BEADS	LB	4.650	10.020	8.850			8/31/77			
0 00 00	SILVER CYANIDE	OZ	2.430	5.020	3.985			6/08/77			3

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J CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A AREA C	USER STA R/2
2 04 00	STEEL CRS HAT F 10'	BAR	4.872	6.090	.000			4/21/77	0	
2 05 00	STEEL CRS HAT F 12'	BAR	5.846	7.308	.000			4/21/77	0	
2 06 00	STEEL CRS HAT F 20'	EACH	5.600	12.380	.000				0	
2 08 00	STEEL CRS HAT F 24'	EACH	6.720	14.820	.000				0	
3 01 00	STEEL CRS HAT C INSIDE 8'	BAR	1.684	2.080	.000			4/21/77	0	
3 02 00	STEEL CRS HAT C INSIDE 10'	BAR	2.080	2.600	.000			4/21/77	0	
3 03 00	STEEL CRS HAT C INSIDE 12'	BAR	2.496	3.120	.000			4/21/77	0	
3 04 00	STEEL CRS HAT C INSIDE 20'	BAR	4.160	5.200	.000			4/21/77	0	
3 05 00	STEEL CRS HAT C INSIDE 24'	BAR	4.992	6.240	.000			4/21/77	0	
4 01 00	STEEL CRS HAT C OUTSIDE 8'	BAR	2.310	2.888	.000			4/21/77	0	
4 02 00	STEEL CRS HAT C OUTSIDE 10'	BAR	2.888	3.610	.000			4/21/77	0	
4 03 00	STEEL CRS HAT C OUTSIDE 12'	BAR	3.466	4.332	.000			4/21/77	0	
4 04 00	STEEL CRS HAT C OUTSIDE 20'	BAR	5.776	7.220	.000			4/21/77	0	
4 05 00	STEEL CRS HAT C OUTSIDE 24'	BAR	6.931	8.664	.000			4/21/77	0	
5 01 00	STEEL CRS FLATS 1/8X2X8'	BAR	3.405	4.256	.000			4/21/77	0	
5 02 00	STEEL CRS FLATS 1/8X2X10'	BAR	4.256	5.320	.000			4/21/77	0	
5 03 00	STEEL CRS FLATS 1/8X2X12'	BAR	5.107	6.384	.000			4/21/77	0	
5 04 00	STEEL CRS FLATS 1/8X2X20'	BAR	8.512	10.640	.000			4/21/77	0	
50 01 00	STYCAST 0005 12X12X3/8	SHT	11.550	12.710	.000				9	
50 02 00	STYCAST 0005 12X12X1/2	SHT	14.350	15.790	.000				9	
50 02 00	STYCAST 0005 12X12X1/2	SHT	14.350	15.790	.000				0	
50 03 00	STYCAST 0005 12X12X1/4	SHT	10.920	10.920	.000				9	
50 17 00	STYCAST 0005 12X12X3/4	SHT	17.680	19.640	.000				9	
50 18 00	STYCAST 0005 12X12X1/8	SHT	9.590	9.590	.000				9	
50 18 00	STYCAST 0005 12X12X1/8	SHT	9.590	9.590	.000				0	
50 19 00	STYCAST 0005 12X12X1/16	SHT	4.785	10.550	.000				9	
50 20 00	STYCAST 0005 12X12X1	SHT	20.650	22.720	.000				9	
50 20 00	STYCAST 0005 12X12X1	SHT	20.650	22.720	.000			8/31/77	0	
50 25 00	STYCAST 0005 12X12X1/4	SHT	10.920	10.920	.000				0	

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DD CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A AREA C	USER STA R/M
10 00 00	SULPHURIC ACID	LB	.050	.089	.078			8/31/77	2	
20 00 00	CARBUM MM	LB	.064	.083	.060			8/31/77	6	
20 00 00	CARBUM MM	LB	.064	.083	.064			6/08/77		
20 00 00	CARBUM MM	LB	.064	.083	.064			6/08/77	8	
30 00 00	SURFLX MM	LB	.050	.090	.000				6	
30 00 00	SURFEX MM	LB	.050	.090	.000				6	
30 00 00	SURFEX MM	LB	.050	.090	.000					
36 00 00	SWS 832	LB	2.530	3.380	3.650			12/20/76	4	
36 00 00	SWS 832	LB	2.530	3.380	.000			10/24/77	6	
36 00 00	SWS 832	LB	2.530	3.380	3.650			12/20/76		
36 00 00	SWS 832	LB	2.530	3.380	3.650			12/20/76		
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77	6	
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77	6	
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77	5	
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77	0	
50 00 00	TABULA ALUMINA 325 MESH	LB	.150	.319	.278			8/31/77	5	
55 00 00	TABULA ALUMINA 14 28 MESH	LB	.140	.303	.261			8/31/77	6	
55 00 00	TABULA ALUMINA 14 28 MESH	LB	.140	.303	.261			8/31/77	5	
55 00 00	TABULA ALUMINA 14 28 MESH	LB	.140	.303	.261			8/31/77	0	
55 00 00	TABULA ALUMINA 14 28 MESH	LB	.140	.303	.261			8/31/77	C	
50 00 00	TABULA ALUMINA 60 MESH	LB	.130	.303	.237			8/31/77	5	
50 00 00	TABULA ALUMINA 60 MESH	LB	.130	.303	.237			8/31/77	6	
50 00 00	TABULA ALUMINA 60 MESH	LB	.130	.303	.237			8/31/77	0	
50 00 00	TABULA ALUMINA 60 MESH	LB	.130	.303	.237			8/31/77	5	
53 00 00	TABULAK ALUMINA 48 MESH	LBS	.125	.230	.000			10/31/76	5	
53 00 00	TABULAK ALUMINA 48 MESH	LB	.125	.230	.600			10/24/77	6	
55 00 00	TABULA ALUMINA 20 MICRON T-61	LB	.370	.422	.000			10/24/77	C	6
55 00 00	TABULA ALUMINA 20 MICRON T-61	LB	.370	.422	.271			6/08/77	C	5
55 00 00	TABULA ALUMINA 20 MICRON T-61	LB	.370	.422	.271			6/08/77		
70 00 00	TANOL SN	LB	.220	.470	.405			12/20/76	1	
10 00 00	TEFLON POWDER CODE 752	LB	2.250	3.500	3.150			6/08/77	6	
10 00 00	TEFLON POWDER CODE 752	LB	2.250	3.500	3.150			6/08/77	6	
10 00 00	TEFLON POWDER CODE 752	LB	2.250	3.500	3.150			6/08/77	C	6
18 00 00	TERTIARY BUTYL STYRENE	LB	.980	1.400	.000			8/31/77	6	
10 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77	4	
10 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77	6	
10 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77	7	
10 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77	0	
10 00 00	TETRAETHYLENE PENTAMINE -TEPA-	LB	.650	1.255	1.140			8/31/77	4	
10 00 00	TETRA HYDRO FURNA	LB	.720	.850	.000				0	
10 00 00	TETRA HYDRO FURNA	LB	.720	.850	.000					

ID CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/H
10 00 00	TETRA HYDRO FURNA	LB	.720	.850	.000					C	
10 00 00	TEXAPHOR-277	LB	.140	.147	.000			10/24/77	C	6	
10 00 00	TEXAPHOR-277	LB	.140	.147	.000				C	4	
10 00 00	TEXAPHOR-277	LBS	.140	.147	.000			10/31/76	C	0	
4 00 00	THERMALASTIC BEADS	LBS	1.950	3.040	.000			10/31/76		0	
4 00 00	THERMALASTIC BEADS	LBS	1.950	3.040	.000			10/31/76		6	
5 00 00	III IRON POWDER ACID TREATED	LB	1.760	1.980	.000			10/24/77	C	6	
5 00 00	III IRON POWDER ACID TREATED	LB	1.760	1.980	.000				C	4	
6 00 00	THERMALASTIC SOLUTION	LB	.420	.420	.000					0	
6 00 00	THERMALASTIC SOLUTION	LB	.420	.420	.000				C	6	
6 00 00	THERMALASTIC SOLUTION	LB	.420	.420	.000					0	
9 00 00	THERMO GAURD 5	LB	1.256	1.795	.000			8/31/77		0	
0 00 00	THERMOLITE 12	LB	1.950	3.470	3.040			8/31/77		6	
0 00 00	THERMOLITE 12	LB	1.950	3.470	3.040			8/31/77		0	
0 00 00	THERMOLITE 12	LB	1.950	3.470	3.040			8/31/77	C		
1 00 00	THINNER CHEMFAST	GAL	3.450	3.450	.000					C	
2 00 00	THIOLOL LP-3	LBS	1.480	1.745	.000			10/31/76		6	
2 00 00	THIOLOL LP-3	LB	1.480	1.745	.000						
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000					6	
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000					6	
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000			10/31/76		0	
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000					0	
0 00 00	TIO2 TITANIUM OXIDE	LB	.610	.820	.000				C		
3 00 00	TITANIUM DIOXIDE	LB	.300	.850	.000					2	
7 00 00	TITANIUM DIOXIDE R 722	LB	.675	.675	.000					C	6
7 00 00	TITANOX RA 47	LB	.300	.350	.000					1	
7 00 00	TITANOX RA-45	LB	.300	.415	.000			10/24/77		6	
7 00 00	TITANOX RA-45	LB	.300	.415	.000					5	
7 00 00	TITANOX 2030	LB	.350	.501	.000			8/31/77		0	
7 00 00	TITANOX RA 50	LB	.270	.270	.000						
00 00	TOLUOL	GAL	.580	1.500	1.090			8/31/77		0	
00 00	TOLUOL	GAL	.580	1.500	1.090			12/20/76		4	
00 00	TOLUOL	GAL	.580	1.500	.000			10/24/77		6	
00 00	TOLUOL	GAL	.580	1.500	1.090			12/20/76		4	
00 00	TOLUOL	GAL	.580	1.500	1.090			8/31/77		0	
00 00	TOLUOL	GAL	.580	1.500	1.090			12/20/76	C	8	
00 00	TOLUOL	GAL	.580	1.500	1.090			12/20/76			

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J CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PROR. UNIT COST	FIRM TIME	PACK TIME	LAST UPDATE	A C	AREA C	USER STA R/A
J 00 00	TUNIX LC	LB	.840	1.450	.940			6/08/77			
J 00 00	TUNIX LC	LBS	.840	1.450	.940			6/08/77		6	
J 00 00	TUNIX LC	LB	.840	1.450	.000			8/31/77		0	
J 00 00	TRI PHENYL PHOSPHATE	LB	.310	.310	.000					5	
J 00 00	TRI PHENYL PHOSPHATE	LB	.310	.310	.000						
J 00 00	TRI PHENYL PHOSPHATE	LB	.310	.310	.000					C	
J 00 00	TWEEN 21	LB	.750	1.580	.000					C	6
J 00 00	TWEEN 21	LB	.750	1.580	.000						
J 00 00	TWEEN 21	LB	.750	1.580	.000						
J 00 00	UNOX 221	LB	.925	2.040	.000					C	
J 00 00	UNOX EPOXIDE 289 ERL 4289	LB	1.490	1.250	.000						4
J 00 00	UNOX EPOXIDE 289 ERL 4289	LB	1.490	1.250	.000					C	
J 00 00	UREA PRILLED CODE 55762	LB	.060	.133	.230			12/20/76			7
J 00 00	UREFOAM CATALYST 2-19	LB	1.750	1.750	.000					C	
J 00 00	UREFOAM R	LB	1.300	1.860	1.650			6/08/77			6
J 00 00	UREFOAM R	LB	1.300	1.860	1.650			6/08/77			0
J 00 00	UREFOAM R	LB	1.300	1.860	1.650			6/08/77			4
J 00 00	VAZI	LB	1.500	6.020	.000						
J 00 00	VACUUM P-4331	LB	.385	.550	.000			4/04/77			0
J 00 00	VELCRO PILE	FT	.285	.590	.407			8/31/77			6
J 01 00	VELCRO HOOK	FT	.285	.407	.000			4/04/77			0
J 01 00	CAT 11	LB	1.071	1.569	.000						0
J 01 00	CAT 11	LB	1.071	1.569	.000						0
J 01 00	CAT 17	LB	3.705	5.401	.000						0
J 01 00	CAT 17	LB	3.705	5.401	.000						0
J 01 00	CAT 12H	LB	.726	1.149	.000						0
J 01 00	CAT 12H	LB	.726	1.149	.000						0
J 01 00	VINYL FILM .020 CONDUCTIVE	SQFT	.410	.410	.000						9
J 02 00	VINYL FILM .060	SQFT	1.210	1.210	.000						9
J 02 00	VINYL FILM .060	SQFT	1.210	1.210	.000						
J 03 00	VINYL FILM .010	LB	2.500	2.500	.000						9
J 04 00	VINYL FILM .040	SQFT	.810	.810	.000						9
J 05 00	VINYL FILM .030	SQFT	.715	.878	.000			6/08/77			9
J 07 00	VINYL FILM .050	SQFT	1.210	1.210	.000			10/31/76			9

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QUD CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA R/H
001 00 00	VINYL CLEAR	YARD	.520	.525	.000					0	
002 00 00	VINYL PERFORATED	YARD	.700	.700	.000					0	
004 00 00	CAT 25	LB	1,272	1,507	.000					0	
004 00 00	CAT 25	LB	1,272	1,507	.000					0	
20 00 00	VINYL TOLUENE T 50	LB	.300	.510	.000					6	
20 00 00	VINYL TOLUENE T50	LB	.300	.510	.000			8/31/77		6	
20 00 00	VINYL TOLUENE T 50	LB	.300	.510	.000				C	2	
20 00 00	VINYL TOLUENE T 50	LB	.300	.510	.000						
30 00 00	VISTANEX	LB	.450	.450	.000					6	
30 00 00	VISTANEX	LB	.450	.450	.000						
40 00 00	VOLAN BONDING AGENT	LB	.950	1,190	.000						
50 02 00	181 FIBER GLASS CLOTH 38" WD	YARD	1,500	1,500	.000					0	
50 04 00	VOLAN 1581 72" WIDE	YARD	2,000	2,000	.000						
50 05 00	VOLAN 1581 60 INCH WIDE	YARD	1,180	1,640	1,180			8/31/77		0	
12 00 00	178"X54"X600' VOLARA CHARCOAL ROLL		189,000	199,800	.000					8	
2 01 00	VOLARA 178	SOFT	.052	.074	.000					0	
3 00 00	1716"X54"X600' VOLARA WHITE	ROLL	54,000	148,500	.000					8	
3 01 00	VOLARA 1716	SQFT	.042	.060	.000					0	
3 02 00	VOLARA 174	SOFT	.078	.112	.000					0	
3 04 00	VOLARA 300'X54X7732	ROLL	189,000	189,000	.000						
3 05 00	VOLARA 900'X54"X1716"	ROLL	81,000	81,000	.000			10/31/76		0	
3 06 00	VOLARA 300'X54"X174"	ROLL	168,000	168,000	.000			10/31/76		0	
1 01 00	VOLARA 1716X54X54	EACH	.320	.320	.000			10/31/76		0	
1 02 00	VOLARA 178X54X54	EACH	1,117	1,117	.000			10/31/76		0	
1 03 00	VOLARA 172X54X54	EACH	51,200	51,200	.000			10/31/76		0	
1 04 00	VOLARA 378X54X54	EACH	.480	.480	.000			10/31/76		0	
1 05 00	VOLARA 1X54X54	EACH	10,240	10,240	.000			10/31/76		0	
00 00	VORITE 63	LBS	.830	1,230	1,020			8/31/77		0	
00 00	VORITE 63	LB	.830	1,230	1,020			8/31/77		6	
00 00	VORITE 63	LB	.830	1,230	1,020			8/31/77	C		
00 00	VORTAL CP 700	LB	.270	.628	.333			6/08/77		4	

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J CODE	PRODUCT DESCRIPTION	U/M	BASE YEAR UNIT COST	CURRENT UNIT COST	PRIOR UNIT COST	FORM TIME	PACK TIME	LAST UPDATE	A C	AREA	USER STA K/M
0 00 00	VORINAL CP 700	LB	.270	.628	.000			10/24/77		6	
0 00 00	VORONOL CP 700	LB	.270	.628	.333			6/08/77		0	
0 00 00	VORINAL CP 700	LB	.270	.628	.333			6/08/77	C		
0 00 00	VULCAN XC 72 CARBON	LB	.310	.443	.368			6/08/77		5	
0 00 00	VULCAN XC 72 CARBON	LB	.310	.443	.000			10/24/77		6	
0 00 00	VULCAN XC 72 CARBON	LB	.310	.443	.413			8/31/77		1	
0 00 00	VULCAN XC 72 CARBON	LB	.310	.443	.368			6/08/77	C		
6 00 00	VULCARITE 549	LB	1.200	1.200	.000						
10 00 00	VULTAFUAM 15 V 13	WP	.850	1.401	1.230			8/31/77		8	
90 00 00	VULTAFUAM 15 V 13	WP	.850	1.401	1.230			12/20/76		4	
90 00 00	VULTAFUAM 15 V 13	WP	.850	1.401	.000			10/24/77		6	
90 00 00	VULTAFUAM 15 V 13	WP	.850	1.401	1.230			12/20/76		0	
90 00 00	VULTAFUAM 15 V 13	WP	.850	1.401	1.230			12/20/76		0	
95 01 00	VULTA FOAM RUF 151 21 A	WP	.570	.629	.570			8/31/77	C	4	
95 02 00	VULTA FOAM RUF 151 21 B	WP	.570	.629	.570			8/31/77	C	6	
95 02 00	VULTA FOAM RUF 151 21 B	WP	.570	.629	.570			8/31/77	C	4	
00 00 00	VYDS 3	LB	.450	.455	.000					C	5
00 00 00	VYDS-3	LB	.450	.455	.000						
00 00 00	VYDS 3	LB	.450	.455	.000						
01 00 00	V TAD CRANSE	LB	2.620	2.620	.000			10/31/76		0	
30 00 00	WITCH 77 86	LB	.750	1.195	.750			6/08/77		6	
30 00 00	WITCH 77 86	LB	.750	1.195	.750			6/08/77		0	
30 00 00	WITCH 77 86	LB	.750	1.195	.750			6/08/77	C		
73 00 00	RED DYE SOLUTION	LB	1.310	1.310	.000			10/31/76		0	
98 01 00	SUPPORT CASTING 5	EACH	5.000	5.000	.000					0	
98 04 00	SUPPORT CASTINGS 14	EACH	15.000	15.000	.000					0	
98 06 00	SUPPORT CASTINGS 8	EACH	7.250	7.250	.000					0	
98 08 00	SUPPORT CASTINGS 12	EACH	9.000	9.000	.000					0	
98 09 00	SUPPORT CASTINGS 18	EACH	16.000	16.000	.000					0	
98 11 00	SUPPORT CASTINGS 16"	EACH	15.500	15.500	.000					0	
98 14 00	SUPPORT CASTING 24"	EACH	45.000	50.000	.000					0	
99 00 00	STANDS	EACH	15.500	15.500	.000					0	
01 00 00	60 MESH FINES	LB	.336	.336	.000			11/30/76		0	
37 01 00	3M #425 ALUM FOIL TAPE 1/2 INCH ROLL		2.230	2.530	.000					4	

*Box N-2-3-1
E&C Canton MA*

I.

CANTON, MASSACHUSETTS

The property in Canton, Massachusetts consists of two basic facilities, sometimes referred to below as Plant #1 and Plant #2.

Plant #1 is located at 869 Washington Street, Canton, Massachusetts, on a parcel of land containing approximately acres. Plant #1 consists of 7 essentially separate buildings, which are generally described as follows:

Building 1: This building is used for manufacturing and maintenance purposes, consists of a basement and one story above grade (each floor containing approximately 4,700 sq. ft.) and is of brick, stone and wood construction.

Building 2: This building is used for maintenance and storage, consists of one story of approximately 3,300 sq. ft. and is of concrete block and wood construction.

Building 3: This building is used for offices, laboratories and storage, consists of a basement and one story above grade (each floor containing approximately 5,700 sq. ft.) and is of wood, stone and brick construction.

Building 4: This building is used for manufacturing, consists of one story of approximately 525 sq. ft. and is of poured concrete, concrete block and steel sheeting construction.

Building 5: This building is used for manufacturing, storage and shipping, consists of a basement and three stories above grade (each floor containing approximately 4,200 sq. ft.) and is of stone, brick and wood construction.

Building 6: This building is used for offices and storage, consists of a basement and two stories above grade. The basement contains approximately 5,500 sq. ft. and there is a total of approximately 9,700 sq. ft. above grade. The building is of reinforced concrete, concrete block and steel construction.

Building 7: This building is used for manufacturing, consists of one story of approximately 2,700 sq. ft. and is of concrete, stone, brick, concrete block and wood construction.

Sum

- NORTHEASTERLY along land now or formerly of James W. Dennis, two hundred ten (210) feet to a corner; then turning and running
- NORTHWESTERLY along other land now or formerly of said Lawless about ninety-five (95) feet to a corner; then turning and running
- SOUTHWESTERLY along parcel "E" and along the northwesterly face of the brick Building on parcel "A" about two hundred five (205) feet to land of said James W. Dennis and a corner; then turning and running
- SOUTHEASTERLY along land of said Dennis about eighty-five (85) feet to the point of beginning and containing about seventeen thousand nine hundred and nine (17,909) square feet.

The second, "Parcel B": Beginning at the northwesterly corner of the above described "Parcel A" and running

- NORTHWESTERLY along other land now or formerly owned by the Tobe Deutschmann Corporation of Norwood, Massachusetts, about forty-five (45) feet to a corner; then turning and running
- SOUTHWESTERLY about seventy-five (75) feet to a corner; then turning and running
- SOUTHEASTERLY about twenty-five (25) feet to the northwesterly face of the concrete building on "Parcel E" and a corner; then turning and running
- SOUTHWESTERLY along the northeasterly face of the said concrete building on "Parcel E" and partly along the southeasterly face of a building on other land now or formerly owned by the Tobe Deutschmann Corporation of Norwood, Massachusetts, about fifty-five (55) feet to a corner; then turning and running
- SOUTHEASTERLY about twenty-three (23) feet to the northwesterly face of the Brick Building on "Parcel A" and a corner; then turning and running
- NORTHEASTERLY along the aforementioned northwesterly face of the brick Building on "Parcel A" about a hundred and thirty (130) feet to the point of beginning and containing about Four thousand two hundred and fifty (4,250) square feet.

The third parcel "Parcel C" formerly known as the "Windmill Lot" on the northerly side of Sherman Street together with the easement and all rights thereto, all as shown on a plan made by Robert E. Bellamy, C.E., dated March 24, 1945, and entitled "Plan of an Easement through land of James W. Dennis, Canton, Mass." and filed in the Norfolk County Registry of Deeds, Book 2562, Page 337.

Together with the rights and easements vested in the grantor for the maintaining and use of power lines, sanitary and storm sewers, and water lines as well as the rights in and over the passageways as shown on a plan entitled "Plan of Land in Canton, Mass., April 3, 1948, Wm. S. Crocker, C.E., 46 Cornhill, Boston, Massachusetts, and recorded at the Norfolk Registry of Deeds in Plan Book 145, Plan 250 of 1945.

being the same premises conveyed to me by deed of George H. Lawless of said Canton, dated June 18, 1949, and recorded in the Norfolk County Registry of Deeds on June 20, 1949, Book 2837, Page 57h.

Except so much thereof as was taken by the Town of Canton for the laying out of Requit Street by instrument recorded July 20, 1950, in Norfolk Deeds, Book 2929, Page 51c.

Deed recorded in Book 3515, Page 529:

The land with the buildings thereon situate in Canton, Norfolk County, Massachusetts, shown as lots "A" and "B" on a Plan of Land in Canton, Mass., dated December 10, 1952, John P. Walsh, Civil Engineer, to be recorded herewith, said lots being together bounded

(Description and encumbrances, if any)

and described as follows:

Beginning at a point at the southwesterly corner of the premises herein conveyed at land of the grantor as shown on said plan, thence running Southeasterly by land of Walter S. Dennis as shown on said plan, 107.40 feet to a granite bound; thence turning and running,

Northeasterly by land of the Canton Housing Authority as shown on said plan, 210 feet to a corner at land of the grantor; thence turning and running,

Northwesterly by land of said grantor, 140 feet to an iron pipe; thence turning and running,

Southwesterly 75 feet to an iron pipe at land of the grantor; thence turning and running,

Southeasterly 25 feet to the northwesterly face of the "one story concrete building" as shown on said plan; thence turning and running,

Southwesterly along the northwesterly face of said concrete building 34.60 feet; thence turning and running,

Southeasterly 90/100ths of a foot; thence turning and running

Southwesterly along the Northeasterly face of said concrete building, 37.10 feet; thence turning and running

Northwesterly 2 feet; thence turning and running

Southwesterly 58.15 feet by land of said grantor to land of said land's and the being of the building.

Together with the rights and easements to use the parcel designated as "Proposed Passageway" shown on said plan recorded herewith, to enable the grantee and its successors and assigns to reach the existing passageway to Washington Street as shown on said plan.

Also, together with the rights and easements vested in the grantor for the maintaining and use of power lines, sanitary and storm sewers, and water lines as well as the rights in and over passageways as shown on a plan entitled, "Plan of Land in Canton, Mass.," April 3, 1948, William L. Crocker, C.E., 46 Cornhill, Boston, Massachusetts and recorded with Norfolk Deeds as Plan No. 250 of 1948 in Plan Book 145.

The above described premises are the same premises intended to be conveyed as Parcels "A" and "B" in deed of Tobe Deutschmann Corporation to George H. Lawless, dated August 5, 1948, recorded with Norfolk Deeds in Book 2777, Page 267. See also deed of said Lawless to Leon J. Kowal, dated June 18, 1949 and recorded with said Deeds in Book 2837 Page 574, and deed of said Kowal to the grantee named herein, dated November 3, 1952 and recorded with said Deeds in Book 3130 Page 184.)

Deed recorded in Book 3446, Page 352:

A certain parcel of land with the buildings thereon situated on a right of way Easterly from Washington Street in Canton, Norfolk County, Commonwealth of Massachusetts; shown as Lot E on "Plan of Land in Canton, Massachusetts" by John F. Walsh, civil engineer, dated December 10, 1955, to be recorded herewith, and more particularly, bounded and described as follows:

Beginning at the Southeast corner of the granted premises at the Southwest corner of other land of the grantee and in the Northerly line of land now or formerly of James W. and Pauline S. Dennis; thence running Westerly along land now or formerly of said Dennis, 152.36 feet, to other land of the grantor; thence running Northeasterly along land of grantor, 115.43 feet, according to said Plan, to the land now or formerly of the Brooks Glue Co., and the center line of a common passage way; thence running Easterly along land now or formerly of Brooks Glue Co. and the center line of said passage way, 91.55 feet to other land of the grantor; thence running Easterly, 35.2 feet along said grantor's land to land of the grantee; thence running Easterly 25. feet along land of grantee; thence running Southwesterly, 34.60 feet; thence Easterly, 0.90 feet; thence Southwesterly, 37.10 feet; thence running Westerly, 2. feet and thence Southwesterly 58.15 feet to point of beginning, the last five courses being by other land of the grantee.

Together with the right in common with the grantor and others entitled thereto and consistent with their interests to use the passage ways shown on said Plan, to Washington Street.

The grantor reserves to itself and its grantees and others entitled thereto the right and easement to use, inspect, maintain and have access to water, sewer, power and other utility lines and mains, if any, as at present constituted or involving no greater use of space, passing through or over the premises hereby granted to or from premises now or formerly owned by the grantor and for such purposes, to enter upon the premises hereby granted; and the grantor hereby grants the right and easement, to the grantee to use, inspect and maintain such lines and mains, if any, as at present constituted or involving no greater use of space, in premises retained by the grantor which service the grantee and for such purposes, the right and easement to enter upon premises retained by the grantor subject to rights and easements granted to others by the grantor.

The right of the grantor and its past or future grantees to enter upon the premises herein granted to inspect and maintain said water, sewer, power and other utility lines and mains and the right of the grantee and its parties to enter for said purposes upon premises retained by the grantor, are to be exercisable only in the event and to the extent of the failure of the persons upon whose premises the inspection and maintenance is necessary, to repair and maintain the same, the person so entering for such purpose to indemnify the person whose premises are so entered, from any cost, loss or damage resulting from such entry or such repair or maintenance.

Deed recorded in Book 3565, Page 12:

the land with the buildings thereon situated in Canton, Norfolk County, Massachusetts, shown as Lots F, G and H on a Plan of Land in Canton, Mass., dated May 2,

1957, by John P. Walsh, Registered Civil Engineer, to be recorded herewith, and bounded and described as follows:

Lot H

- Northwesterly by the southeasterly line of Washington Street, forty and 42/100 (40.42) feet;
- Northeasterly by Parcel C as shown on a Plan of Land in Canton, Mass., dated Oct. 1948, by K. A. Mahoney, C.E., recorded in Norfolk Deeds, Book 2787, page 364, one hundred twenty-nine and 63/100 (129.63) feet;
- Southeasterly by lot B as shown on a Plan of Land in Canton, Mass., dated May 1, 1948, by John P. Walsh, recorded in Book 2754, page 266, eighty-three and 32/100 (83.32) feet; and
- Southwesterly by land now or formerly of Walter S. Dennis, one hundred twenty and 69/100 (120.69) feet.

Lot F

- Southwesterly by said lot B, one hundred twenty-six and 04/100 (126.04) feet;
- Northeasterly and Northerly by various courses, by Parcel D as shown on said plan dated Oct. 1948, by K. A. Mahoney, one hundred seventy-one and 43/100 (171.43) feet;
- Southeasterly by land conveyed to Brooks Glue Company, Inc., by deed dated April 7, 1948, recorded in Book 2746, page 481, and shown on a Plan of Land in Canton, Mass., dated April 3, 1948, recorded as Plan No. 250 in Plan Book 145, twenty and 48/100 (20.48) feet;
- Southerly by Parcel E on said plan dated Oct. 1948, fifty-five and 26/100 (55.26) feet;
- Easterly by the same, forty-eight and 50/100 (48.50) feet;
- Southeasterly by said land conveyed to Brooks Glue Company, Inc., about ten (10) feet;

- Northeasterly by the same, eighty-seven and 58/100 (87.58) feet;
- Southeasterly, in part by the center line of a wall, by Lot "E" as shown on a Plan of Land in Canton, Mass., dated Dec. 10, 1955, by John P. Walsh, C.E., recorded as Plan No. 101 in Plan Book 201, one hundred eleven and 43/100 (111.43) feet;
- Southwesterly by said land now or formerly of Walter S. Dennis, about one hundred five and 21/100 (105.21) feet;
- Northwesterly by said Lot B shown on said plan dated May 1, 1948, thirty-four and 70/100 (34.70) feet;
- Southwesterly by the same, five (5) feet;

Northwesterly by the same, thirty-eight and 59/100
(38.59) feet;
Northeasterly by the same, one and 60/100 (1.60) feet;
and
Northwesterly by the same, fifty and 32/100 (50.32) feet.

Lot G

Northwesterly by said land conveyed to Brooks Glue Com-
pany, Inc., forty-seven and 16/100 (47.16)
feet;
Northeasterly by the same, nine and 92/100 (9.92) feet;
Northwesterly by the same, twelve and 03/100 (12.03) feet;
Southwesterly by the same, nine and 91/100 (9.91) feet;
Northwesterly by the same, twenty and 66/100 (20.66) feet;
Southwesterly by the same, by two courses, fifty and
35/100 (50.35) feet;
Northwesterly by the same, ninety-five and 88/100 (95.88)
feet;
Southwesterly by said Lot "E" on said plan dated Dec. 10,
1955, twenty-three and 46/100 (23.46) feet;
Southeasterly by Lot "B" as shown on a Plan of Land in
Canton, Mass., dated Dec. 10, 1952, by
John P. Walsh, C.E., recorded in Book 3146,
page 114, seventy-five (75) feet;
Northeasterly by Lot A on a Plan of Land in Canton, Mass.,
dated May 24, 1954, by John P. Walsh, C.E.,
recorded in Book 3325, page 51, eighteen
and 73/100 (18.73) feet;
Southeasterly, Easterly and Northeasterly by the same,
one hundred thirteen and 55/100 (113.55)
feet;
Southeasterly by the same, eight (8) feet; and
Northeasterly by land now or formerly of August Thiel,
about fifty and 5/10 (50.5) feet.

Be all said measurements more or less, and be the premises
however otherwise bounded or described.

The granted premises are conveyed together with and sub-
ject to the easements and rights of way granted and reserved in
the following deeds, all so far as now in force and applicable:

Elijah A. Morse to Samuel Billings, dated July 20, 1883,
Book 548, page 573;
Felicia V. Morse et al to J. L. Prescott Company, dated
July 31, 1911, Book 1187, page 353;
Canton Wheel Co. to August Thiel, dated May 28, 1920,
Book 1456, page 403;
Tobe Deutschmann Corporation to Brooks Glue Company, Inc.,
dated April 7, 1948, Book 2746, page 431;
Same to Control Engineering Corp., dated May 14, 1948,
Book 2754, page 268;
Same to George H. Lawless, recorded August 24, 1948,
Book 2777, page 267;
Same to same, dated October 1, 1948, Book 2787, page 384;
Same to Emerson & Cuming, Inc., dated January 8, 1953,
Book 3146, page 114;

Same to Walter J. Hanson, dated December 6, 1954, Book 3325, page 51;
Same to Emerson & Cuming, Inc., dated January 28, 1956, Book 3446, page 353.

The granted premises are also subject to a lease to Boston Edison Company, dated October 25, 1941, Book 2366, page 194, to a grant to Boston Edison Company, dated January 9, 1947, Book 2659, page 141, and to taxes assessed as of January 1, 1957.

Deed recorded in Book 3847, Page 426:

the land in Canton, show as Lot "A" on a plan entitled "Plan of Land in Canton, Mass. Belonging to James W. & Pauline Dennis", dated September 12, 1960, prepared by John P. Walsh, (of even record herewith) and bounded and described, as shown on said plan, as follows:

NORTHEASTERLY	by other land of the grantee, thirty-five and 12/100 (35.12) feet;
EASTERLY	by Lot "C", one hundred nine and 76/100 (109.76) feet;
NORTHEASTERLY	by said Lot "C", in two courses measuring eighty-five and 73/100 (85.73) feet and two hundred sixty-nine and 80/100 (269.80) feet, respectively;
NORTHWESTERLY	by said Lot "C" sixty-one and 61/100 (61.61) feet;
NORTHEASTERLY	by other land of the grantee, seventy-three and 50/100 (73.50) feet;
SOUTHEASTERLY	by land now or formerly of the Canton Housing Authority, one hundred eighteen and 53/100 (118.53) feet;
SOUTHWESTERLY	by land now or formerly of Estey and Endicott, in three courses measuring ninety-eight and 01/100 (98.01) feet, one hundred forty-two and 65/100 (142.65) feet and one hundred fifty and 85/100 (150.85) feet, respectively;
NORTHWESTERLY	by other land of the grantors, forty-nine and 77/100 (49.77) feet; and
SOUTHWESTERLY	by said land of the grantors, in two courses measuring forty-nine and 06/100 (49.06) feet and one hundred forty-three and 66/100 (143.66) feet, respectively.

All of said measurements and boundaries being as shown on said plan, and containing 33,109 square feet, according to said plan.

This conveyance is made subject to those easements granted to the Tobe Deutschman Corp., recorded in Books 2408, Page 551, 2562, Page 335 and 2562, Page 338, Norfolk Deeds, all insofar as and only to the extent

that the same affect the granted premises, and only insofar as the same are now in force and applicable.

Being a part of (and intending hereby to convey a part of) the premises conveyed to us by Deed of James W. Dennis dated April 25, 1949, recorded at Book 2825, Page 521, said Deeds.

Deed recorded in Book 3917, Page 596:

two certain parcels of land in said Canton, with the improvements thereon as follows:

Parcel 1.

A certain parcel of land with the buildings thereon, situated on the southeasterly side of Washington Street in Canton, Massachusetts, and sometimes known and numbered as 863 Washington Street, and shown as lot "B" on a "Plan of Land in Canton, belonging to Tobe Deutschmann Corp." by John P. Walsh, registered Civil Engineer, dated May 1, 1948, containing 16,960 square feet, more or less, recorded with Norfolk County Registry of Deeds, as Plan 384 of 1948, Book 2754, Page 266, and bounded and described as follows:

Northwesterly by lot "A" on said plan eighty-seven and 8/100 (87.08) feet,

Northeasterly by other land now or formerly of said Tobe Deutschmann Corp., by three courses, one hundred and sixty-two and 26/100 (162.26) feet to a spike in the pavement

Southeasterly by other land now or formerly of Tobe Deutschmann Corp., fifty and 32/100 (50.32) feet to a point on the outside face of a three-story brick building,

Southwesterly by other land now or formerly of Tobe Deutschmann Corp., one and 60/100 (1.60) feet,

Southeasterly by a building now or formerly of Tobe Deutschmann Corp., thirty-eight and 59/100 (38.59) feet,

Northeasterly by a building now or formerly of Tobe Deutschmann Corp., five (5) feet,

Southeasterly by other land now or formerly of Tobe Deutschmann Corp., thirty-four and 70/100 (34.70) feet,

Southwesterly by land now or formerly of Walter S. Dennis, forty-four and 90/100 (44.90) feet,

Northwesterly by land now or formerly of Walter S. Dennis, fifteen and 10/100 (15.10) feet, and

Southwesterly by land now or formerly of Walter S. Dennis, one hundred twenty and 89/100 (120.89) feet.

All as shown on said plan aforementioned and filed and recorded aforesaid.

Being the same premises conveyed to the grantor by deed of Ideal Realty Corp., dated August 24, 1953 and recorded with said deeds, Book 3195, Page 401.

Parcel II.

A certain parcel of land situated in said Canton and being shown as lot "C" on "Plan of Land in Canton, Mass." belonging to James W. and Pauline Dennis, John F. Walsh, C.E., dated Jan. 23, with Norfolk Deeds, Book 3212, Page 18, 1954 recorded, bounded and described as follows:

Northerly by land now or formerly of the grantor one hundred twenty and 89/100 (120.89) feet,

Southeasterly by other land now or formerly of the grantor, fifteen and 10/100 (15.10) feet,

Northerly by other land now or formerly of the grantor, land now or formerly of Tobe Deutschmann Corp. and land of the grantee three hundred thirty-six and 5/10 (336.5) feet,

Southeasterly by land now or formerly of Dennis, sixty-one and 61/100 (61.61) feet,

Southerly by land now or formerly of Dennis by two courses, two hundred sixty-nine and 80/100 (269.80) feet and eighty-five and 73/100 (85.73) feet, respectively, and

Northwesterly by land now or formerly of Dennis, one hundred nine and 76/100 (109.76) feet.

Said premises are hereby conveyed subject to two easements granted to Tobe Deutschmann Corp. as shown on said plan and recorded with Norfolk Deeds, Book 2408, Page 551 and Book 2562, Page 338, respectively, and a third easement as shown on said plan and a lease to Boston Edison Co. and recorded with said deeds, book 2559, page 141.

Being the same premises conveyed to grantor by deed of James W. and Pauline Dennis dated February 18, 1954 and recorded with said deeds, Book 3242, page 18.

Deed recorded in Book 3695, Page 543:

PARCEL I

Beginning at a stone post on the Westerly line of the location of the New York, New Haven and Hartford Railroad tracks (sometimes also identified as the Boston & Providence Railroad right of way) about twenty (20) feet Northerly from the wing wall of the railroad viaduct (see point marked "abutment" on Sheet 1 of Plan entitled "Plan of Land in Canton, Mass., formerly property of Reponset Woolen Mills, compiled from various deeds & plans by John P. Walsh, Civil Engineer, dated December 19, 1958", to be recorded herewith); thence turning and running in a

NORTHWESTERLY	direction by land now or formerly of Cole, one hundred two and 75/100 (102.75) feet, to a point; thence turning and running in a
SOUTHWESTERLY	direction, still by land of said Cole, fifty-five (55) feet to a stone monument on Reponset Street; thence turning and running in a
SOUTHEASTERLY	direction along Reponset Street, ninety-seven (97) feet to a stone bound at the end of a wall; thence running along Reponset Street in a similar direction in two (2) courses of eighty-two and 15/100 (82.15) feet and one hundred fifty-seven and 66/100 (157.66) feet to a point on a curve; thence turning and running along said curve, still in a generally Southeasterly direction, seventy-five and 70/100 (75.70) feet to a point; thence turning and running in a
NORTHEASTERLY	direction, two hundred sixty (260) feet, more or less, to a point on a curve; thence turning and running in a generally
NORTHWESTERLY	direction, one hundred thirty (130) feet to the point of the abutment; thence Northwesterly twenty (20) feet to point of beginning.

Being the same premises shown on said Plan as "Lot A", and all of said points and monuments being as shown on said Plan.

PARCEL II

Commencing at the Northerly boundary of the Canton River, as shown on said Plan, on the Westerly side of Neponset Street; thence running in a generally

- SOUTHWESTERLY direction, four hundred thirty (430) feet, to a point on the Northerly bank of the Canton River at which said Northerly bank intersects a property line shown on said Plan as "Approx. Fuller Prop. Line"; thence turning and running in a
- SOUTHEASTERLY direction, twenty (20) feet, to the thread of the stream; thence turning and running generally in a
- SOUTHWESTERLY and then NORTHWESTERLY direction six hundred twenty (620) feet to a point on the thread of the stream intersecting a line on said Plan shown as "Approx. Line Between Lot C & D^c"; thence turning and running in a
- SOUTHEASTERLY direction along said line between Lots C and D^c, three hundred twenty (320) feet, to a point on the Southerly side of the Mill Race shown on said Plan; thence turning and running in an
- EASTERLY direction, thirty-eight (38) feet, to a point on the South side of the Mill Race opposite a fence post as shown on said Plan; thence turning and running in a
- SOUTHEASTERLY direction along the woven wire fence shown on said Plan, three hundred and five (305) feet, to a stone bound on the North side of Walpole Street; thence turning; and running generally in an
- EASTERLY and NORTHEASTERLY direction along the Northerly side of Walpole Street in three (3) courses of one hundred and five (105) feet, two hundred eleven and 69/100 (211.69) feet and three hundred forty-one and 26/100 (341.26) feet, respectively, to a point on a curve on the North side of Walpole Street; thence turning and running in a generally
- NORTHEASTERLY direction along the Northerly line of Walpole Street, one hundred seventy-three and 44/100 (173.44) feet, to a stone bound; thence turning and running in a
- NORTHWESTERLY direction along the Westerly side of Neponset Street, two hundred twenty-three (223) feet to the point of beginning.

Being the same parcel shown on said Plan as "Lot C", and all of said points and monuments being as shown on said Plan.

PARCEL III

Beginning at a point on the Northwesternly side of said Railroad line running generally in a Westerly direction along a curve,

one hundred seven and 02/100 (107.02) feet, to a stone bound on the South side of Walpole Street, as shown on said Plan; thence turning and running

SOUTHWESTERLY along said South side of Walpole Street in two (2) curves of three hundred fifty-two and 77/100 (352.77) feet and sixty-six (66) feet, respectively, to a point on the South side of Walpole Street, which is the Northeasterly corner of land now or formerly of Bordenko; thence turning and running

SOUTHEASTERLY along the Northeasterly boundary of said land of Bordenko, three hundred ninety (390) feet, more or less, to a point on the Northwesterly boundary of land shown on said Plan as land of the "N.Y. N.H. & H. RR."; thence turning and running generally in a

NORTHEASTERLY direction, three hundred (300) feet along said Northwesterly boundary of the Railroad land to a point; thence turning and running, but still in a

NORTHEASTERLY direction, sixty (60) feet, still along land of said Railroad, as shown on said Plan; thence turning and running still in a

NORTHEASTERLY direction along land of said Railroad, as shown on said Plan, two hundred sixty-three (263) feet to the point of beginning.

Being the same premises shown as "Lot B" on said Plan, and all of said points and monuments being as shown on said Plan.

All of the foregoing references to said Plan are to Sheet 1 thereof.

PARCEL 1V

Beginning at the thread of the stream of said Canton River at the Northwesterly bound of Lot C as shown on said Plan; thence turning and running generally in a

WESTERLY and SOUTHWESTERLY direction along the thread of the stream, sixteen hundred seventy (1670) feet, to a point fifteen (15) feet from the North side of a ditch shown on Sheet 2 of said Plan; thence turning and running

SOUTHWESTERLY fifteen (15) feet, to a point near the most Northeasterly point of the ditch shown on said Sheet 2 of said Plan; thence turning and running generally in a

SOUTHEASTERLY direction along a Northeasterly boundary of land now or formerly known as the "Canton and Sharon Park Plot", four hundred twenty (420) feet, to a point; thence turning and running generally in an

EASTERLY direction along the Northerly boundary of said Canton and Sharon Park Plot, seven hundred (700) feet, to a point; thence turning and running

SOUTHEASTERLY along a Southwesterly boundary of said Park Plot, one hundred (100) feet, to a point; thence turning and running

NORTHEASTERLY along a Northwesterly boundary of said Plot, two hundred fifty-eight and 07/100 (258.07) feet, to a point; thence turning and running in a direction, ninety-five and 33/100 (95.83) feet, to the most Northwesterly point of Walpole Terrace shown on Sheet 2 of said Plan; thence turning and running in a

NORTHERLY direction, sixty (60) feet, along Walpole Terrace to a point on the North side of Walpole Terrace; thence turning and running in a direction, forty-five (45) feet, along the Westerly boundary of Lot 7, as shown on Sheet 2 of said Plan to a point; thence turning and running in an

NORTHEASTERLY direction along the Northerly boundary of said Lot 7, one hundred twenty-nine and 53/100 (129.53) feet, to a point; thence turning and running in a

NORTHERLY direction along the Northeastly boundary of said Lot 7, forty-nine and 65/100 (49.66) feet, to a point on a curve on the North-easterly side of Walpole Terrace; thence turning and running in a generally

EASTERLY direction along said curve, eighty-two and 47/100 (82.47) feet, to a point on a woven wire fence which is a part of the boundary of Lot C hereinabove described, and which point is one hundred eighty-eight (188) feet from the Northerly side of Walpole Street.

Being the same premises shown on said Plan as "Lots D¹ and D²", and all of said points and monuments being shown on Sheets 1 and 2 of said Plan, read together.

However otherwise said premises may be bounded or described, and be any or all of said measurements more or less, it being the intention, however, of the Grantor to convey by this instrument all the land on which are constructed the Neponset Woolen Hills' buildings, so-called, and the adjoining premises, as are included within the bounds of Lots A, B, C, D¹ and D² on the Plan hereinbefore referred to, including, but without limiting the rights Grantee may otherwise have with respect to the granted premises, the right to use the water flowing through the granted premises by the East branch of the Neponset River, and a right to maintain a dam on the granted premises across said East branch of the Neponset River, the height of which dam may be at least as high as the bolt placed in a drill hole in the viaduct near the Westerly corner of the Northerly abutment of the most Northerly arch of the viaduct of the Boston & Providence Railroad, the top of said dam being at least as high as said bolt, said right being referred to in the deed from Wright et al to the Grantor, recorded at Norfolk Deeds Book 1512, Page 243.

As a part of the granted premises, the Grantor also conveys to the Grantee with quiet enjoyment the fee in those portions of said Neponset and Walpole Streets on which the granted premises bound, except insofar as the granted premises do not bound on both sides of said streets, as to which such portions this conveyance includes only the fee to the

middle of the way, and the Grantor's right, title and interest in the balance thereof; but the foregoing grant with respect to said ways is subject to any takings made by municipal or other governmental authorities thereof for the purpose of laying out and maintaining public ways.

Excepting and excluding from the foregoing that parcel (conveyed out by Emerson & Cuming, Inc.) by deed recorded in Book 4409, Page 518, and bounded and described as follows:

the land in Canton, Norfolk County, Massachusetts, bounded and described as follows:

Beginning at a point on the Northwestern side of land of the N.Y. N.H. & H. RR. thence running generally in a Westerly direction along a curve, one hundred seven and 02/100 (107.02) feet, more or less, to a stone bound on the South side of Walpole Street, as shown on the Plan hereinafter referred to; thence turning and running

SOUTHWESTERLY along said South side of Walpole Street two (2) distances of three hundred fifty-two and 77/100 (352.77) feet, more or less, and sixty-six (66) feet, more or less, respectively, to a point on the South side of Walpole Street, which is the Northeasterly corner of land now or formerly of Bordenko; thence turning and running

SOUTHEASTERLY along the Northeasterly boundary of said land of Bordenko, three hundred ninety (390) feet, more or less, to a point on the Northwestern boundary of land shown on said Plan as land of the "N.Y. N.H. & H. RR."; thence turning and running generally in a

NORTHEASTERLY direction, three hundred (300) feet, more or less, along said Northwestern boundary of the Railroad land to a point; thence turning and running, but still in a

NORTHEASTERLY direction sixty (60) feet, more or less, still along land of said Railroad, as shown on the Plan hereinafter referred to; thence turning and running still in a

NORTHEASTERLY direction along land of said Railroad, as shown on said Plan, two hundred sixty-three (263) feet, more or less, to the point of beginning.

The aforementioned premises being the same premises as shown as "Lot B" on Sheet 1 of a Plan entitled "Plan Of Land In Canton, Mass., Formerly Property of Reponset Woolen Mills Compiled From Various Deeds & Plans by John P. Walsh-Registered Civil Engineer, December 19, 1958, Scale 1 in. = 40 ft.", recorded at Norfolk Deeds as Plan No. 6 and 7 of 1959 in Plan Book 206.

Title to the Canton property is subject to the following exceptions:

Listing to Schedule
to Section 7.36

Listings of effluent and atmospheric discharge generated in
the manufacture of the product line.

June 1973	-	Waste service information
Feb. 1975	-	Air contaminants report.
March 1975	-	Process waste discharge into sanitary sewer.
April 1975	-	Fuel burning Equipment Registration
November 1976	-	Fuel burning Equipment Registration
December 1976	-	Process Manufacturing Equipment
March 1978	-	Hydrocarbon Emissions Registration
May 1978	-	Liquid Organic Material Storage
May 1978	-	Process Manufacturing Equipment
May 1978	-	Process Fuel Burning Equipment Registration.



The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

Re: Questionnaire

Dear Sir:

The enclosed questionnaire has been developed to supply the Sewerage Division of the Metropolitan District Commission with needed information, so that we may serve you more efficiently and program your future needs.

The requested information will be used in the classification of various process waste discharges and to aid in forecasting future waste service demands, trends, and loadings. Your cooperation in responding to this questionnaire is urgently solicited to identify the most critical program (s) which require modification or enlargement.

The questionnaire should be completed as soon as possible and returned to the indicated address. Matters pertaining to specific manufacturing processes will be considered privileged information.

Your participation and interest in this industrial survey is appreciated.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. C. Hayes".

A. C. Hayes
Director of Sewerage Division
and Chief Sewerage Engineer

APF:mc

THE COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT COMMISSION
SEWERAGE DIVISION

Due Date _____

LOCATION: 869 WASHINGTON ST., CANTON

1. If different from stated address, please correct when answering
- A) Name of Company, EMERSON & CURTINE, INC.
- B) Business Address, 59 WALPOLE ST, CANTON MA 02021
No. Street Town or City Zip Code
2. Telephone Number, 828-3300 3. Years at present location 20
4. Type of industry, CHEMICALS
- A) Standard Industrial Classification Index Number, _____
- B) Major products or services: CHEMICAL RESINS ; INORGANIC POWDERS
- C) List type and quantity of chemicals used annually in process-(if applicable):

5. Daily water consumption, 17,000 cu. ft/day or gal/day
- A) Source of supply, TOWN OF CANTON
6. Total volume of waste discharged into Public Sewer, _____ gal/day
- Other discharge:- Sub-surface or ground, _____ gal/day
- Surface waters, _____ gal/day
- Scavenger services, (type/quantity) _____

NOTE: If seasonal, please indicate _____

A) Characteristics of waste discharge-(if known): _____

B) Is pretreatment practiced? X Yes No

If "Yes" please indicate type:

a) Separators or Traps

b) Screening

c) Sedimentation X

d) Coagulation and/or Precipitation

e) Other (specify)

C) Is pretreatment planned? Yes No, if "Yes", indicate implementation date:

7. Would you like additional copies of the "Rules and Regulations concerning Discharge of Waste"? Yes X No

If "Yes" indicate number of copies

Name of Company Representative preparing this return:

Name: VICTOR W. MORGAN Date

Title: PLANT MANAGER

Please return to:

METROPOLITAN DISTRICT COMMISSION
SEWERAGE DIVISION
20 SOMERSET STREET
BOSTON, MASSACHUSETTS 02108

Att: Noel Baratta
Assistant Sanitary Engineer
(Telephone: 727-8989)

DATE RECEIVED	APPLICATION NUMBER 0607 (59 Nulpole So, Canada)	COORDINATES
---------------	--	-------------

PLEASE MAINTAIN COPY

[Faint, mostly illegible text, possibly bleed-through from the reverse side of the page.]

[Handwritten signature or initials]

[Faint, illegible text, possibly a stamp or administrative note.]

OFFICIAL USE ONLY	
Date Inspected	Inspector

APPLICATION FOR THE REGISTRATION OF PROCESSING
OR MANUFACTURING EQUIPMENT, SOLVENT USEAGE, AND INCINERATORS
OPERATED DURING THE CALENDAR YEAR ~~1973~~, 1974

The Bureau of Air Quality Control, Division of Environmental Health, Department of Public Health, requests you to complete and return this application within 30 days under Regulation 12 of the Regulations for the Control of Air Pollution. You will receive written acknowledgement upon satisfactory completion of the application.

BEFORE FILLING OUT THE APPLICATION, PLEASE READ THE FOLLOWING INSTRUCTIONS:

- Everyone receiving this form, regardless of whether or not he has any equipment which needs to be registered, must complete page one.
- Indicate any changes in the name and/or address on page one.
- The information submitted should pertain to the calendar year ~~1973~~ 1974
- An application is required for each location of:
 - (a) process and/or manufacturing operations where air contaminants are vented or discharged into the ambient air;
 - (b) solvent useage;
 - (c) incinerator(s).
- The owner is ultimately responsible for registering his air pollution source. Each page must be signed by the owner or by a responsible company official at the location. If an agent has been designated to fill out this form, the owner or official must check and sign this form. If you are a tenant or property manager, your cooperation is asked for by forwarding this application to the owner.
- Additional forms may be copied from the original or obtained from the nearest District Office.
- The form is designed for a wide variety of applicants and many of the questions may not apply or may require engineering expertise. Answer what you can. You will be contacted if further information is necessary.
- Returned applications should be directed to the District Office checked below:

Metropolitan Boston APCD
600 Washington St., Rm. 320
Boston, Tel. 617-727-2658

Southeastern Mass. APCD
Lakeville State Hospital
Lakeville, Tel. 617-947-1060

Merrimack Valley APCD
Tewkesbury State Hospital
Tewkesbury, Tel. 617-727-7908

Central Mass. APCD
75 Grove Street
Worcester, Mass., Tel. 617-791-3672

Berkshire & Pioneer Valley APCD
1414 State Street
Springfield, Tel. 413-785-5327

LOCATION OF SOURCE TO BE REGISTERED:

Facility Name EMERSON & CUMMINS, INC.Address 59 WALPOLE ST.City or Town CANTON, MASS. Zip Code 02021A. 1. Did you previously receive and return a registration form? Yes ___ No 2. If yes, were there any significant changes or additions to the registered equipment or changes in production rate during the calendar year 1974
Yes ___ No ___B. Approximate number of employees 95C. Operating hours of source: hrs/day 8; days/wk 5; wks/yr 52D. 1. What products are produced or services rendered? MOLDED PLASTICS2. Are processing or manufacturing operations involved? Yes No ___
If yes, complete page two.3. Are solvent containing materials used as an integral part of the process or manufacturing? Yes ___ No . If yes, complete page three.E. Do you have/or operate an on-premise incinerator? Yes ___ No .
If yes complete page four.

F. If pages two, three, and/or four are not applicable, so indicate in the appropriate box on the page and sign the page.

G. Person to be contacted for further information, if necessary:

Name VICTOR MORAN Title PLANT MGR.
(please print)Address 849 WASHINGTON ST. Area Code 617 Tel. 827-3300City or Town CANTON Zip Code 02021

PROCESS AND/OR MANUFACTURING EQUIPMENT AND OPERATIONS

INSTRUCTIONS: List those steps in the process or manufacturing where air contaminants are vented or discharged into the ambient air. Additional instructions are on the back of this page. Use the back of this page for additional comments. The information should be for the calendar year 1974. Indicate if otherwise.

We have no process and/or manufacturing where air contaminants are vented or discharged into the ambient air. If true, check box and sign below.

1. Process and/or manufacturing Data:								2. Operating Schedule			
Major Steps Involved In Process	Type Equip. Used	RAW MATERIALS			FINISHED MATERIALS			Hrs per day	Days per week	Wks per year	Months in Operation (e.g., Sept-May)
		Type	Max/Hr.	Avg/Yr.	Type	Max/Hr.	Avg/Yr.				
1. FIBERGLASS COATING	BLENDER	FIBERGLASS		200,000 lbs.	—			8	5	52	
2.											
3.											
4.											

3. How is gas/air vented to stack (fan, blower, nat)	4. Stack/Vent Data for Process				5. Air Cleaning Equipment		6. Process Emissions		
	Ht above ground	Inside Diam at Top	Exit Velocity (ft/sec)	Exit Temp (°F)	Quantity of Gaseous Discharge (cfm)	Type	Percent Efficiency Rated Actual	Type Contaminant Collected	Amount Removed (ton/yr)
1. FAN	6'	—	—	AMBIENT	2000	NONE		NONE	
2.									
3.									
4.									

7. Provide a roof plan showing the location of the stacks and/or vents.

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge, it is true and complete.	Signed:	Title:	Date:
	<i>W. W. Morgan</i>	<i>Plant Mgr</i>	<i>2/27/75</i>

Materials Containing Solvents Used In Process and/or Manufacturing

INSTRUCTIONS: This section is to be completed if materials containing solvents are used as an integral part of the processing or manufacturing in quantities of greater than or equal to 40 lbs. per day. This means, for instance, that materials containing solvents used to clean machinery should not be mentioned and those used in such operations as surface coating (paint, varnish, lacquer, enamel, primer, glaze, resin, sealer shellac, etc.), laundries (degreasing agents, dry cleaning agents), and miscellaneous (adhesives, insecticides, printing inks, putty) should be mentioned.

Do use no materials containing solvents used in process and/or manufacturing- If true, check box and sign below.

1. Surface Coatings

	Type*	Amount Max Hour	(gal) Annual	Type+ Control Equip	Vents	
					Height (Ft)	Discharge (cfm)
a.	_____	_____	_____	_____	_____	_____
b.	_____	_____	_____	_____	_____	_____
c.	_____	_____	_____	_____	_____	_____

* If paint, indicate whether water base or solvent base.
+ Spray booth, water spray, incinerator, etc.

2. Solvent Cleaners

	Type*	Max Hour	Annual	Recovery System	Discharge Method	Height (Ft)	Discharge (cfm)
1.	_____	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____	_____	_____

*Indicate solvent material (Trichloroethylene, trichloroethane, perchloroethylene, stoddard solvent, etc.)
+For Intermittent operation, indicate maximum rate

3. Miscellaneous

	Type	Amount Max Hour	Annual	Percent Solids	Emission Control Equipment	Vents	
						Height (Ft)	Discharge (cfm)
1.	_____	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____	_____

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge, it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

Signed: _____

Title _____

Date _____

M. D. Morgan *Plant Mgr.* *2/27/74*

INCINERATORS

We do not use an incinerator - if true, check box and sign below

- 1. Manufacturer's Name _____ Make _____ Model # _____
- 2. Type: single chamber _____ multi _____ pathological _____ Other _____
- 3. Auxilliary Fuel, if any: gas _____ oil _____ number of burners _____
- 4. Flyash Control Devices, if any: type _____
- 5. Loading: type(s) waste _____ max lbs/hr _____ estimated tons/yr _____
- 6. Operating schedule (please circle):

hours of day 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12

days of week Mon Tues Wed Thurs Fri Sat Sun

- 7. If incinerator has smoke stack separate from boiler stack:

a.

<u>Stack(s)</u>	<u>1</u>	<u>2</u>	<u>3</u>
Incinerator served	_____	_____	_____
Height (ft)	_____	_____	_____
Inside diameter at top (ft)	_____	_____	_____
Exit Velocity (ft/sec)	_____	_____	_____
Exit temperature (°F)	_____	_____	_____

b. Show location in Section H.

- 8. Has the incinerator(s) been approved by the Bureau? Yes _____ No _____

Date of approval _____

H. Location of Stack(s) and/or Vents

Instructions: It will be necessary to locate your stacks and/or vents on a city or town map. In order to assist us, please sketch out several major and minor streets indicating the approximate location of the stacks and/or vents in respect to them.

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge, it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

Signed: Victor W. Morgan Title Plant Mgr. Date 2/27/67



The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

March 27, 1975

CC - WRC
- file

Victor Morgan, Plant Engineer
Emerson & Cuming
869 Washington Street
Canton, Massachusetts 02021

Re: Process waste discharges into the sanitary sewer.

Dear Mr. Morgan:

This confirms the results of the March 21, 1975 inspection of your company's premises by sanitary engineers from this office.

It is apparent that there is a substantial quantity of rinse water used to clean the chemical mixing tanks, containing mixtures of sulfuric acid and sodium borasilicate which is intermittently discharged into the sanitary sewer system. The backwash water used to rinse particulate matter (powered glass) from six (6) air filter beds is intermittently discharged, as well.

As stated at the time of inspection the plant process discharge is intermittently milky white in color and contains large quantities of suspended matter.

It is our understanding, that neutralization of the acid bearing waste stream is occasionally practiced prior to sewer discharge.

The discharge of the aforementioned process wastes with an unknown pH, containing unknown concentration of suspended solids could be in violation of the Metropolitan District Commission's Rules and Regulations. You are referred to Sections 4.h.1 & 2, and 4.i of the enclosed copy of Rules and Regulations.

The Division is requiring at this time that your company contact an approved testing laboratory to conduct analysis on the process waste discharge.

The analytical data, to include: pH readings, total suspended solids and dissolved solids concentrations, turbidity and any other pertinent information should be submitted to this office prior to June 1, 1975, so that a fair and equitable evaluation of your process waste can be made.

Victor Morgan, Plant Engineer
Emerson & Cuming

- 2 -

March 27, 1975

If this office can be of assistance, please do not hesitate to notify us.

Sincerely,



A. P. Fisichelli
Assistant Director of
Sewerage Engineering

NDB:dlm

enc. Rules and Regulations

cc: Thomas C. McMahon, Dir. of W.P.C.
Harold J. Publicover, Super., of Public Works, Canton

FORM AP-1
 DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
 ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

1. APPLICATION NO. _____
 2. STACK NO. _____

LEGAL NAME: **EMERSON & CUMMINS, INC.**
 BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE): **59 WALPOLE ST., CANTON, 02021**
 PHONE: **828-3300**

EQUIPMENT TYPE OF EQUIPMENT (e.g. Boiler, Space Heater): **BOILER**
 BRAND NAME OF EQUIPMENT: **DILGON**
 MODEL NUMBER: _____
 NUMBER OF IDENTICAL UNITS ON THIS FORM: **2**
 AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
 YES NO

MAJOR ACTIVITY OF FIRM
 MFG. OFFICE RETAIL OR WHLSE. STORE SCHOOL OR CHURCH HOTEL/MOTEL HOSPITAL OR LAB WAREHOUSE RESIDENCE OR APTS. OTHER (Specify)

FUEL	GRADES (x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft. ³)	MAXIMUM FIRING RATE PER UNIT		SEASONAL USE		FUEL SUPPLIER		
					(Lbs., Gals., ft. ³ /hr.)	(BTU/hr.)	Month	Yr. to Month	Yr.	Name	City or Town
COAL	<input type="checkbox"/> Bituminous	%	%								
	<input type="checkbox"/> Anthracite	%									
OIL	<input checked="" type="checkbox"/> Kerosene	%									
	<input type="checkbox"/> 2	%									
	<input type="checkbox"/> 4	%									
	<input type="checkbox"/> 5	%									
	<input checked="" type="checkbox"/> 6	1.0 %		135,000 GAL	30 GAL/HR					WHITE FUEL	BOSTON
NAT. GAS	<input type="checkbox"/>										
OTHER	<input type="checkbox"/>										

FUEL USAGE BREAKDOWN
 % OF FUEL USED FOR HEATING: **90** %
 % OF FUEL USED FOR COOLING: _____ %
 % OF FUEL USED FOR POWER: _____ %
 % OF FUEL USED FOR PROCESS: **10** %

BURNER EQUIPMENT
 ARE OIL HEATERS USED? YES NO
 OIL TEMPERATURE BEFORE INJECTION: **150** °F
 BURNER MANUFACTURER: **JOHNSON**
 DATE OF BURNER INSTALLATION: **OCTOBER 1978**
 BURNER MODEL NO.: **L268133**

TYPE OF COAL BURNER
 HAND FIRED UNDERFEED STOKER TRAVELING GRATE CHAIN GRATE SPREADER STOKER STOKER WITH GAS REINJECTION CYCLONE FURNACE PULVERIZED COAL

TYPE OF OIL BURNER
 PRESSURE OR GUN ROTARY CUP STEAM ATOMIZER AIR ATOMIZER TANGENTIALLY FIRED OTHER (Specify)

COMBUSTION
 OVERFIRE AIR CONTROL: YES NO
 TYPE OF DRAFT: FORCED INDUCED NATURAL
 TYPE OF AIR FUEL RATIO CONTROL SYSTEM: ON-OFF LOW FIRE HIGH-LOW FIRE HAND CONTROLLED FULL AUTOMATIC

EQUIPMENT INFORMATION
 BREACHING GAS TEMPERATURE: **425** °F
 DATE EQUIPMENT WAS PUT IN SERVICE: MONTH **OCTOBER** YEAR **1908**
 EXHAUST GAS FLOW RATE (ACFM): **NORMAL**
 STACK GAS VELOCITY IN FEET PER SECOND: _____
 EQUIPMENT OPERATING HOURS: _____ HOURS PER YEAR
 FACILITY OPERATING HOURS: _____ HOURS/DAY _____ DAYS/WEEK _____ WEEKS/YEAR

STACK INFORMATION
 STACK EXIT DIRECTION: HORIZ. VERT.
 SIZE OF STACK EXIT: ROUND STACK Inside Diameter _____ In. RECTANGULAR STACK In. By _____ In.
 STACK HEIGHT (FEET): **100**
 IS STACK EQUIPPED WITH RAIN HAT? YES NO
 TEMPERATURE AT STACK EXIT: _____ °F
 SMOKE INDICATOR IN STACK: YES NO
 MAKE AND MODEL NO. OF SMOKE INDICATOR: **HEAT-TIMER Model-M11**
 STACK LINING: METAL REFRACTORY OTHER (Specify) **Red Brick**

STACK LOCATION
 NAME OF NEAREST INTERSECTING STREET: **WALPOLE ST.**
 DISTANCE TO STACK FROM INTERSECTION: **300**
 DIRECTION FROM INTERSECTION TO STACK: (Circle one) **N NE E SE S SW W NW**

CERTIFICATION
 I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).
 SIGNED: **Victor Morgan**
 TITLE: **PLANT MGR**
 DATE: **4/4/75**

APPLICANT

FORM AP-1
 DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
 ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

1. APPLICATION NO. _____ 2. STACK NO. _____

FIRM: **EMERSON F. CUMING, INC.**
 BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE): **269 WASHINGTON ST, CANTON 02021**
 PHONE: **828-3300**

EQUIPMENT REGISTERED: TYPE OF EQUIPMENT (e.g. Boiler, Space Heater): **BOILER**
 BRAND NAME OF EQUIPMENT: **HODGE**
 MODEL NUMBER: _____
 NUMBER OF IDENTICAL UNITS ON THIS FORM: **1**
 AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
 YES NO

MAJOR ACTIVITY OF FIRM:
 MFG. OFFICE RETAIL OR WHLSE. STORE SCHOOL OR CHURCH HOTEL/MOTEL HOSPITAL OR LAB WAREHOUSE RESIDENCE OR APTS. OTHER (Specify)

TYPES OF FUEL USED	FUEL	GRADES (x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft. ³)	MAXIMUM FIRING RATE PER UNIT		SEASONAL USE		FUEL SUPPLIER	
						(Lbs., Gals., ft. ³ /hr.)	(BTU/hr.)	Month Yr. to	Month Yr.	Name	City or Town
<input type="checkbox"/> COAL		Bituminous	%	%							
		Anthracite	%	%							
<input checked="" type="checkbox"/> OIL		Kerosene	%								
		2	0.30%		36,000 GAL	14 GAL/HR				WHITE FUEL	BOSTON
		4	%								
		5	%								
	6	%									
<input type="checkbox"/> NAT. GAS			%	%							
<input type="checkbox"/> OTHER			%	%							

FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING: **50** %
 % OF FUEL USED FOR COOLING: _____ %
 % OF FUEL USED FOR POWER: _____ %
 % OF FUEL USED FOR PROCESS: **50** %

BURNER EQUIPMENT: ARE OIL HEATERS USED? YES NO
 OIL TEMPERATURE BEFORE INJECTION: **70** °F
 BURNER MANUFACTURER: **WALTHAM**
 DATE OF BURNER INSTALLATION: **12/71**
 BURNER MODEL NO.: **LE**

TYPE OF COAL BURNER: HAND FIRED UNDERFEED STOKER TRAVELING GRATE CHAIN GRATE SPREADER STOKER STOKER WITH GAS REINJECTION CYCLONE FURNACE PULVERIZED COAL

TYPE OF OIL BURNER: PRESSURE OR GUN ROTARY CUP STEAM ATOMIZER AIR ATOMIZER TANGENTIALLY FIRED OTHER (Specify)

COMBUSTION: OVERFIRE AIR CONTROL YES NO
 TYPE OF DRAFT: FORCED INDUCED NATURAL
 TYPE OF AIR FUEL RATIO CONTROL SYSTEM: ON-OFF LOW FIRE HIGH-LOW FIRE FULL AUTOMATIC HAND CONTROLLED

EQUIPMENT INFORMATION	BREACHING GAS TEMPERATURE °F	DATE EQUIPMENT WAS PUT IN SERVICE MONTH YEAR	EXHAUST GAS FLOW RATE (ACFM) NORMAL	MAXIMUM STACK GAS VELOCITY IN FEET PER SECOND	EQUIPMENT OPERATING HOURS HOURS PER YEAR	15' STACK TEST RESULTS	TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST

STACK INFORMATION: STACK EXIT DIRECTION: HORIZ. VERT.
 SIZE OF STACK EXIT: ROUND STACK Inside Diameter: _____ RECTANGULAR STACK In. By In.: _____
 STACK HEIGHT (FEET): **60**
 IS STACK EQUIPPED WITH RAIN HAT? YES NO
 TEMPERATURE AT STACK EXIT: _____ °F
 SMOKE INDICATOR IN STACK: YES NO
 MAKE AND MODEL NO. OF SMOKE INDICATOR: _____
 STACK LINING: METAL REFRACTORY OTHER (Specify): **RED BRICK**

STACK LOCATION: NAME OF NEAREST INTERSECTING STREET: **PEQUIT STREET**
 DISTANCE TO STACK FROM INTERSECTION: **200 FT.**
 DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE **(S)** W NW

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).
 SIGNED: **Walt Morgan**
 TITLE: **PLANT MGR.**
 DATE: **4/7/75**

APPLICANT

DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

111

1

FIRM	LEGAL NAME	BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)	PHONE
DIVISION			
APPLICANT			
INSTALLATION			
EQUIPMENT BEING REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER
	Boiler	HODGE	
			NUMBER OF IDENTICAL UNITS ON THIS FORM
			1
			AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
			<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
MAJOR ACTIVITY OF FIRM	<input checked="" type="checkbox"/> MFG. <input type="checkbox"/> OFFICE <input type="checkbox"/> RETAIL OR WHLSE. STORE <input type="checkbox"/> SCHOOL OR CHURCH <input type="checkbox"/> HOTEL/MOTEL <input type="checkbox"/> HOSPITAL OR LAB <input type="checkbox"/> WAREHOUSE <input type="checkbox"/> RESIDENCE OR APTS. <input type="checkbox"/> OTHER (Specify)		

a. TYPES OF FUEL USED	FUEL	GRADES (x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft. ³)	MAXIMUM FIRING RATE PER UNIT		SEASONAL USE		FUEL SUPPLIER	
						(Lbs., Gals., fr. ³ /hr.)	(BTU/hr.)	Month	Yr. to	Month	Yr.
	COAL	Bituminous	%	%							
		Anthracite	%	%							
	OIL	Kerosene	%	%							
		2	0.30%		33000 GAL. RI GAL/HR.					WHITE FUEL	BOSTON
		4	%								
		5	%								
		6	%								
	NAT. GAS		%	%							
	OTHER		%	%							

b. FUEL USAGE BREAKDOWN	% OF FUEL USED FOR HEATING	30%	% OF FUEL USED FOR COOLING	%	% OF FUEL USED FOR POWER	%	% OF FUEL USED FOR PROCESS	70%
-------------------------	----------------------------	-----	----------------------------	---	--------------------------	---	----------------------------	-----

c. BURNER EQUIPMENT	ARE OIL HEATERS USED?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	OIL TEMPERATURE BEFORE INJECTION	70 °F	BURNER MANUFACTURER	WALTHAM	DATE OF BURNER INSTALLATION	12/71	BURNER MODEL NO.	LF
---------------------	-----------------------	---	----------------------------------	-------	---------------------	---------	-----------------------------	-------	------------------	----

d. TYPE OF COAL BURNER	<input type="checkbox"/> HAND FIRED <input type="checkbox"/> UNDERFEED STOKER <input type="checkbox"/> TRAVELING GRATE <input type="checkbox"/> CHAIN GRATE <input type="checkbox"/> SPREADER STOKER <input type="checkbox"/> STOKER WITH GAS REINJECTION <input type="checkbox"/> CYCLONE FURNACE <input type="checkbox"/> PULVERIZED COAL
------------------------	---

e. TYPE OF OIL BURNER	<input checked="" type="checkbox"/> PRESSURE OR GUN <input type="checkbox"/> ROTARY CUP <input type="checkbox"/> STEAM ATOMIZER <input type="checkbox"/> AIR ATOMIZER <input type="checkbox"/> TANGENTIALLY FIRED <input type="checkbox"/> OTHER (Specify)
-----------------------	--

f. COMBUSTION	OVERFIRE AIR CONTROL <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	TYPE OF DRAFT <input type="checkbox"/> FORCED <input type="checkbox"/> INDUCED <input checked="" type="checkbox"/> NATURAL	TYPE OF AIR FUEL RATIO CONTROL SYSTEM <input type="checkbox"/> HAND CONTROLLED <input checked="" type="checkbox"/> FULL AUTOMATIC
---------------	--	--	---

14. EQUIPMENT INFORMATION	BREACHING GAS TEMPERATURE °F	DATE EQUIPMENT WAS PUT IN SERVICE MONTH 12 YEAR 1971	15. STACK TEST RESULTS	TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST
	EXHAUST GAS FLOW RATE (ACFM):						
	NORMAL						
	STACK GAS VELOCITY IN FEET PER SECOND	EQUIPMENT OPERATING HOURS HOURS PER YEAR 5000					
	FACILITY OPERATING HOURS HOURS/DAY 16 DAYS/WEEK 5 WEEKS/YEAR 52						

16. STACK INFORMATION	STACK EXIT DIRECTION <input type="checkbox"/> HORIZ. <input checked="" type="checkbox"/> VERT.	SIZE OF STACK EXIT	STACK HEIGHT (FEET)	IS STACK EQUIPPED WITH RAIN HAT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	TEMPERATURE AT STACK EXIT _____ °F
	SMOKE INDICATOR IN STACK <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	ROUND STACK Inside Diameter In. RECTANGULAR STACK In. by In.	60		
	MAKE AND MODEL NO. OF SMOKE INDICATOR		STACK LINING <input type="checkbox"/> METAL <input type="checkbox"/> REFRACTORY <input checked="" type="checkbox"/> OTHER (Specify) RED BRICK		

17. LOCATION	NAME OF NEAREST INTERSECTING STREET: PEQUIT ST	DISTANCE TO STACK FROM INTERSECTION: 200 FT.	DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE SW W NW
--------------	--	--	--

I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).

SIGNED	TITLE	DATE
<i>[Signature]</i>	<i>[Title]</i>	11/2/71

A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION
NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved in Process	Type Equipment Used	LOCATION OF EQUIPMENT			RAW MATERIALS			FINISHED MATERIALS		
		Plant	Bldg	Floor	Type	Max/ Hour	Total/ Year	Type	Max/ Hour	Total Year
1. DRY CERAMIC MICRO SPHERES	ROTARY OVEN (2)	2		BASEMENT				CERAMIC MICRO SPHERES	250 LBS PER OVEN	500,000
2.										
3.										

PART 2. OPERATING SCHEDULE PART 3. STACK/VENT DATA

No. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inlet diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
1. 1/HR	5	50	12								
2.											
3.											

PART 4. PROCESS EMISSIONS

PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

VENT Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 3	CERAMIC DUST		BAG FILTER	DRAPER BROS.		1976
2.						
3.						

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: [Signature] TITLE: [Signature] DATE: 12 12 76

A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved in Process	Type Equipment Used	LOCATION OF EQUIPMENT			RAW MATERIALS			FINISHED MATERIALS		
		Plant	Bldg	Floor	Type	Max/ Hour	Total/ Year	Type	Max/ Hour	Total/ Year
1. MANUFACTURE FEED STOCK	CHEMICAL SPRAY DRYER	1	5	1	SODIUM SILICATE BORIC ACID UREA & WATER	62 GAL	3000 GAL	FEED STOCK	186 Lbs	75,000
2. DRYING MICROBALLONS	DRYING OVEN	1	1	BASEMENT	MICROBALLONS			MICROBALLONS	60	100%
3. MANUFACTURE MICROBALLONS	BALLOONING FURNACE (10)	1	5	19.2	FEED STOCK			MICROBALLONS		350,000

PART 2. OPERATING SCHEDULE **PART 3. STACK/VENT DATA**

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside diameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velocity (ft/sec)	Does Stack have rain cap?
1.	PART 4, ITEM 1										
2.	8	3	50	12	#1 VENT HORIZONTAL	6" x 6"	10'	450°F	UNKNOWN	UNKNOWN	NA
3.	PART 4, ITEM 3										

PART 4. PROCESS EMISSIONS

PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. NA	PARTICULATES	LESS THAN 0.1 LBS/HR	BAGHOUSE (2)	TORIT DIVISION DANALSON CO.	99.9%	1974
2. #1 VENT	FLUE GAS					
3. NA	PARTICULATES	LESS THAN 0.1 LBS/HR	BAGHOUSE (3)	TORIT DIVISION DANALSON CO.	99.9%	1975

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: _____ TITLE: _____ DATE: 12 17 74

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
CHEMICAL SPRAY DRYER	1	5	1	1,250,000 BTU/HR	ATMOSPHERIC TORCH	NATURAL GAS	476,000 CU/FT	1190 CU/FT
COILING WREN	1	1	BASMENT	800,000 BTU/HR	ATMOSPHERIC TORCH	NATURAL GAS	1,300,000 CU/FT	723 CU/FT
BALLOONING FURNACE	1	5	1	310,000 BTU/HR(EA)	ATMOSPHERIC TORCH	NATURAL GAS	7,085,700 CU/FT	1770 CU/FT
BALLOONING FURNACE	1	5	2	310,000 BTU/HR(EA)	ATMOSPHERIC TORCH	NATURAL GAS	1,417,110 CU/FT	1180 CU/FT

PART 2. OPERATING SCHEDULE:

PART 3. STACK/VENT DATA:

Hrs. per day	Days per week	Wks per yr.	Months in Operation	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above ground (ft)	Exit gas Temp. (°F)	Quantity (gaseous discharge) (acfm)	Exit velocity (ft/sec)	Does stack have rain cap?
8	1	50	12	N.A.	SEE SECTION A, PART 5 (EMISSION CONTROL SYSTEM)						
8	3	50	12	VENT	HORIZONTAL	6" x 6"	10"	450°F	UNKNOWN	UNKNOWN	NA
16	5	50	12	N.A.	SEE SECTION A, PART 5 (EMISSION CONTROL SYSTEM)						
8	3	50	12	N.A.	SEE SECTION A, PART 5 (EMISSION CONTROL SYSTEM)						

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(S) AND VENT(S).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED

E. Paul Gaudette

TITLE

Plant Mgr.

DATE

12 17 76

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
ROTARY DRYING OVEN	2		BASEMENT	180,000 BTU/HR	CONTINUOUS LINE	NATURAL GAS	174,000 CU. FT.	175 CU. FT.
ROTARY DRYING OVEN	2		BASEMENT	180,000 BTU/HR	CONTINUOUS LINE	NATURAL GAS	174,000 CU. FT.	175 CU. FT.
3.								
4.								

PART 2. OPERATING SCHEDULE:

PART 3. STACK/VENT DATA:

hrs. per day	Days per week	Wks per yr.	Months in Operation	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above ground (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfm)	Exit velocity (ft/sec)	Does stack have rain cap?
4	5	50	12	VENT #1	VERTICAL	10 IN	30	-	-	-	YES
4	5	50	12	VENT #2	VERTICAL	10 IN	30	-	-	-	YES
3.											
4.											

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(S) AND VENT(S).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED

E. Paul Gault, Jr.

TITLE

Plant Mgr.

DATE

12 17 76

**VISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658**

1. APPLICATION NO. 111 2. STACK NO. 1

LEGAL NAME		BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)				PHONE										
FIRM																
DIVISION																
APPLICANT																
INSTALLATION																
EQUIPMENT REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)		BRAND NAME OF EQUIPMENT		MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)									
	<u>Boiler</u>		<u>WALK-SUPPLY</u>		<u>500-100-10</u>	<u>1</u>	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
MAJOR ACTIVITY OF FIRM		<input checked="" type="checkbox"/> MFG. <input type="checkbox"/> OFFICE <input type="checkbox"/> RETAIL OR WHLSE. STORE <input type="checkbox"/> SCHOOL OR CHURCH <input type="checkbox"/> HOTEL/MOTEL <input type="checkbox"/> HOSPITAL OR LAB <input type="checkbox"/> WAREHOUSE <input type="checkbox"/> RESIDENCE OR APTS. <input type="checkbox"/> OTHER (Specify)														
TYPES OF FUEL USED	FUEL	GRADES (x)		SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft.³)		MAXIMUM FIRING RATE PER UNIT		SEASONAL USE		FUEL SUPPLIER				
							(lbs., Gals., ft. ³ /hr.)	(BTU/hr.)	Month Yr. to	Month Yr.	Name	City or Town				
	COAL <input type="checkbox"/>	Bituminous		%	%											
		Anthracite		%	%											
	OIL <input checked="" type="checkbox"/>	Kerosene		%	%											
		2		%	%	<u>10,000</u>	<u>11,000</u>									
		4		%	%											
5		%	%													
NAT. GAS <input type="checkbox"/>			%	%												
OTHER <input type="checkbox"/>			%	%												
FUEL USAGE BREAKDOWN	% OF FUEL USED FOR HEATING			% OF FUEL USED FOR COOLING			% OF FUEL USED FOR POWER			% OF FUEL USED FOR PROCESS						
												<u>70%</u>			<u>0%</u>	
BURNER EQUIPMENT	ARE OIL HEATERS USED?		OIL TEMPERATURE BEFORE INJECTION		BURNER MANUFACTURER		DATE OF BURNER INSTALLATION		BURNER MODEL NO.							
	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<u>200°F</u>		<u>WALK-SUPPLY</u>		<u>6/7/75</u>		<u>100-100-10</u>							
TYPE OF COAL BURNER	<input type="checkbox"/> HAND FIRED		<input type="checkbox"/> UNDERFEED STOKER		<input type="checkbox"/> TRAVELING GRATE		<input type="checkbox"/> CHAIN GRATE		<input type="checkbox"/> SPREADER STOKER		<input type="checkbox"/> STOKER WITH GAS REINJECTION		<input type="checkbox"/> CYCLONE FURNACE		<input type="checkbox"/> PULVERIZED COAL	
TYPE OF OIL BURNER	<input type="checkbox"/> PRESSURE OR GUN		<input type="checkbox"/> ROTARY CUP		<input type="checkbox"/> STEAM ATOMIZER		<input type="checkbox"/> AIR ATOMIZER		<input type="checkbox"/> TANGENTIALLY FIRED		<input type="checkbox"/> OTHER (Specify)					
COMBUSTION	OVERFIRE AIR CONTROL			TYPE OF DRAFT		TYPE OF AIR FUEL RATIO CONTROL SYSTEM				<input type="checkbox"/> HAND CONTROLLED						
	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			<input type="checkbox"/> FORCED <input type="checkbox"/> INDUCED <input checked="" type="checkbox"/> NATURAL		<input checked="" type="checkbox"/> ON-OFF <input type="checkbox"/> LOW FIRE <input type="checkbox"/> HIGH-LOW FIRE				<input type="checkbox"/> FULL AUTOMATIC						
EQUIPMENT INFORMATION	BREACHING GAS TEMPERATURE		DATE EQUIPMENT WAS PUT IN SERVICE		15. STACK TEST RESULTS	TYPE OF POLLUTANT		DATE OF TEST		RATE OF EMISSIONS (Pounds Per Hour)		GROUP CONDUCTING TEST				
	<u>110°F</u>		<u>MONTH YEAR</u>													
	EXHAUST GAS FLOW RATE (ACFM):		MAXIMUM													
	NORMAL		EQUIPMENT OPERATING HOURS													
		HOURS PER YEAR														
FACILITY OPERATING HOURS		HOURS/DAY		DAYS/WEEK		WEEKS/YEAR										
STACK INFORMATION	STACK EXIT DIRECTION		SIZE OF STACK EXIT				STACK HEIGHT (FEET)		IS STACK EQUIPPED WITH RAIN HAT?		TEMPERATURE AT STACK EXIT					
	<input type="checkbox"/> HORIZ. <input checked="" type="checkbox"/> VERT.		ROUND STACK		RECTANGULAR STACK				<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<u>°F</u>					
		Inside Diameter In.		In. By In.												
SMOKE INDICATOR IN STACK		MAKE AND MODEL NO. OF SMOKE INDICATOR				STACK LINING										
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO						<input type="checkbox"/> METAL <input type="checkbox"/> REFRACTORY <input checked="" type="checkbox"/> OTHER (Specify)										
STACK LOCATION	NAME OF NEAREST INTERSECTING STREET:					DISTANCE TO STACK FROM INTERSECTION:			DIRECTION FROM INTERSECTION (Circle one)							
	<u>Washington St</u>					<u>200 ft</u>			N NE E SE S SW W NW							
CERTIFICATION	I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).							SIGNED		TITLE		DATE				
								<u>[Signature]</u>		<u>[Title]</u>		<u>[Date]</u>				

APPLICANT

VISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

111

LEGAL NAME		BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)			PHONE					
FIRM		100 WASHINGTON ST. BOSTON MASS 02111			(617) 727-2658					
DIVISION										
APPLICANT										
INSTALLATION										
EQUIPMENT REGISTERED	TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)	BRAND NAME OF EQUIPMENT	MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					
	Boiler	D. DILLON		1						
MAJOR ACTIVITY OF FIRM	<input checked="" type="checkbox"/> MFG. <input type="checkbox"/> OFFICE <input type="checkbox"/> RETAIL OR WHLSE. STORE <input type="checkbox"/> SCHOOL OR CHURCH <input type="checkbox"/> HOTEL/MOTEL <input type="checkbox"/> HOSPITAL OR LAB <input type="checkbox"/> WAREHOUSE <input type="checkbox"/> RESIDENCE OR APTS. <input type="checkbox"/> OTHER (Specify)									
TYPES OF FUEL USED	FUEL	GRADES (x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft. ³)	MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft. ³ /hr.) (BTU/hr.)	SEASONAL USE (Month Yr. to Month Yr.)	FUEL SUPPLIER (Name City or Town)		
	COAL	<input type="checkbox"/> Bituminous <input type="checkbox"/> Anthracite	%	%						
	OIL	<input checked="" type="checkbox"/>	Kerosene	%						
			2	%		700000				
			4	%						
			5	%						
			6	%						
NAT. GAS	<input type="checkbox"/>		%	%						
OTHER	<input type="checkbox"/>		%	%						
FUEL USAGE BREAKDOWN	% OF FUEL USED FOR HEATING		% OF FUEL USED FOR COOLING		% OF FUEL USED FOR POWER		% OF FUEL USED FOR PROCESS			
70%										
BURNER EQUIPMENT	ARE OIL HEATERS USED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	OIL TEMPERATURE BEFORE INJECTION (°F)	BURNER MANUFACTURER		DATE OF BURNER INSTALLATION		BURNER MODEL NO.			
NO		400	DILLON		11/78		1000000			
TYPE OF COAL BURNER	<input type="checkbox"/> HAND FIRED <input type="checkbox"/> UNDERFEED STOKER <input type="checkbox"/> TRAVELING GRATE <input type="checkbox"/> CHAIN GRATE <input type="checkbox"/> SPREADER STOKER <input type="checkbox"/> STOKER WITH GAS REINJECTION <input type="checkbox"/> CYCLONE FURNACE <input type="checkbox"/> PULVERIZED COAL									
TYPE OF OIL BURNER	<input type="checkbox"/> PRESSURE OR GUN <input checked="" type="checkbox"/> ROTARY CUP <input type="checkbox"/> STEAM ATOMIZER <input type="checkbox"/> AIR ATOMIZER <input type="checkbox"/> TANGENTIALLY FIRED <input type="checkbox"/> OTHER (Specify)									
COMBUSTION	OVERFIRE AIR CONTROL <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		TYPE OF DRAFT <input type="checkbox"/> FORCED <input type="checkbox"/> INDUCED <input checked="" type="checkbox"/> NATURAL		TYPE OF AIR FUEL RATIO CONTROL SYSTEM <input type="checkbox"/> ON-OFF <input type="checkbox"/> LOW FIRE <input checked="" type="checkbox"/> HIGH-LOW FIRE <input type="checkbox"/> FULL AUTOMATIC			<input type="checkbox"/> HAND CONTROLLED		
EQUIPMENT INFORMATION	BREACHING GAS TEMPERATURE (°F)		DATE EQUIPMENT WAS PUT IN SERVICE (MONTH YEAR)		15. STACK TEST RESULTS	TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST	
	EXHAUST GAS FLOW RATE (ACFM): NORMAL		MAXIMUM							
	STACK GAS VELOCITY IN FEET PER SECOND		EQUIPMENT OPERATING HOURS (HOURS PER YEAR)							
	FACILITY OPERATING HOURS (HOURS/DAY DAYS/WEEK WEEKS/YEAR)									
STACK INFORMATION	STACK EXIT DIRECTION <input type="checkbox"/> HORIZ. <input type="checkbox"/> VERT.		SIZE OF STACK EXIT ROUND STACK (Inside Diameter In.) RECTANGULAR STACK (In. By In.)		STACK HEIGHT (FEET)	IS STACK EQUIPPED WITH RAIN HAT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		TEMPERATURE AT STACK EXIT (°F)		
	SMOKE INDICATOR IN STACK <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		MAKE AND MODEL NO. OF SMOKE INDICATOR		STACK LINING <input type="checkbox"/> METAL <input type="checkbox"/> REFRACTORY <input type="checkbox"/> OTHER (Specify)					
STACK LOCATION	NAME OF NEAREST INTERSECTING STREET: WASHINGTON ST.				DISTANCE TO STACK FROM INTERSECTION:		DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW			
CERTIFICATION	I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).				SIGNED		TITLE		DATE	

APPLICANT

AF-1
 DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
 ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

LEGAL NAME		BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE)				PHONE									
TYPE OF EQUIPMENT (e.g. Boiler, Space Heater)		BRAND NAME OF EQUIPMENT		MODEL NUMBER	NUMBER OF IDENTICAL UNITS ON THIS FORM	AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
MFG. <input checked="" type="checkbox"/> OFFICE <input type="checkbox"/> RETAIL OR WHLSE. STORE <input type="checkbox"/> SCHOOL OR CHURCH <input type="checkbox"/> HOTEL/MOTEL <input type="checkbox"/> HOSPITAL OR LAB <input type="checkbox"/> WAREHOUSE <input type="checkbox"/> RESIDENCE OR APTS. <input type="checkbox"/> OTHER (Specify)															
FUEL	GRADES (x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft. ³)	MAXIMUM FIRING RATE PER UNIT		SEASONAL USE		FUEL SUPPLIER						
					(Lbs., Gals., ft. ³ /hr.)	(BTU/hr.)	Month	Yr. to	Month	Yr.	Name	City or Town			
COAL <input type="checkbox"/>	Bituminous	%	%												
	Anthracite	%	%												
	OIL <input checked="" type="checkbox"/>	Kerosene	%												
		2	%												
		4	%												
5		%													
NAT. GAS <input type="checkbox"/>		%	%												
FUEL USAGE BREAKDOWN		% OF FUEL USED FOR HEATING		% OF FUEL USED FOR COOLING		% OF FUEL USED FOR POWER		% OF FUEL USED FOR PROCESS							
ARE OIL HEATERS USED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		OIL TEMPERATURE BEFORE INJECTION		BURNER MANUFACTURER		DATE OF BURNER INSTALLATION		BURNER MODEL NO.							
HAND FIRED <input type="checkbox"/> UNDERFEED STOKER <input type="checkbox"/> TRAVELING GRATE <input type="checkbox"/> CHAIN GRATE <input type="checkbox"/> SPREADER STOKER <input type="checkbox"/> STOKER WITH GAS REINJECTION <input type="checkbox"/> CYCLONE FURNACE <input type="checkbox"/> PULVERIZED COAL <input type="checkbox"/>		PRESSURE OR GUN <input checked="" type="checkbox"/> ROTARY CUP <input type="checkbox"/> STEAM ATOMIZER <input type="checkbox"/> AIR ATOMIZER <input type="checkbox"/> TANGENTIALLY FIRED <input type="checkbox"/> OTHER (Specify) <input type="checkbox"/>		OVERFIRE AIR CONTROL <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		TYPE OF DRAFT <input type="checkbox"/> FORCED <input type="checkbox"/> INDUCED <input checked="" type="checkbox"/> NATURAL		TYPE OF AIR FUEL RATIO CONTROL SYSTEM <input type="checkbox"/> ON-OFF <input type="checkbox"/> LOW FIRE <input type="checkbox"/> HIGH-LOW FIRE <input type="checkbox"/> FULL AUTOMATIC <input type="checkbox"/> HAND CONTROLLED							
BREACHING GAS TEMPERATURE		DATE EQUIPMENT WAS PUT IN SERVICE		15. STACK TEST RESULTS		TYPE OF POLLUTANT		DATE OF TEST		RATE OF EMISSIONS (Pounds Per Hour)		GROUP CONDUCTING TEST			
EXHAUST GAS FLOW RATE (ACFM):		MONTH				YEAR									
NORMAL		MAXIMUM				EQUIPMENT OPERATING HOURS									
STACK GAS VELOCITY IN FEET PER SECOND		EQUIPMENT OPERATING HOURS				HOURS PER YEAR									
FACILITY OPERATING HOURS		HOURS/DAY		DAYS/WEEK		WEEKS/YEAR									
STACK EXIT DIRECTION <input type="checkbox"/> HORIZ. <input checked="" type="checkbox"/> VERT.		SIZE OF STACK EXIT		STACK HEIGHT (FEET)		IS STACK EQUIPPED WITH RAIN HAT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		TEMPERATURE AT STACK EXIT							
SMOKE INDICATOR IN STACK <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		MAKE AND MODEL NO. OF SMOKE INDICATOR		STACK LINING <input type="checkbox"/> METAL <input type="checkbox"/> REFRACTORY <input checked="" type="checkbox"/> OTHER (Specify)											
NAME OF NEAREST INTERSECTING STREET:		DISTANCE TO STACK FROM INTERSECTION:		DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW		SIGNED		TITLE		DATE					
I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).															

APPLICANT



DAVID STANDLEY
Commissioner
727-5194

The Commonwealth of Massachusetts

Department of Environmental Quality Engineering

Metropolitan Boston - Northeast Region

600 Washington Street, Boston, Ma. 02111

January 1978

Mailed April 18, 1978

Gentlemen:

The Division of Air and Hazardous Materials must develop regulations limiting the quantities of volatile organic compounds emitted from sources in the Commonwealth in order to achieve compliance with applicable ambient air standards.

It is the Division's desire to develop regulations that will provide for the necessary reduction in volatile organic compound emissions without imposing undue economic hardship on the industries in the Commonwealth utilizing these compounds. Toward this end, the Metropolitan Boston Region must update its inventory of commercial and industrial facilities within the Region to determine the types and quantities of volatile organic compounds presently being utilized.

The Region has determined that the nature of operations at your facility involves the use of volatile organic compounds. Your cooperation is requested in completing all applicable parts of the enclosed questionnaire. This is a requirement of the Department's Regulation 12, Registration, Record Keeping and Reporting, of the "Regulations for the Control of Air Pollution in the Metropolitan Boston Air Pollution Control District".

You are requested to complete and return the form within thirty (30) days. If you have any questions or need assistance, please do not hesitate to call, telephone number 727-4609.

Thank you in advance for your cooperation.

Very truly yours,

John A. Desmond

John A. Desmond
Chief

Air Quality Control Section

C- MBAPCD
C- R.E.E.

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF AIR AND HAZARDOUS MATERIALS

FORM FOR THE REGISTRATION OF HYDROCARBON EMISSIONS

Please complete and return this form to the Metropolitan Boston Air Quality Control Region, Room 320, 600 Washington Street, Boston, MA. 02111. Should you have any questions, call 727-4609, 5195

Company Name EMERSON & CUMING INC.
Plant Address 869 WASHINGTON ST. CANTON, MASS. 02021
Mailing Address " " "
Contact JOHN HAGEN Title SAFETY DIRECTOR
Telephone Number 828-3300
Approximate number of employees at this plant address 85
Normal Operating Schedule of this facility 8 hr/day 5 days/wk. 52 wk/yr
Indicate the percentage of annual production produced per quarter:
First 25 Second 25 Third 25 Fourth 25

How many gallons of material containing volatile hydrocarbons such as cleaning fluids, coatings, adhesives, inks, or solvents are purchased by this facility annually? 6000 GAL ASSORTED SOLVENTS

Supplier	Address of Supplier	Type of Materials
<u>AXION CROSS</u>	<u>CROSS ST. HOLLISTON, MASS.</u>	<u>METHYLENE CHLORIDE</u>
<u>DOE & INGALLS</u>	<u>25 COMMERCIAL ST. MEDFORD, MASS.</u>	<u>TOLUENE</u>
<u>NEW ENGLAND CHEMICAL</u>	<u>P.O. BOX 38, MERRIMACK, NH. 03001</u>	<u>TRICHLOROETHANE</u>

CERTIFICATION to be signed by responsible corporate official: I certify that I have examined the information on this form and that to the best of my knowledge, it is true and complete.

Signed J. Hagen Title Safety Director Date 3/28/78

INSTRUCTIONS

Everyone receiving this form should complete the first page and only those other sections pertaining to their company.

The information submitted should pertain to calendar year 1977 operations.

If the space provided is not adequate, feel free to either copy the form, use a separate sheet or request an additional copy.

Information contained in the Division's files is available to the general public upon request under the provisions of the Freedom of Information Act. Contact the Division (727-4609) immediately if you feel that completion of information requested would compromise proprietary data.

Supply a schematic of your facility indicating the location of all stacks and vents that emit volatile organic compounds.

Please supply as much information as possible to enable accurate calculations to be made and an accurate survey to be conducted.

Please also indicate if you have substituted compounds or installed control equipment in order to comply with the provisions of existing regulations.

STACK INFORMATION AND HYDROCARBON CONTROL INFORMATION

Complete the table below for all stacks which exhaust volatile organic compounds and for all hydrocarbon collection equipment. Number the sources to agree with data submitted on the following pages of this form.

Stack data need not be submitted for stacks which do not emit hydrocarbons.

Source No.	Process or Operation	Type of Process Equipment	No. of Units	Hydrocarbon Control Equipment		Stack Information				
				Type of Control Device	Estimated Control Efficiency	Exit Height above Ground (feet)	Inside Dia. (ft.)	Temp (°F)	Exhaust flowrate (CFM)	Stack Exit Velocity (ft./s)
1	PRODUCT FORMULATION	MIXERS	8	EXHAUST SYSTEM	90%	60	10"	AMB.	UNKNOWN	UNKNOWN
2	CLEAN PIPING		3	EXHAUST SYSTEM	90%	8	N/A	AMB.	UNKNOWN	UNKNOWN
3	R&D		N/A	EXHAUST SYSTEM	90%	8	N/A	VARIOUS	"	"
4	FORMULATION MOLDING	MIXERS/MOLDS	3	EXHAUST SYSTEM	90%	20	6"	AMB.	"	"
5	FORMULATION	" / "	5	EXHAUST SYSTEM	90%	18	N/A	AMB.	"	"
6	FORMULATION SMALL AMTS	MIXERS	5	EXHAUST SYSTEM	90%	18	8"	AMB.	"	"
7	PAINT SPRAY	SPRAY	1	BOOTH EXHAUST SYSTEM	90%	12	N/A	AMB.	"	"
8	FORMULATION PACKAGING	MIXER	1	EXHAUST SYSTEM	90%	15	N/A	AMB.	"	"
9	FORMULATION	MIXERS	6	EXHAUST SYSTEM	90%	50	N/A	AMB.	"	"

COLUMN HEADED. TYPE OF CONTROL DEVICE; ENTRY INDICATES ONLY THAT HYDROCARBON VAPORS ARE EXHAUSTED TO ATMOSPHERE.

SURFACE COATING

Temperature at Which coating is applied or cured	Type of Solvent in Undiluted Coating	Wt. Solvent in Undiluted Coating	Type of Solvent added to Coating	Amount of Solvent added per year, pounds or gallons

How much, if any, solvent is shipped out for recovery or disposal? 500 gal/yr.

What type(s) of cleaning solvent is(are) used? METHYLENE CHLORIDE/1,1,1 TRICHLOROETHANE

How much cleaning solvent is used per year? 1000 GAL.

CLEANING, DEGREASING AND/OR DRYCLEANING

Complete this page for operations such as cold solvent cleaning, hot solvent cleaning and vapor degreasing. Stoddard solvent, 1,1, 1 trichloroethane, perchloroethylene, methylene chloride and trichloroethylene are examples of solvents that must be reported.

Source Number	Operation	Type of Material Treated	Pounds of Material Treated Annually	Type of Solvent Used	Gallons Used Annually
2	RESIN SYSTEM PIPING CLEANING	RESIN SYSTEM TRANSFER PIPING	N/A	METHYLENE CHLORIDE	200
3/6	CLEANING / DEGREASING	PARTS CLEANING	10,000	1,1,1 TRICHLOROETHANE	55 GAL

Temperature of Solvent in Use. of.	Type of Emission Control Device	Estimated Control Efficiency	Waste Solvent Disposal Method	Gallons of Solvent Disposed of Annually
AMB.	EXHAUST SYSTEM	90%	LICENSED DISPOSAL	200
AMB	" "	90%	" "	50

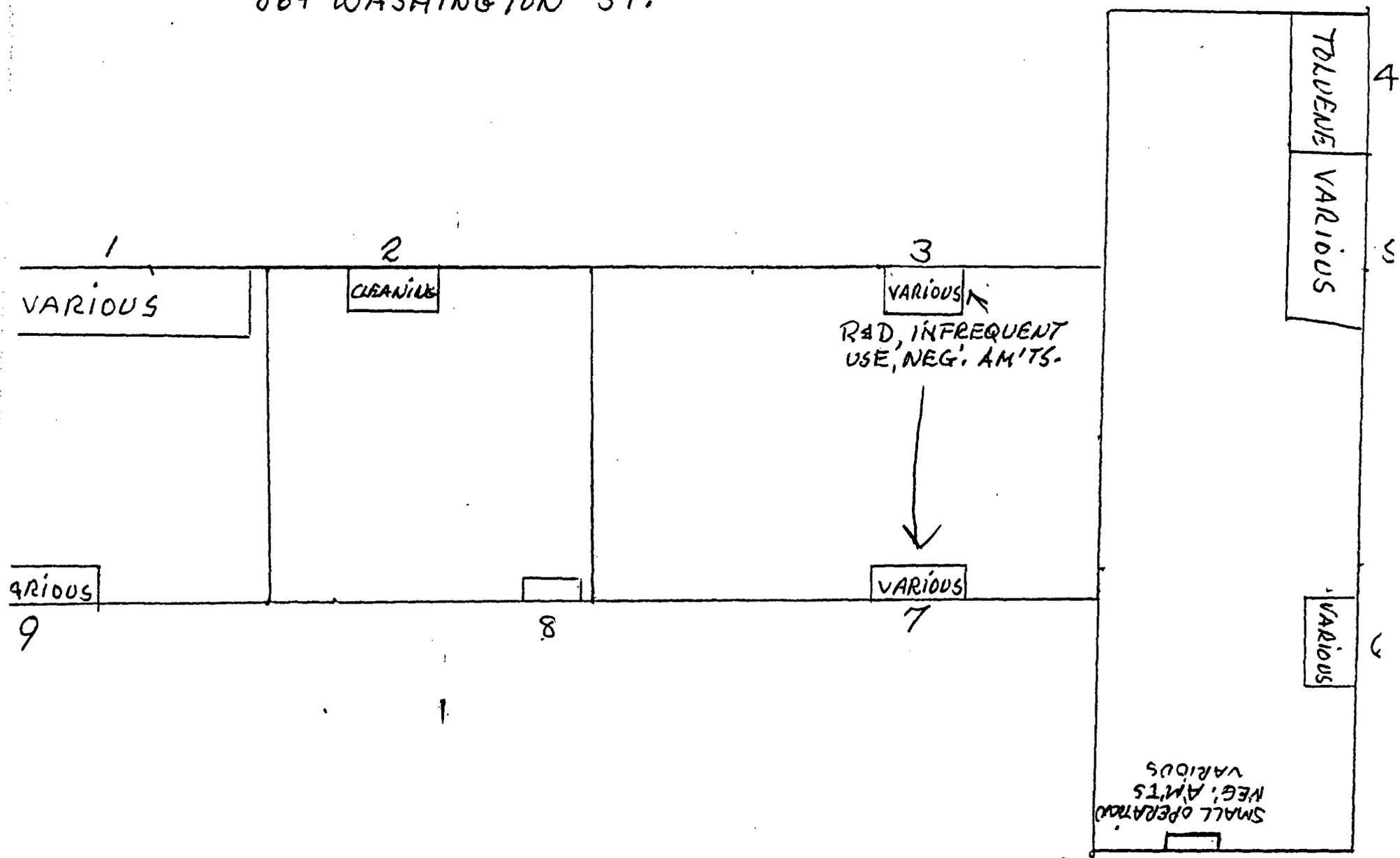
MANUFACTURING

Complete the sheet for all operations which utilize hydrocarbons as a raw material or which produce an end product containing hydrocarbons.

Brief Description of Process ALL ARE VARIOUS COMBINATIONS OF FORMULATION/MIXING/MOLDING AND/OR PACKAGING

Source No.	Process or operation using hydrocarbons	Type of Material Processed	Annual Process Thruput	Type & Weight of Volatile hydrocarbons in processed material	Quantity of Volatile Hydrocarbons lost to Atmosphere during processing lb/yr.	Method Used to determine Emission (est. or measured)
1	FORMULATION, MIXING PLASTICS	RESINS PLASTICS	750,000 LBS	32,000 lbs	6%	EST
3	R&D	PLASTICS	NEGLECTIBLE	-	-	-
4	FORMULATION, MIXING/MOLDING	PLASTIC FOAMS				
5	FORMULATION, MIXING/MOLDING	RESIN SYSTEMS	INCLUDED IN SOURCE NO. 1 ABOVE	INCLUDED IN SOURCE NO. 1 ABOVE	INCLUDED IN SOURCE NO. 1 ABOVE	EST
6	FORMULATION MIXING	RESIN SYSTEMS	NEGLECTIBLE			
7	SPRAY	MICROWAVE ABSORBERS	NEGLECTIBLE	PRIMARILY R&D		
8	FORMULATION MIXING PACKAGING	RESIN SYSTEMS	SMALL AMOUNTS	INCLUDED AS PART OF NO. 1 ABOVE	INCLUDED AS PART OF 6% LOSS	
9	FORMULATION MIXING	RESIN SYSTEMS	INCLUDED IN SOURCE NO. 1 ABOVE	INCLUDED IN SOURCE NO. 1 ABOVE	INCLUDED IN SOURCE NO. 1 ABOVE	EST

869 WASHINGTON ST.



DEPARTMENT OF PUBLIC HEALTH
 FORM AP-1
 DIVISION OF ENVIRONMENTAL HEALTH, BUREAU OF AIR QUALITY CONTROL, 600 WASHINGTON STREET
 ROOM 320 BOSTON, MASSACHUSETTS 02111 (617) 727-2658

APPLICATION NO. **0111**
 STACK NO.

LEGAL NAME: **ERIEASON & CUMING, INC.**
 BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE): **59 WALPOLE ST, CANTON, 02021**
 PHONE: **426-3320**

TYPE OF EQUIPMENT (e.g. Boiler, Space Heater):
 BRAND NAME OF EQUIPMENT:
 MODEL NUMBER:
 NUMBER OF IDENTICAL UNITS ON THIS FORM:
 AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4)
 YES NO

MAJOR ACTIVITY OF FIRM
 MFG. OFFICE RETAIL OR WHLSE. STORE SCHOOL OR CHURCH HOTEL/MOTEL HOSPITAL OR LAB WAREHOUSE RESIDENCE OR APTS. OTHER (Specify)

FUEL	GRADES (x)	SULFUR CONTENT	ASH CONTENT	ANNUAL USAGE (Tons, Gals., or ft. ³)	MAXIMUM FIRING RATE PER UNIT		SEASONAL USE				FUEL SUPPLIER		
					(lbs., Gals., ft. ³ /hr.)	(BTU/hr.)	Month	Yr.	to	Month	Yr.	Name	City or Town
COAL <input type="checkbox"/>	Bituminous	%	%										
	Anthracite	%											
OIL <input type="checkbox"/>	Kerosene	%											
	2	%											
	4	%											
	5	%											
	6	1.0		226,380 GAL								WHITE FUEL	BOSTON
NAT. GAS <input type="checkbox"/>		%	%										
OTHER <input type="checkbox"/>		%	%										

FUEL USAGE BREAKDOWN
 % OF FUEL USED FOR HEATING: %
 % OF FUEL USED FOR COOLING: %
 % OF FUEL USED FOR POWER: %
 % OF FUEL USED FOR PROCESS: %

BURNER EQUIPMENT
 ARE OIL HEATERS USED? YES NO
 OIL TEMPERATURE BEFORE INJECTION: °F
 BURNER MANUFACTURER:
 DATE OF BURNER INSTALLATION:
 BURNER MODEL NO.:

TYPE OF COAL BURNER
 HAND FIRED UNDERFEED STOKER TRAVELING GRATE CHAIN GRATE SPREADER STOKER STOKER WITH GAS REINJECTION CYCLONE FURNACE PULVERIZED COAL

TYPE OF OIL BURNER
 PRESSURE OR GUN ROTARY CUP STEAM ATOMIZER AIR ATOMIZER TANGENTIALLY FIRED OTHER (Specify)

COMBUSTION
 OVERFIRE AIR CONTROL YES NO
 TYPE OF DRAFT: FORCED INDUCED NATURAL
 TYPE OF AIR FUEL RATIO CONTROL SYSTEM: ON-OFF LOW FIRE HIGH-LOW FIRE FULL AUTOMATIC HAND CONTROLLED

EQUIPMENT INFORMATION	BREACHING GAS TEMPERATURE °F	DATE EQUIPMENT WAS PUT IN SERVICE		15. STACK TEST RESULTS	TYPE OF POLLUTANT	DATE OF TEST	RATE OF EMISSIONS (Pounds Per Hour)	GROUP CONDUCTING TEST
		MONTH	YEAR					
	EXHAUST GAS FLOW RATE (ACFM):							
	NORMAL							
	STACK GAS VELOCITY IN FEET PER SECOND							
	EQUIPMENT OPERATING HOURS							
	HOURS PER YEAR							
	FACILITY OPERATING HOURS							
	HOURS/DAY							
	DAYS/WEEK							
	WEEKS/YEAR							

STACK INFORMATION
 STACK EXIT DIRECTION: HORIZ. VERT.
 SIZE OF STACK EXIT:
 ROUND STACK: Inside Diameter In.
 RECTANGULAR STACK: In. By In.
 STACK HEIGHT (FEET):
 IS STACK EQUIPPED WITH RAIN HAT? YES NO
 TEMPERATURE AT STACK EXIT: °F
 SMOKE INDICATOR IN STACK: YES NO
 MAKE AND MODEL NO. OF SMOKE INDICATOR:
 STACK LINING: METAL REFRACTORY OTHER (Specify)

STACK LOCATION
 NAME OF NEAREST INTERSECTING STREET: **WALPOLE ST**
 DISTANCE TO STACK FROM INTERSECTION: **160 FT**
 DIRECTION FROM INTERSECTION TO STACK: (Circle one) **N NE E S SW W NW**

CERTIFICATION
 I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements)
 SIGNED: _____
 TITLE: _____
 DATE: _____

APPLICANT

FIRM: EMERSON & CUMMINS, INC.
BUSINESS ADDRESS (NO. AND STREET, CITY, ZIP CODE): 869 WASHINGTON ST, CANTON, 02021
PHONE:

EQUIPMENT REGISTERED: BOILER
TYPE OF EQUIPMENT (e.g. Boiler, Space Heater):
BRAND NAME OF EQUIPMENT:
MODEL NUMBER:
NUMBER OF IDENTICAL UNITS ON THIS FORM: 1
AIR POLLUTION CONTROL EQUIPMENT USED? (If Yes, File Form AP-4):
 YES NO

MAJOR ACTIVITY OF FIRM: MFG. OFFICE RETAIL OR WHLSE. STORE SCHOOL OR CHURCH HOTEL/MOTEL HOSPITAL OR LAB WAREHOUSE RESIDENCE OR APTS. OTHER (Specify)

Table with columns: FUEL, GRADES (x), SULFUR CONTENT, ASH CONTENT, ANNUAL USAGE (Tons, Gals., or ft.³), MAXIMUM FIRING RATE PER UNIT (Lbs., Gals., ft.³/hr.), SEASONAL USE (Month Yr. to Month Yr.), FUEL SUPPLIER (Name, City or Town).
Oil 2: 0.3% sulfur, 42352 gal. annual usage, 14 gal/hr firing rate. Supplier: WHITE FUEL.

FUEL USAGE BREAKDOWN: % OF FUEL USED FOR HEATING: 90%
% OF FUEL USED FOR COOLING: %
% OF FUEL USED FOR POWER: %
% OF FUEL USED FOR PROCESS: %

BURNER EQUIPMENT: ARE OIL HEATERS USED? YES NO
OIL TEMPERATURE BEFORE INJECTION: °F
BURNER MANUFACTURER:
DATE OF BURNER INSTALLATION:
BURNER MODEL NO.:

TYPE OF COAL BURNER: HAND FIRED UNDERFEED STOKER TRAVELING GRATE CHAIN GRATE SPREADER STOKER STOKER WITH GAS REINJECTION CYCLONE FURNACE PULVERIZED COAL

TYPE OF OIL BURNER: PRESSURE OR GUN ROTARY CUP STEAM ATOMIZER AIR ATOMIZER TANGENTIALLY FIRED OTHER (Specify)

COMBUSTION: OVERFIRE AIR CONTROL YES NO
TYPE OF DRAFT: FORCED INDUCED NATURAL
TYPE OF AIR FUEL RATIO CONTROL SYSTEM: HAND CONTROLLED FULL AUTOMATIC

EQUIPMENT INFORMATION: BREACHING GAS TEMPERATURE °F, DATE EQUIPMENT WAS PUT IN SERVICE (MONTH, YEAR), EXHAUST GAS FLOW RATE (ACFM), NORMAL, MAXIMUM, STACK GAS VELOCITY IN FEET PER SECOND, EQUIPMENT OPERATING HOURS (HOURS PER YEAR), FACILITY OPERATING HOURS (HOURS/DAY, DAYS/WEEK, WEEKS/YEAR).

STACK INFORMATION: STACK EXIT DIRECTION: HORIZ. VERT.
SIZE OF STACK EXIT: ROUND STACK (In. Inside Diameter) or RECTANGULAR STACK (In. By In.)
STACK HEIGHT (FEET):
IS STACK EQUIPPED WITH RAIN HATT? YES NO
TEMPERATURE AT STACK EXIT: °F

STACK INFORMATION: SMOKE INDICATOR IN STACK: YES NO
MAKE AND MODEL NO. OF SMOKE INDICATOR:
STACK LINING: METAL REFRACTORY OTHER (Specify)

STACK LOCATION: NAME OF NEAREST INTERSECTING STREET: WASHINGTON ST
DISTANCE TO STACK FROM INTERSECTION: 390 FT
DIRECTION FROM INTERSECTION TO STACK: (Circle one) N NE E SE S SW W NW

CERTIFICATION: I certify that I have examined the above information and that to the best of my knowledge it is true and complete. (Signature subjects signer to provisions of the General Statutes regarding false and misleading statements).
SIGNED: _____ TITLE: _____ DATE: _____

APPLICANT

DATE RECEIVED	APPLICATION NUMBER	COORDINATES
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APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
 INFORMATION REQUESTED FOR CALENDAR YEAR 1975

- AP-2 A. Process/Manufacturing Equipment
- B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED
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A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION
NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved in Process	Type Equipment Used	LOCATION OF EQUIPMENT			RAW MATERIALS			FINISHED MATERIALS		
		Plant	Bldg	Floor	Type	Max/ Hour	Total/ Year	Type	Max/ DAY ^{yr}	Total/ Year
1. Dry Ceramic Microspheres	Rotary Ovens (3)	2		Basement	Fly Ash	ea. 250 lb	ea. oven 250,000#	Ceramic Microspheres	3000 lbs	750,000#
2.										
3.										

PART 2. OPERATING SCHEDULE PART 3. STACK/VENT DATA

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside di- ameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velo- city (ft/sec)	Does Stack have rain cap?
14 ea.	5	50	12	1,2,&3	Vert	14"	1&3-40' 2-30'	NA	NA		Yes
2.					Stacks	1,2,&3	for steam escape				
3.											

PART 4. PROCESS EMISSIONS

PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1.	Fly Ash Dust		Dust Collector	Deltair	98%	2/1978
2.						
3.						

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: _____ TITLE: _____ DATE: _____

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Ant/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
Rotary Drying Oven	2		Basement	180,000 BTU/hr	Continuous Line	Naturel Gas	174,000 cu. ft	175 cu ft.
2. "	2		"	"	"	"	"	"
3. "	2		"	"	"	"	"	"
4.								

PART 2. OPERATING SCHEDULE:

PART 3. STACK/VENT DATA:

Hrs. per day	Days per week	Wks per yr.	Months in Operation	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above ground (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfn)	Exit velocity (ft/sec)	Does stack have rain cap?
1. 4	5	50	24	1	Vert.	14"	40'				Yes
2. 4	5	50	24	2	"	14"	30'				"
3. 4	5	50	1	3	"	14"	40"		STEAM ESCAPE		"
4.											

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(S) AND VENT(S).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED _____ TITLE _____ DATE _____

DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
 INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-5 LIQUID ORGANIC MATERIAL STORAGE

OFFICIAL USE ONLY				
DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGE

LIQUID ORGANIC MATERIAL STORAGE
(see instructions, page 2)

APPLICATION NUMBER

PART 1. MATERIAL STORAGE DATA

MATERIAL BEING STORED	Annual Thruput (gals)	TYPE OF STORAGE CONTAINER (tank, drum, etc.)	Size of Container (gals)	Number of Identical Containers	Location of Container (Inside or outside of bldg)
1. Resin 828	35,000	Tank	4000	7	6 outside 1 inside
2. Resin (Epoxite 8)	7,000	Drum	55	128	Outside
3.					
4.					

PART 2. STACK/VENT DATA

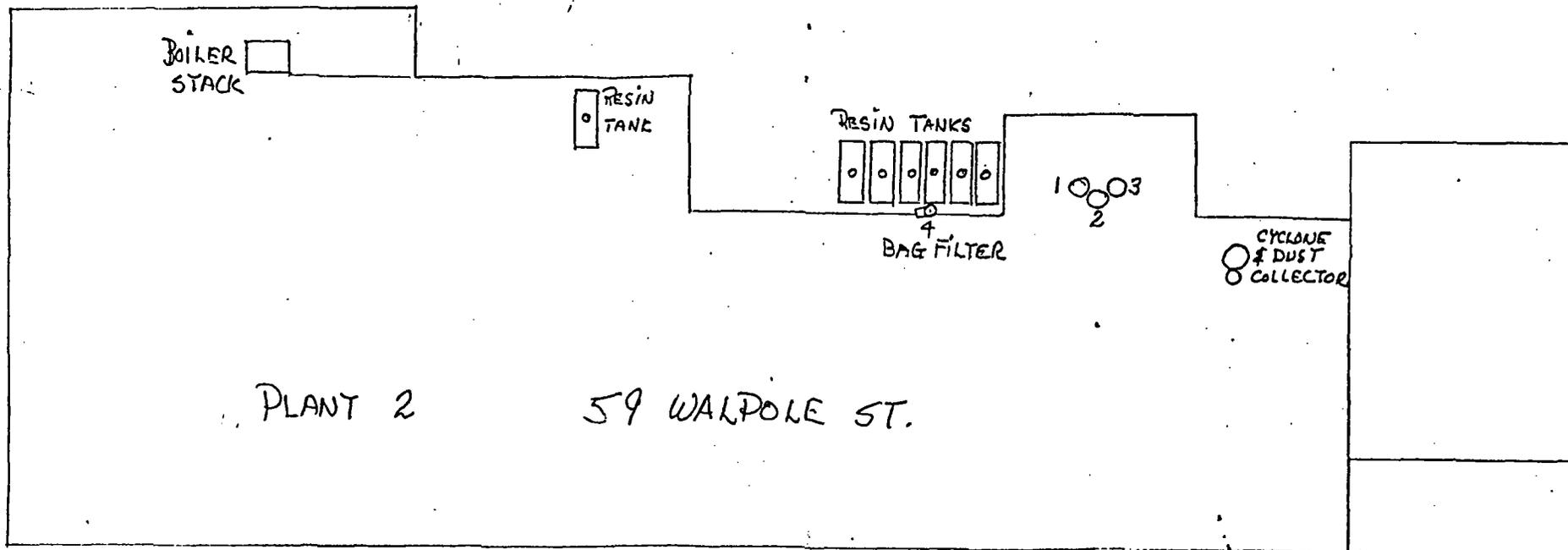
TYPE OF COVER ON CONTAINERS (none, floating roof, closed with vent to atmosphere, closed with vapor recovery system, other (specify)

STACK DATA: If container is served by a vent or if storage area is served by an area ventilation system, answer these items:

	Vent Exit Direction (horizontal-vertical)	Does vent have rain cap?	Height above ground (ft)	Quantity of Gaseous Discharge	EMISSION RATE
1. Closed Vented	Vertical	yes	8'	Unknown	Unknown
2.					
3.					
4.					

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED: _____ TITLE: _____ DATE: _____



DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
 INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-5 LIQUID ORGANIC MATERIAL STORAGE

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGE

LIQUID ORGANIC MATERIAL STORAGE
(see instructions, page 2)

APPLICATION NUMBER

PART 1. MATERIAL STORAGE DATA

MATERIAL BEING STORED	Annual Thruput (gals)	TYPE OF STORAGE CONTAINER (tank, drum, etc.)	Size of Container (gals)	Number of Identical Containers	Location of Container (Inside or outside of bldg)
1. Resin 828	20,000	Tank	4000	4	Inside
2.					
3.					
4.					

PART 2. STACK/VENT DATA

TYPE OF COVER ON CONTAINERS (none, floating roof, closed with vent to atmosphere, closed with vapor recovery system, other (specify))	STACK DATA: If container is served by a vent or if storage area is served by an area ventilation system, answer these items:				
	Vent Exit Direction (horizontal-vertical)	Does vent have rain cap?	Height above ground (ft)	Quantity of Gaseous Discharge	EMISSION RATE
1. Vented	Horizontal	NA	10	Unknown	Inknown
2.					
3.					
4.					

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED: _____ TITLE: _____ DATE: _____

DATE RECEIVED	APPLICATION NUMBER	COORDINATES
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APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
 INFORMATION REQUESTED FOR CALENDAR YEAR 1975

- AP-2 A. Process/Manufacturing Equipment
 B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED
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A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION
NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT			RAW MATERIALS			FINISHED MATERIALS		
		Plant	Bldg	Floor	Type	Max/ Hour	Total/ Year	Type	Max/ Hour	Total/ Year
1. Drying Microballoons	Oven	1	1	Basement	Glass Balloons			Micro Balloons	60 lbs	100,00
2. Mfg. Feed Stock	Spray Dried Ballooning	1	5	1	Sodium silicate boric acid, water	60 gal	3000 gal	Feed stock	185 lbs	75,00
3. Mfg. Glass Balloons	furnace	1	5	1&2 c	Feed Stock			Micro Balloons		350,000

PART 2. OPERATING SCHEDULE PART 3. STACK/VENT DATA

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside di- ameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velo- city (ft/sec)	Does Stack have rain cap?
1. 8	3	52	12	10	Horiz.	6"x6"	10'	450°			NA
2. 8	1	52	12		SEE PART 4 BELOW - ITEM 2						
3. 8	5&3	52	12		"	"	"	"			

PART 4. PROCESS EMISSIONS

PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 10	Flue Gas					
2. NA	Particulates (Glass)	less than 0.1lbs/hr	Baghouse(2)	Torit Div. Donaldson Co.	99.9%	1974
3. NA	"	"	(3)	"	99.9%	1975

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: _____ TITLE: _____ DATE: _____

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Ant./yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1. Drying Oven	1	1	Basement	800,000 BTU/HR	Atmospheric Torch	Natural Gas	1,300,000 cuft	723 cu. ft /
2. Spray Dryer	1	5	1	1,250,000 BTU/HR	" "	" "	476,000 cu.ft	1190 cu ft
3. Ballooning Furnace	1	5	1	310,000 BTU/HR	" "	" "	7,085,700 cu.ft	1770 cu.ft.
4. Ballooning Furnace	1	5	1	310,000 BTU/HR	" "	" "	1,400,000 cu.ft.	1180 cuft

PART 2. OPERATING SCHEDULE:

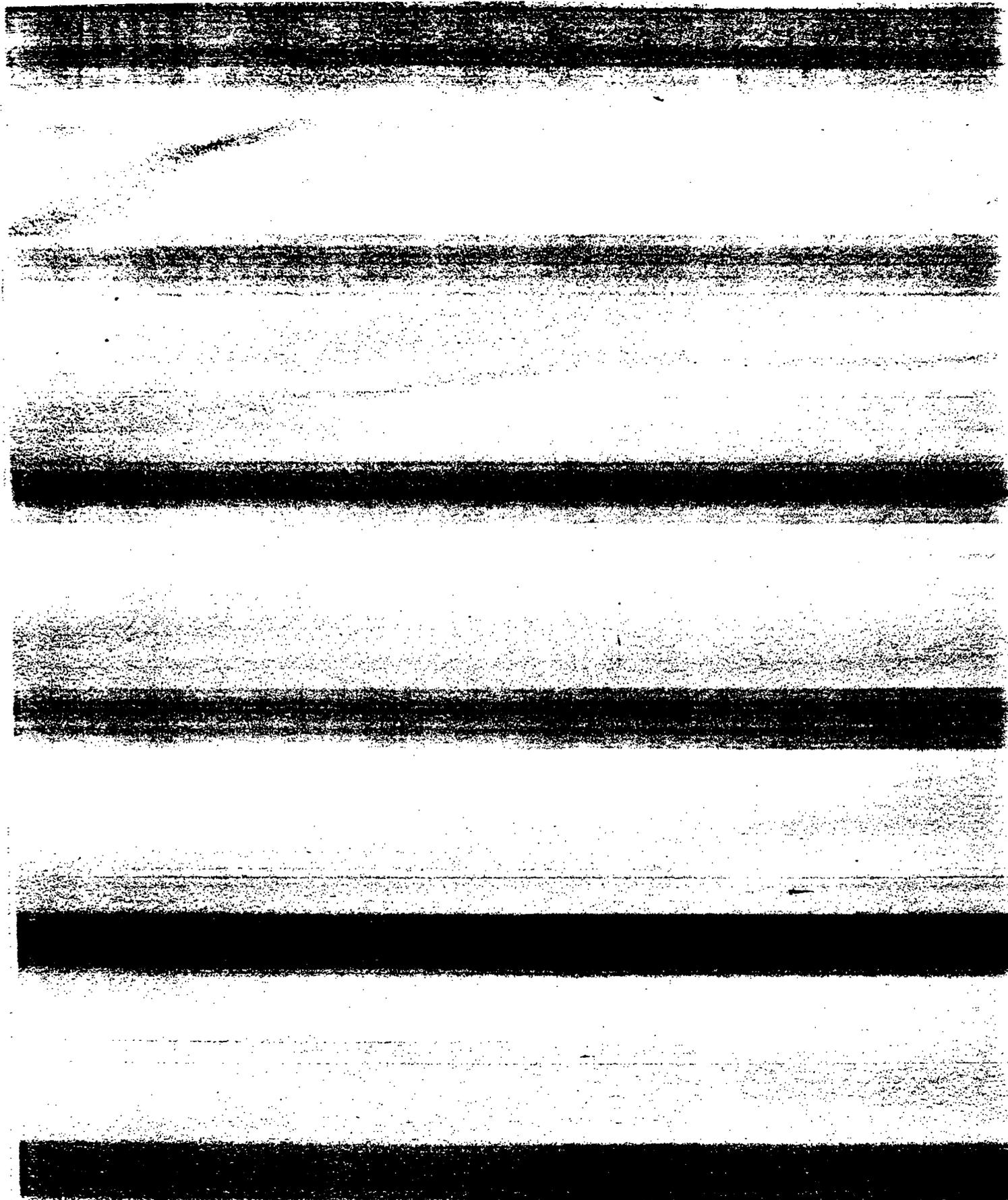
PART 3. STACK/VENT DATA:

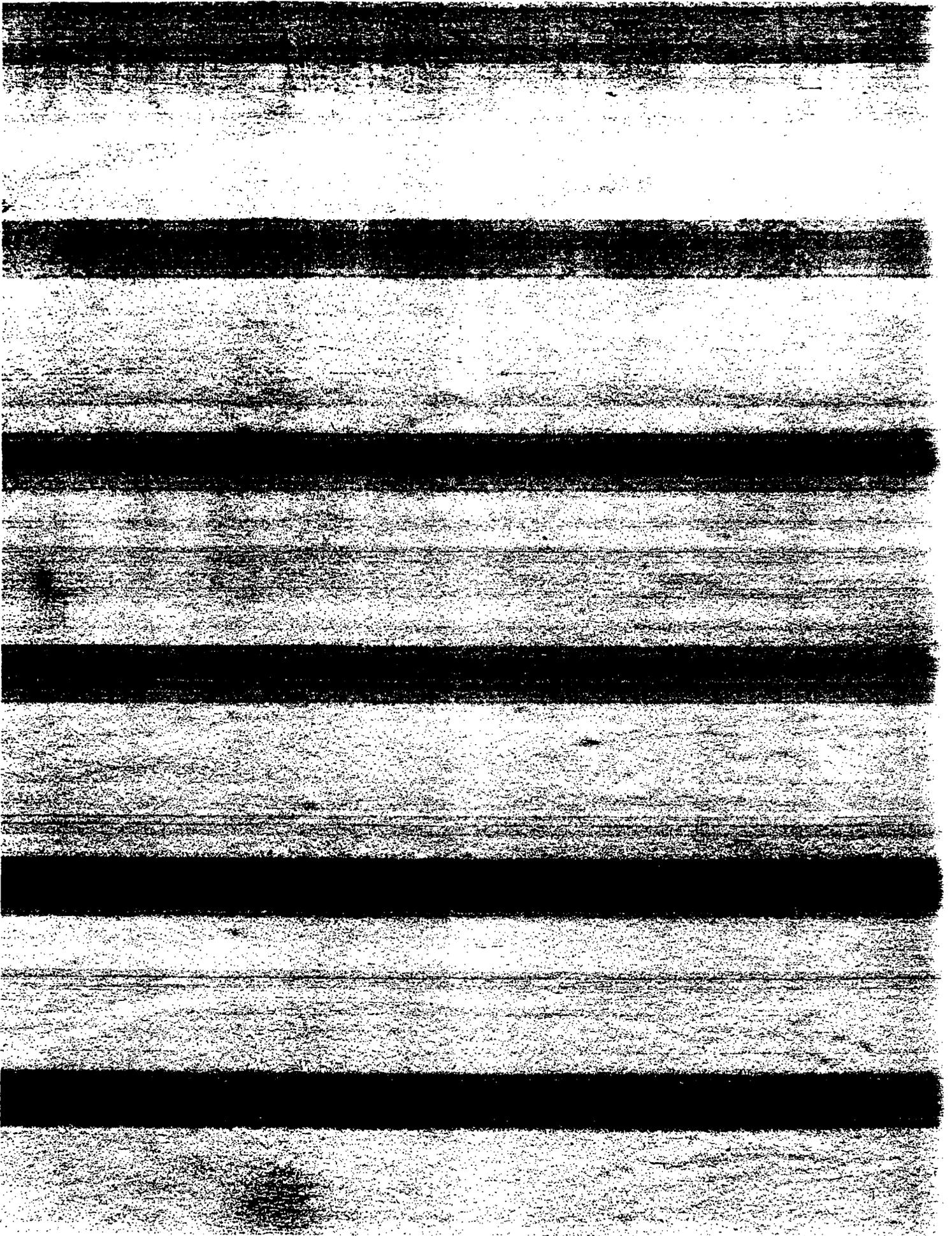
Hrs. per day	Days per week	Wks per yr.	Months in Operation	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above ground (ft)	Exit gas Temp. (OF)	Quantity gaseous discharge (acfn)	Exit velocity (ft/sec)	Does stack have rain cap?
1. 8	3	52	12	10	Horiz.	6" sq.	10'	450 ^{OF}	Unk.		NA
2. 8	1	52	12	NA	Exhausts to Dust Collectors						
3. 8	5	52	12	"	"	"	"	"	"	"	"
4. 8	3	52	12	"	"	"	"	"	"	"	"

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(S) AND VENT(S).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED _____ TITLE _____ DATE _____





DATE RECEIVED	APPLICATION NUMBER	COORDINATES

APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
 INFORMATION REQUESTED FOR CALENDAR YEAR 1975

AP-5 LIQUID ORGANIC MATERIAL STORAGE

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGE

LIQUID ORGANIC MATERIAL STORAGE
(see instructions, page 2)

APPLICATION NUMBER

PART 1. MATERIAL STORAGE DATA

MATERIAL BEING STORED	Annual Thruput (gals)	TYPE OF STORAGE CONTAINER (tank, drum, etc.)	Size of Container (gals)	Number of Identical Containers	Location of Container (Inside or outside of bldg)
1. Resin 828	20,000	Tank	4000	4	Inside
2.					
3.					
4.					

PART 2. STACK/VENT DATA

TYPE OF COVER ON CONTAINERS (none, floating roof, closed with vent to atmosphere, closed with vapor recovery system, other (specify))	STACK DATA: If container is served by a vent or if storage area is served by an area ventilation system, answer these items:				
	Vent Exit Direction (horizontal-vertical)	Does vent have rain cap?	Height above ground (ft)	Quantity of Gaseous Discharge	EMISSION RATE
1. Vented	Horizontal	NA	10	Unknown	Inknown
2.					
3.					
4.					

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED: _____ TITLE: _____ DATE: _____

DATE RECEIVED	APPLICATION NUMBER	COORDINATES
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APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
 INFORMATION REQUESTED FOR CALENDAR YEAR 1975

- AP-2 A. Process/Manufacturing Equipment
- B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED
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A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION
NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT			RAW MATERIALS			FINISHED MATERIALS		
		Plant	Bldg	Floor	Type	Max/ Hour	Total/ Year	Type	Max/ Hour	Total/ Year
1. Drying Microballoons	Oven	1	1	Basement	Glass Balloons			Micro Balloons	60 lbs	100,000
2. Mfg. Feed Stock	Spray Dried Ballooning furnace	1	5	1	Sodium silicate boric acid, water, urea	60 gal	3000 gal	Feed stock	185 lbs	75,000
3. Mfg. Glass Balloons		1	5	1&2 c	Feed Stock			Micro Balloons		350,000#

PART 2. OPERATING SCHEDULE PART 3. STACK/VENT DATA

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside di- ameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velo- city (ft/sec)	Does Stack have rain cap?
1. 8	3	52	12	10	Horiz.	6"x6"	10'	450°			NA
2. 8	1	52	12		SEE PART 4 BELOW - ITEM 2						
3. 8	5&3	52	12		"	"	"	"			

PART 4. PROCESS EMISSIONS

PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 10	Flue Gas					
2. NA	Particulates (Glass)	less than 0.1lbs/hr	Baghouse(2)	Torit Div. Donaldson Co.	99.9%	1974
3. NA	"	"	" (3)	"	99.9%	1975

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: _____ TITLE: _____ DATE: _____

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1. Drying Oven	1	1	Basement	800,000 BTU/HR	Atmospheric Torch	Natural Gas	1,300,000 cuft	723 cu ft
2. Spray Dryer	1	5	1	1,250,000 BTU/HR	" "	" "	476,000 cu.ft	1190 cu ft
(6) Ballooning Furnace	1	5	1	310,000 BTU/HR	" "	" "	7,085,700 cu.ft	1770 cu.ft.
(4) Ballooning Furnace	1	5	1	310,000 BTU/HR	" "	" "	1,400,000 cu.ft.	1180 cuft

PART 2. OPERATING SCHEDULE:

PART 3. STACK/VENT DATA:

Hrs. per day	Days per week	Wks per yr.	Months in Operation	Stack No.	Stack Exit Direction (horiz-vert)	Inside Diameter at top (ft)	Height above ground (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfn)	Exit velocity (ft/sec)	Does stack have rain cap?
1. 8	3	52	12	10	Horiz.	6" sq.	10'	450°F	Unk		NA
2. 8	1	52	12	NA	Exhausts to Dust Collectors						
3. 8	5	52	12	"	" "	" "					
4. 8	3	52	12	"	" "	" "					

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(S) AND VENT(S).

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED _____ TITLE _____ DATE _____

DATE RECEIVED	APPLICATION NUMBER	COORDINATES
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APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
 INFORMATION REQUESTED FOR CALENDAR YEAR 1975

- AP-2 A. Process/Manufacturing Equipment
- B. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED
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A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION
NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT			RAW MATERIALS			FINISHED MATERIALS		
		Plant	Bldg	Floor	Type	Max/ Hour	Total/ Year	Type	Max/ Hour	Total/ Year
1. Blending	Mixer	1		1	Resins, Solvent Catalysts					
2. Blending	Mixer	1		2	Resins, Solvent, Catalysts					
3. Blending	Mixer	1		3	Resins, Solvents, Catalysts					

PART 2. OPERATING SCHEDULE

PART 3. STACK/VENT DATA

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside di- ameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velo- city (ft/sec)	Does Stack have rain cap?
1. 8	5	52	12	4, 5, 6, 8	Horiz	N/A	15-20ft	AMB	Unk	Unk	No (Shuttered fan)
2.											
3. 8	5	52	12	1 & 9	1- Vert 9- Hort.	1	60 ft.	Amb.	Unk.	Unk	Vented Enclosure Shuttered Fan

PART 4. PROCESS EMISSIONS

PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 4, 5 & 6	Organic Vapors/ Hydrocarbons	Unk.	None			
2. 8	Organic Vapors/ Hydrocarbons					
1 & 9	Organic Vapors/ Hydrocarbons	Unk	None			

DECLARATION: I certify that I have examined the information on this page and that to the best of my knowledge,
it is true and complete. SIGNED: J. J. Stager TITLE: Plant Mgr. DATE: 5/15/78

DATE RECEIVED	APPLICATION NUMBER	COORDINATES
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APPLICATION FOR REGISTRATION OF AIR CONTAMINATION SOURCES
 INFORMATION REQUESTED FOR CALENDAR YEAR 1975

- AP-2 A. Process/Manufacturing Equipment
- I. Process Fuel Burning Equipment

OFFICIAL USE ONLY

DATE INSPECTED	INSPECTOR	DATE ACCEPTED	DATE REJECTED	ACKNOWLEDGED
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A. PROCESS/MANUFACTURING EQUIPMENT
(see instructions, page 2 and 3)

APPLICATION
NUMBER

PART 1. EQUIPMENT DATA

Major Steps Involved In Process	Type Equipment Used	LOCATION OF EQUIPMENT			RAW MATERIALS			FINISHED MATERIALS		
		Plant	Bldg	Floor	Type	Max/ Hour	Total/ Year	Type	Max/ Hour	Total/ Year
1. Blending	Mixer	1		1	Resins, Solvent Catalysts					
2. Blending	Mixer	1		2	Resins, Solvent, Catalysts					
3. Blending	Mixer	1		3	Resins, Solvents, Catalysts					

PART 2. OPERATING SCHEDULE **PART 3. STACK/VENT DATA**

Hrs. per day	Days per week	Wks. per yr.	Months in Operation	Stack No.	Stack exit direction (horiz-vert)	Inside di- ameter at top (ft)	Height above ground (ft.)	Gas Temp. (°F)	Quantity Gaseous Discharge (acfm)	Exit Velo- city (ft/sec)	Does Stack have rain cap?
1. 8	5	52	12	4,5, 6,8	Horiz	N/A	15-20ft	AMB	Unk	Unk	No (Shuttered fan)
2.											
3. 8	5	52	12	1 & 9	1- Vert 9- Hort.	1	60 ft.	Amb.	Unk.	Unk	Vented Enclosure Shuttered Fan

PART 4. PROCESS EMISSIONS

PART 5. EMISSION CONTROL SYSTEM, IF APPLICABLE

Stack Number	Type of Contaminant (s) Emitted	Amount Emitted Ton/yr.	Type	Manufacturer	Percent Efficiency	Date of Installation
1. 4, 5 & 6	Organic Vapors/ Hydrocarbons	Unk.	None			
2. 8	Organic Vapors/ Hydrocarbons					
3. 1 & 9	Organic Vapors/ Hydrocarbons	Unk	None			

CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete. SIGNED: _____ TITLE: _____ DATE: _____

B. PROCESS FUEL BURNING EQUIPMENT
(see instructions, page 5)

PART 1. EQUIPMENT DATA:

Type Equipment Used	LOCATION OF EQUIPMENT			Size of Unit (Indicate Btu/ hour or hsp)	BURNER Type (s) (rot. cup, gun, etc)	FUEL DATA		
	Plant	Bldg	Floor			Type Fuel	Amt/yr. (barrels, gals, tons, cu.ft.)	Maximum Hourly Fuel Rate
1.								
2.								
3.								
4.								

PART 2. OPERATING SCHEDULE:

PART 3. STACK/VENT DATA:

Hrs. per day	Days per week	Wks per yr.	Months in Operation	Stack No.	Stack Exit Direction (horiz-vert)	Inside Di- ameter at top (ft)	Height above ground (ft)	Exit gas Temp. (°F)	Quantity gaseous discharge (acfn)	Exit velo- city (ft/ sec)	Does stack have rain cap?
1.											
2.											
3.											
4.											

PART 4. PROVIDE A ROOF PLAN SHOWING LOCATION OF STACK(S) AND VENT(S).

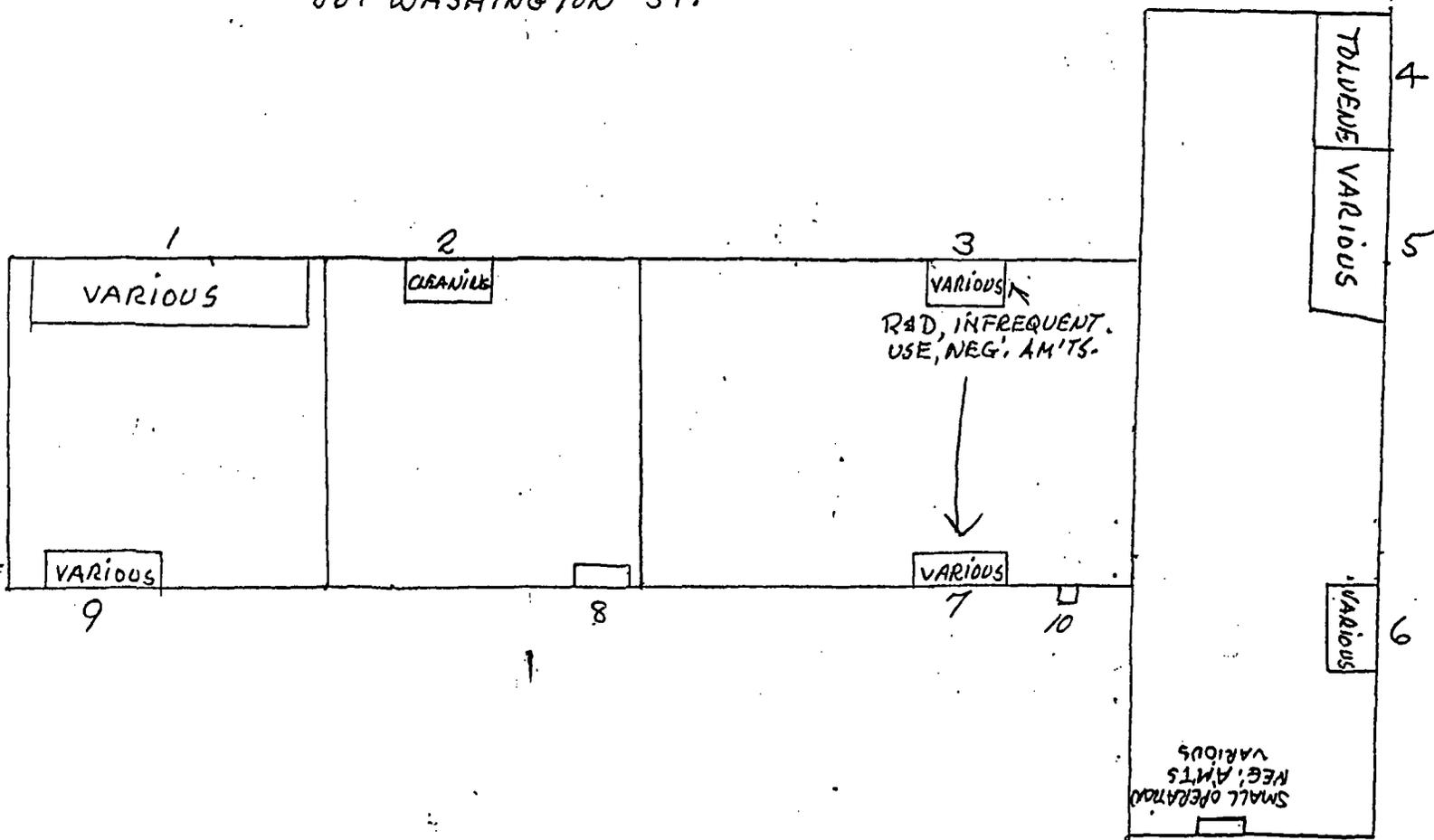
CERTIFICATION: I certify that I have examined the information on this page and that to the best of my knowledge, it is true and complete.

SIGNED _____

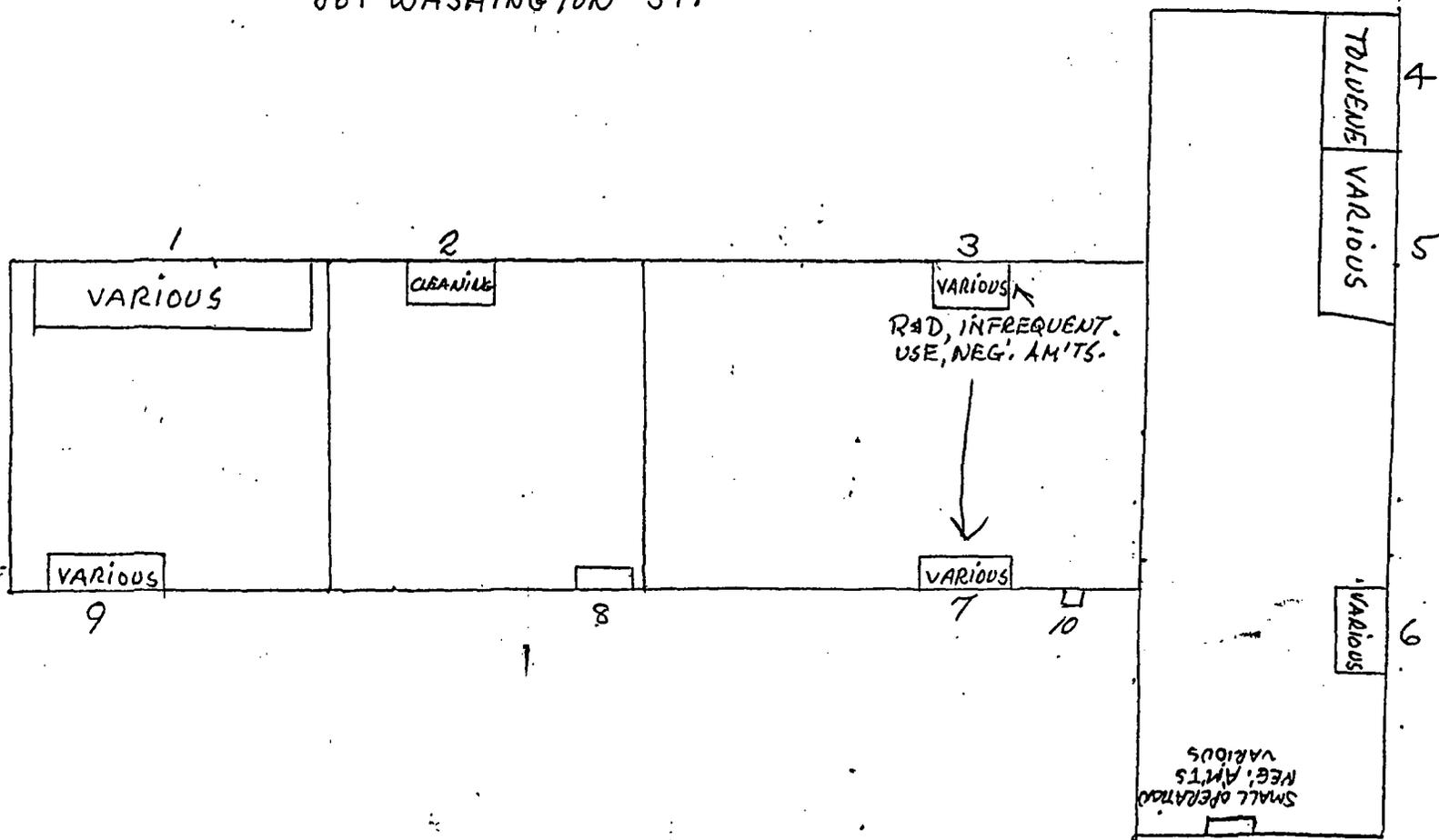
TITLE _____

DATE _____

869 WASHINGTON ST.



869 WASHINGTON ST.



MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Stycast CPC 19 Part "A"
CHEMICAL FAMILY	FORMULA	
Urethane-Polyether Based	Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Available Aliphatic	4.75				
Isocyanate content HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	Not Known	SPECIFIC GRAVITY (H ₂ O=1)	1.03
VAPOR PRESSURE (mm Hg.)	N. A.	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	N. A.	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Insol		
APPEARANCE AND ODOR			
Honey-colored liquid. Pungent odor. May irritate eyes and nose			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
>550°F (O.C.)			
EXTINGUISHING MEDIA			
Standard types			
SPECIAL FIRE FIGHTING PROCEDURES			
None			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE Diisocyanate TLV = 0.02 ppm		
	EFFECTS OF OVEREXPOSURE May cause irritation to skin, eyes and respiratory tract due to traces of diisocyanate		
	EMERGENCY AND FIRST AID PROCEDURES Wash skin with soap and water for 5 minutes, then wash again with tincture of green soap. Wash eyes in running water. For inhalation - get fresh air and contact physician.		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	Moisture - Store in closed container in cool dry place
		X	
	INCOMPATABILITY (Materials to avoid) Moisture, strong oxidizers, alcohols, amines		
HAZARDOUS DECOMPOSITION PRODUCTS Misc. fumes of nitrogen and hydrogen. Should be considered toxic.			
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	
		X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Scrape up immediately and discard into vented can.		
	WASTE DISPOSAL METHOD Burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Have respirators available should ventilation system fail		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES		EYE PROTECTION
	Yes		Safety Glasses
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid contact with skin and eyes. Store in closed container in cool dry place		
	OTHER PRECAUTIONS Use vented oven during heat cure		

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 2741 LV
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION, STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	Trace		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.4
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Black Viscous Liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	± 465° F (Tag open cup)			
	EXTINGUISHING MEDIA			
	Foam, CO ₂ , Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES				
None - Avoid Breathing Smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Mildly Irritating to Skin with Extended contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">Wash with soap and water</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) <p style="text-align: center;">Strong oxidizing agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">Carbon Monoxide, Aldehydes, Acids</p>		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <p style="text-align: center;">Clean with a solvent; then with soap and water</p>		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled Burning or Burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) <p style="text-align: center;">Not ordinarily required</p>		
	VENTILATION	LOCAL EXHAUST <p style="text-align: center;">Only if heated</p>	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES <p style="text-align: center;">Rubber Gloves</p>		EYE PROTECTION <p style="text-align: center;">Goggles</p>
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store in a cool place in closed containers</p>		
	OTHER PRECAUTIONS <p style="text-align: center;">Carry out fumes when heat curing in vented ovens</p>		

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Stycast 2741
	CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	Trace		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Mineral Filler			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.4
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Black Viscous Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) ± 465° F (Tag open cup)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO₂, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None - Avoid Breathing Smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Mildly Irritating to Skin with Extended contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">Wash with soap and water</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) <p style="text-align: center;">Strong oxidizing agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">Carbon Monoxide, Aldehydes, Acids</p>		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Clean with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled Burning or Burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) <p style="text-align: center;">Not ordinarily required</p>		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Only if heated	
		MECHANICAL (General)	OTHER
PROTECTIVE GLOVES <p style="text-align: center;">Rubber Gloves</p>		EYE PROTECTION <p style="text-align: center;">Goggles</p>	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store in a cool place in closed containers</p>		
	OTHER PRECAUTIONS <p style="text-align: center;">Carry out fumes when heat curing in vented ovens</p>		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma, 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
	Aliphatic Amine		Eccocoat LN1853 (Part B)
CHEMICAL FAMILY		FORMULA	
Aliphatic Amine		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	Modified Aliphatic Amine catalyst			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	1.09
	VAPOR PRESSURE (mm Hg.)	(at 100° C) < 1	PERCENT VOLATILE BY VOLUME (%)	Nil
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (Butylac = 1)	< 1
	SOLUBILITY IN WATER	Appreciable		
	APPEARANCE AND ODOR			
Clear to pale amber liquid with ammonia odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	(COC) 220° F			
	EXTINGUISHING MEDIA			
	Water, Foam, CO ₂ Dry chemicals			
SPECIAL FIRE FIGHTING PROCEDURES				
None				
UNUSUAL FIRE AND EXPLOSION HAZARDS				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Inhalation may cause hazy vision and irritation of nose and throat. This material can cause severe injury to skin and eye tissues.		
	EMERGENCY AND FIRST AID PROCEDURES Excessive inhalation - Remove to fresh air. In case of skin or eye contact: Flush with plenty of water. For eyes flush for 15 minutes. Get medical attention.		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Acids		
	HAZARDOUS DECOMPOSITION PRODUCTS NH ₃ , CO, CO ₂ , by thermal decomposition		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Flush with plenty of water		
	WASTE DISPOSAL METHOD Controlled burning		
	RESPIRATORY PROTECTION (Specify type)		
SECTION VIII - SPECIAL PROTECTION INFORMATION	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General) Acceptable	OTHER
	PROTECTIVE GLOVES Rubber	EYE PROTECTION Splash-proof Goggles	
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing at other than room temp. in vented oven		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson and Cuming, Inc.		EMERGENCY PHONE NO. 829-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington Street, Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccocoat TF-11Part A
	CHEMICAL FAMILY Epoxy resin	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	Trace		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS	60-80	200	FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS	Epoxy resin 20-40					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	± 80 C	SPECIFIC GRAVITY (H ₂ O=1)	± 1.0
	VAPOR PRESSURE (mm Hg.)	71	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)	2.4	EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Red-amber colored liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	22 F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT 1.8%	UPPER EXPLOSIVE LIMIT 11.5%
	EXTINGUISHING MEDIA	CO ₂ , dry chemicals, carbon tetrachloride			
	SPECIAL FIRE FIGHTING PROCEDURES	Handle as a flammable liquid - avoid inhalation of smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	Explosion hazard - moderate when exposed to flame			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE			± 200
	EFFECTS OF OVEREXPOSURE			
	mildly irritating to skin and eyes.			
	narcosis effect if sufficient amount is inhaled			
SECTION VI REACTIVITY DATA	STABILITY		UNSTABLE	CONDITIONS TO AVOID
			STABLE	X sparks and open flames
	INCOMPATIBILITY (Materials to avoid)			
	strong oxidizing agents			
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS DECOMPOSITION PRODUCTS			
	acids aldehydes, etc,			
	HAZARDOUS POLYMERIZATION		MAY OCCUR	CONDITIONS TO AVOID
			WILL NOT OCCUR	X
SECTION VIII - SPECIAL PROTECTION INFORMATION	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
	Clean with a solvent; then wash with water			
	WASTE DISPOSAL METHOD			
	Controlled burning or burial			
SECTION IX SPECIAL PRECAUTIONS	RESPIRATORY PROTECTION (Specify type)			
	canister mask			
	VENTILATION	LOCAL EXHAUST	SPECIAL	
		MECHANICAL (General)	OTHER	
PROTECTIVE GLOVES		rubber gloves	EYE PROTECTION	goggles
OTHER PROTECTIVE EQUIPMENT				
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING				
Store away from sparks and open flame-as a flammable liquid				
OTHER PRECAUTIONS				

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson and Cuming, Inc		EMERGENCY PHONE NO. 929-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington Street, Canton, Mass. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccocoat TF-11 Part B
CHEMICAL FAMILY Anhydride	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS anhydride	trace		BASE METAL		
CATALYST	20-40		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS	60-80		FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	± 100 C	SPECIFIC GRAVITY (H ₂ O=1)	± 1.0
VAPOR PRESSURE (mm Hg.)	71	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	2.4	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR red liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	22 F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT 1.3%	UPPER EXPLOSIVE LIMIT 11.5%
EXTINGUISHING MEDIA CO₂, dry chemicals, carbon tetrachloride				
SPECIAL FIRE FIGHTING PROCEDURES Handle as a flammable liquid - avoid inhalation of smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS Explosion hazard - moderate when exposed to flame				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE \pm 200		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes		
	Narcosis effect if sufficient amount is inhaled		
	EMERGENCY AND FIRST AID PROCEDURES Skin - wash with soap and water		
	Eyes - wash with water		
Remove to fresh air after breathing vapors - call M.D.			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X sparks and open flames
	INCOMPATIBILITY (Materials to avoid) strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS acids, aldehydes, etc.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) canister mask		
	VENTILATION	LOCAL EXHAUST yes	SPECIAL
		MECHANICAL (General) as required to maintain TLV	
	PROTECTIVE GLOVES rubber gloves	EYE PROTECTION goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store away from sparks and open flame - as a flammable liquid		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R033a

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
	Neoprene		Eccocoat 909C
CHEMICAL FAMILY		FORMULA	
Neoprene		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Aliphatic petroleum distillate					23	200* ppm
	Hexane					23	100**ppm
Methyl ethyl ketone					10	200 ppm	
Toluene					2	100 ppm	
Acetone					17	1,000 ppm	

SECTION III PHYSICAL DATA	BOILING POINT (°F.) IBP (Pct. Dist.)	140	SPECIFIC GRAVITY (H ₂ O=1)	0.83
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY WEIGHT (%)	75
	VAPOR DENSITY (AIR=1)	> 1	EVAPORATION RATE (_____ = 1)	Slower
	SOLUBILITY IN WATER	V Slight		
	APPEARANCE AND ODOR			
Thin red syrup - ketone odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	< 0° F (C. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
				1.0	7.0
	EXTINGUISHING MEDIA	CO ₂ Foam, dry chemical			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE See Section II		
	EFFECTS OF OVEREXPOSURE Irritating to eyes. May defat skin upon prolonged exposure. Vapors may be irritating to the upper respiratory system		
	EMERGENCY AND FIRST AID PROCEDURES Eye Contact: Immediately flush eyes with plenty of water. Obtain medical attention. Skin Contact: Wash with soap and water.		
	Inhalation: Provide fresh air. Ingestion: Do not induce vomiting. Call physician		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Collect spilled material and store in closed metal container		
	WASTE DISPOSAL METHOD Incinerate properly. Do not landfill.		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES PVA Gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid all sources of ignition. Use only in areas adequately ventilated to prevent vapor buildup. Avoid eye contact. Avoid prolonged breathing of vapor and prolonged or repeated skin contact. Keep container closed.		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Epoxy Resin		Eccocoat 582 (Part A)	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS	Hydrocarbon and Ketone	2.5-5	200	FILLER METAL PLUS COATING OR CORE FLUX		
	ADDITIVES	Mineral Filler	2.5-5	200	OTHERS		
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Solvent						

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	200	SPECIFIC GRAVITY (H ₂ O=1)	cured coat 2.3
	VAPOR PRESSURE (mm Hg.)	54	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)	2.78	EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Black Liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	31°F (CC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
				1.54	9.3
	EXTINGUISHING MEDIA				
	CO ₂ , Dry Chemicals, Carbon Tetrachloride				
SPECIAL FIRE FIGHTING PROCEDURES					
None - Treat as a Flammable Liquid					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE (Solvent) 200 PPM		
	EFFECTS OF OVEREXPOSURE Slightly Irritating to skin with prolonged contact. Overexposure to vapors of solvent could cause headaches, dizziness, nausea		
	EMERGENCY AND FIRST AID PROCEDURES Skin contact- wash with soap and water, When inhaled, remove to fresh air. If symptoms continue, obtain medical aid		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, Acids, Aldehydes, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Avoid breathing vapors; Avoid ignition sources; Dam and absorb on inert materials such as sand; place in containers		
	WASTE DISPOSAL METHOD Controlled burning		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Self-contained breathing mask if exposed to fumes		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Adequate to keep below TLV & LEL	
		MECHANICAL (General)	OTHER
SECTION IX SPECIAL PRECAUTIONS	PROTECTIVE GLOVES	EYE PROTECTION	
	Impervious Gloves	Splash Goggles	
	OTHER PROTECTIVE EQUIPMENT Use hood when mixing and while curing at room temp.		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep in closed containers away from heat, sparks, open flames; store below 80° F when curing at elevated temps. Use vented oven		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
	Modified aliphatic amine		Eccocoat 582 (Part B)
CHEMICAL FAMILY		FORMULA	
Modified aliphatic amine		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST	100		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	± 240°	SPECIFIC GRAVITY (H ₂ O=1)	1.00-1.03
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Mobile liquid - pink to amber			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	± 250°F (COG)			
	EXTINGUISHING MEDIA Foam, CO ₂ , dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES No special procedures - avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID heating to decomposition
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS toxic fumes of nitrogen oxides		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED wash with soap and water		
	WASTE DISPOSAL METHOD controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General) only if heated	
	PROTECTIVE GLOVES	rubber gloves	EYE PROTECTION goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING store at room temperature in closed containers		
	OTHER PRECAUTIONS carry out fumes by means of oven vents, if oven curing		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington, Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Eccocoat SEC
CHEMICAL FAMILY	FORMULA	
Latex	Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Water			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Carbon			OTHERS		
OTHERS Latex					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR Black Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA				
SPECIAL FIRE FIGHTING PROCEDURES				
UNUSUAL FIRE AND EXPLOSION HAZARDS				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Not considered a hazardous material.		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and Water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wash with soap and water		
	WASTE DISPOSAL METHOD Burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Gloves	EYE PROTECTION Goggles
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Diglycidyl ether or Bisphenol A		Eccocoat EP-3 (Part A)	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS	Epoxy resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	> 580	SPECIFIC GRAVITY (H ₂ O=1)	1.16
	VAPOR PRESSURE (mm Hg.) 87°F	6	PERCENT VOLATILE BY VOLUME (%)	.3%
	VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____ = 1)	None
	SOLUBILITY IN WATER	INS.		
	APPEARANCE AND ODOR			
Clear liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	235°C TCC			
	EXTINGUISHING MEDIA			
	CO ₂ , dry chemicals, Foam			
	SPECIAL FIRE FIGHTING PROCEDURES			
None				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mild skin and eye irritant - skin sensitizer		
	EMERGENCY AND FIRST AID PROCEDURES Skin contact-wash with soap and water Eyes-flush with plenty of water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>)		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, CO ₂ , Aldehydes and other organics		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with solvent; then wash with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Safety Glasses
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid skin and eye contact		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Eccocoat EP-3 (Part B)
CHEMICAL FAMILY		FORMULA
Aliphatic Amine		Proprietary
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS Aromatic Hydrocarbon			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Aliphatic Amine					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)
Solvent				Solvent	

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	210	SPECIFIC GRAVITY (H ₂ O=1)	0.97
VAPOR PRESSURE (mm Hg.)	21	PERCENT VOLATILE BY VOLUME (%)	60
VAPOR DENSITY (AIR=1)	3.1	EVAPORATION RATE (Bu Ac = 1)	1.9
SOLUBILITY IN WATER	Neg.		
APPEARANCE AND ODOR			
Clear liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	38°F (TOC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
			1.2	7.1
EXTINGUISHING MEDIA				
Foam, CO ₂ , Dry chemicals				
SPECIAL FIRE FIGHTING PROCEDURES				
Wear goggles and a self-contained breathing apparatus when exposed to fumes, vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE Not established		
	EFFECTS OF OVEREXPOSURE Solvent-Narcosis, Headache, Nausea, irritation of skin and mucous membranes. Possible eye burns due to slovent		
	EMERGENCY AND FIRST AID PROCEDURES Inhalation-Remove to fresh air - Use oxygen if indicated. Contact- Skin and eyes - Flush with water for 15 minutes, wash skin with soap and water. Call Physician		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS Nitric oxide fumes		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Avoid ignition sources; avoid breathing vapors, dry and absorb spills on inert material such as sand; place in containers.		
	WASTE DISPOSAL METHOD Landfill, According to Federal, State, and local regulations		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Self-contained breathing apparatus if exposed to fumes.		
	VENTILATION	LOCAL EXHAUST Adequate to keep below TLV and LEL	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Impervious Gloves	EYE PROTECTION Splash Goggles
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep between 50°F and 100°F in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-20338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccocoat RTU (Part A)
CHEMICAL FAMILY Urethane Polymer	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Available Isocyanate Content	4.75		OTHERS		
OTHERS Urethane Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	1.03
VAPOR PRESSURE (mm Hg.)	N. A.	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	N. A.	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Insol.		
APPEARANCE AND ODOR Pale Amber Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) T. O. C. > 550° F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, CO₂, Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE of Diisocyanate = 0.02 ppm		
	EFFECTS OF OVEREXPOSURE Irritation of skin, eyes, respiratory tract		
	EMERGENCY AND FIRST AID PROCEDURES Skin- Wash with soap and water for 5 minutes; then wash again with tinct. of green soap. Wash eyes in running water. For inhalation - remove to fresh air and contact physician.		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Moisture
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Moisture, strong oxidizers, alcohols, amines		
	HAZARDOUS DECOMPOSITION PRODUCTS Misc. fumes of nitrogen and hydrogen - toxic		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Scrape up and discard into vented can		
	WASTE DISPOSAL METHOD Bury		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Have respirators available should ventilation system fail		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Safety Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in closed container in cool, dry place		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccocoat RTU (Part B)
	CHEMICAL FAMILY Tertiary Amine		FORMULA Proprietary
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Tertiary Amine	1-5		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS Hydrocarbon	95-98		FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Solvent						

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	230	SPECIFIC GRAVITY (H ₂ O=1)	0.866
	VAPOR PRESSURE (mm Hg.)	36.7 (30°C)	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)	3.14	EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Pale Amber Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	40° F (CC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT 1.27	UPPER EXPLOSIVE LIMIT 7
	EXTINGUISHING MEDIA Foam, CO₂, Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES Treat as a flammable liquid				
	UNUSUAL FIRE AND EXPLOSION HAZARDS				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE Solvent 100 ppm on skin; 200 ppm - inhalation		
	EFFECTS OF OVEREXPOSURE May cause impairment of coordination and reaction time, headache or nausea		
	EMERGENCY AND FIRST AID PROCEDURES Remove to fresh air		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
			Keep away from heat or flames
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Oxidizing materials		
HAZARDOUS DECOMPOSITION PRODUCTS			
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Blot with rags or sawdust and dispose of in closed containers		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	To maintain TLV		
PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep in closed containers in a cool place away from heat or flames.		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccocoat 341	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)		
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS Ketone		200 ppm	FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Silver Mineral			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Solvent						Solvent

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	80° C	SPECIFIC GRAVITY (H ₂ O=1)	0.81
	VAPOR PRESSURE (mm Hg.)	71.2 mm	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)	2.41	EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Metallic Gray Liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Melt and used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT	
	22° F (T.O.C.)		1.8%	11.5%	
	EXTINGUISHING MEDIA				
	CO ₂ Dry Chemicals, Foam				
	SPECIAL FIRE FIGHTING PROCEDURES				
None					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE Solvent 200 ppm		
	EFFECTS OF OVEREXPOSURE Irritation - Nose, Throat, Eyes, Headache, Nausea		
	EMERGENCY AND FIRST AID PROCEDURES Remove to fresh air and call physician. Flush skin and eye contact with water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO₂ Aldehydes, acids, etc.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Eliminate all sources of ignition; Flush with water		
	WASTE DISPOSAL METHOD Controlled Burning		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Canister Mask		
	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Face Shield or Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep in closed containers away from heat, sparks, flames, use with adequate ventilation.		
	OTHER PRECAUTIONS Prolonged breathing of vapors, avoid contact with eyes. Avoid prolonged contact with skin		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccospheres EP 1500
	CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	0.32
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Cured Hollow Epoxy Spheres - 0.25" To 0.50" Diam.			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA CO₂ Foam, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	This is not a Hazardous Material		
	EFFECTS OF OVEREXPOSURE		
	EMERGENCY AND FIRST AID PROCEDURES		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	WASTE DISPOSAL METHOD		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES		EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	OTHER PRECAUTIONS		

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	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
	Epoxy Resin		Eccospheres EP
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Cured Hollow epoxy Spheres				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA			
	CO ₂ , Foam, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES			
None				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	EFFECTS OF OVEREXPOSURE		
	This is not a Hazardous material		
	EMERGENCY AND FIRST AID PROCEDURES		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (<i>Materials to avoid</i>)		
	HAZARDOUS DECOMPOSITION PRODUCTS		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VIII - SPECIAL PROTECTION INFORMATION	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	WASTE DISPOSAL METHOD		
	RESPIRATORY PROTECTION (<i>Specify type</i>)		
SECTION IX SPECIAL PRECAUTIONS	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES		EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
OTHER PRECAUTIONS			

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SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Eccospheres
CHEMICAL FAMILY	FORMULA	
Glass	Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER		
APPEARANCE AND ODOR		
White - Very Fine Free-Flowing Powder		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE		
	EMERGENCY AND FIRST AID PROCEDURES If any particles should get in the eyes, have them removed by a <u>physician</u>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Vacuum or sweep up		
	WASTE DISPOSAL METHOD		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Dust Mask		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	EYE PROTECTION Safety Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep Dry		
	OTHER PRECAUTIONS		

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	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Eccospheres IG101
CHEMICAL FAMILY		FORMULA	
Glass		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
White-very fine free-flowing powder				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA			
	SPECIAL FIRE FIGHTING PROCEDURES			
	UNUSUAL FIRE AND EXPLOSION HAZARDS			

DD

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE		
	EMERGENCY AND FIRST AID PROCEDURES If any particles should get in the eyes, have them removed by a physician		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Vacuum or sweep up		
	WASTE DISPOSAL METHOD		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Dust mask		
	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	EYE PROTECTION Safety goggles	
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep dry		
	OTHER PRECAUTIONS		

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	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Eccospheres VT
CHEMICAL FAMILY		FORMULA	
Glass		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR White - Very Fine Free-Flowing Powder			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA			
	SPECIAL FIRE FIGHTING PROCEDURES			
	UNUSUAL FIRE AND EXPLOSION HAZARDS			

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES
 If any particles should get in the eyes, have them removed by a
physician

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 Vacuum or sweep up

WASTE DISPOSAL METHOD

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Dust Mask		
VENTILATION	LOCAL EXHAUST Yes	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES		EYE PROTECTION Safety Goggles
OTHER PROTECTIVE EQUIPMENT		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
 Keep Dry

OTHER PRECAUTIONS

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	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Eccospheres FTD-202	
CHEMICAL FAMILY		FORMULA	
Glass		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR White - Very Fine Free-Flowing Powder			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA			
	SPECIAL FIRE FIGHTING PROCEDURES			
	UNUSUAL FIRE AND EXPLOSION HAZARDS			

**SECTION V
HEALTH HAZARD DATA**

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES
 If any particles should get in the eyes, have them removed by a
physician

**SECTION VI
REACTIVITY DATA**

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

**SECTION VII
SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 Vacuum or sweep up

WASTE DISPOSAL METHOD

**SECTION VIII - SPECIAL
PROTECTION INFORMATION**

RESPIRATORY PROTECTION (Specify type) Dust Mask		
VENTILATION	LOCAL EXHAUST Yes	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES		EYE PROTECTION Safety Goggles
OTHER PROTECTIVE EQUIPMENT		

**SECTION IX
SPECIAL
PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
 Keep Dry

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Catalyst 9
CHEMICAL FAMILY		FORMULA	
Modified Aliphatic Amine		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST mod. aliphatic amine	100		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	> 330°C	SPECIFIC GRAVITY (H ₂ O=1)	< 1.0
	VAPOR PRESSURE (mm Hg.)	.01	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Viscous liquid (pink to amber)		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	T. O. C. 325°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ , dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Irritating to skin		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to decomposition
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic fumes of nitrogen oxides		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wash with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	X
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in unopened containers below 80°F		
	OTHER PRECAUTIONS		

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Emerson & Cuming, Inc.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.				
	Emerson & Cuming, Inc.		828-3300				
	ADDRESS (Number, Street, City, State, and ZIP Code)						
	869 Washington St., Canton, Mass. 02021						
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS				
			Catalyst 11				
	CHEMICAL FAMILY		FORMULA				
Modified Aromatic Amine		Proprietary					
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)				
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL							
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____							
SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST	mod. aromatic amine	100	ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
SECTION III PHYSICAL DATA	BOILING POINT (°F.)	274°F		SPECIFIC GRAVITY (H ₂ O=1)	1.12		
	VAPOR PRESSURE (mm Hg.)			PERCENT VOLATILE BY VOLUME (%)			
	VAPOR DENSITY (AIR = 1)			EVAPORATION RATE (_____ = 1)			
	SOLUBILITY IN WATER						
	APPEARANCE AND ODOR	light tan to dark brown liquid					
SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	280°F (C.O.C.)		FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT	
	EXTINGUISHING MEDIA	Foam, CO ₂ , dry chemicals					
	SPECIAL FIRE FIGHTING PROCEDURES	None					
	UNUSUAL FIRE AND EXPLOSION HAZARDS						

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SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Irritating to skin. Also, it is a powerful dye - avoid contact with skin, clothes, etc		
	EMERGENCY AND FIRST AID PROCEDURES Wash		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to decomposition
		STABLE	X
	INCOMPATABILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS toxic fumes of oxides of nitrogen		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	X
WILL NOT OCCUR			
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wash		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>)		
	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in unopened containers below 80°F		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Cyclic-Primary Amine		Catalyst 11M	
CHEMICAL FAMILY		FORMULA		
Cyclic-Primary Amine		Prop ietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	Cyclic-Primary amine	100					
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	263°C	SPECIFIC GRAVITY (H ₂ O=1)	0.91
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Mobile Liquid, Yellow Amber		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	482F TOC	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Irritating to skin</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">Wash (with soap and water)</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID <p style="text-align: center;">Heating to decomposition</p>
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) <p style="text-align: center;">Strong oxidizing agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">Toxic fumes of nitrogen oxides</p>		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <p style="text-align: center;">Wash with soap and water</p>		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled burning or burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST <p style="text-align: center;">X</p>	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES <p style="text-align: center;">Rubber gloves</p>		EYE PROTECTION <p style="text-align: center;">Goggles</p>
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store in unopened containers below 80°F</p>		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Acid anhydride		Catalyst 14	
	CHEMICAL FAMILY		FORMULA	
Acid anhydride				
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST <u>Acid anhydride</u>			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	± 570	SPECIFIC GRAVITY (H ₂ O=1)	1.5
	VAPOR PRESSURE (mm Hg.)	1	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)	5.1	EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	White powder		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	305° F (COC)	FLAMMABLE LIMITS	1.7	UPPER EXPLOSIVE LIMIT	10.4
	EXTINGUISHING MEDIA	CO ₂ Foam, Dry chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES	None				
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Irritating to skin and eyes after extended contact. When inhaled-vapors irritating to mucous membranes		
	EMERGENCY AND FIRST AID PROCEDURES Skin-wash with soap and water. Eyes- wash with water. When inhaled- remove to fresh air.		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Acids, Aldehydes, etc.		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Sweep up		
	WASTE DISPOSAL METHOD controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Canister mask		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in closed containers at room temperature		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0330

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Mass. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Polyamide		Catalyst 15 Clear	
CHEMICAL FAMILY		FORMULA		
Polyamide		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Polyamide			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	.91
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Clear syrup				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	354°F T. O. C.			
	EXTINGUISHING MEDIA			
	Foam, CO ₂ , dry chemicals			
SPECIAL FIRE FIGHTING PROCEDURES				
None - Avoid Breathing smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Skin - wash with soap and water Eyes - wash with water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic fumes of nitrogen oxides		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Yes	
		MECHANICAL (<i>General</i>)	OTHER
PROTECTIVE GLOVES		EYE PROTECTION	
Rubber Gloves		Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in unopened containers below 80° F		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Mass. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Polyamide		Catalyst 15LV	
CHEMICAL FAMILY		FORMULA		
Polyamide		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	Trace		BASE METAL			
	CATALYST	Polyamide		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	.97
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (= 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Black syrup (like light oil)			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	354° F T. O. C.			
	EXTINGUISHING MEDIA Foam, CO ₂ , Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None - Avoid Breathing Smoke			
UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Skin - Wash with soap and Water Eyes - Wash with Water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic Fumes of Nitrogen Oxides		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST Only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Safety Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in unopened containers		
	OTHER PRECAUTIONS		

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SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Skin - Wash with soap and Water Eyes - Wash with Water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic Fumes of Nitrogen Oxides		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Safety Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in unopened containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson and Cuming, Inc.		EMERGENCY PHONE NO. 828-3390
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington Street, Canton, Mass. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Catalyst 17
CHEMICAL FAMILY Modified anhydride	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
mod. CATALYST anhydride	100		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	240 C	SPECIFIC GRAVITY (H ₂ O=1)	1.3-1.5
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR Blue-gray slurry at 65 C			

SECTION IV
EXPOSURE HAZARD DATA

FLASH POINT (Method used) High	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA CO₂, foam, dry chemicals			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Irritating to skin and eyes after extended contact		
	When inhaled vapors are irritating to mucous membranes		
	EMERGENCY AND FIRST AID PROCEDURES Skin- wash with soap and water Eyes wash with water when inhaled - remove to fresh air		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Acids, aldehydes, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean with a solvent; then with water		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Canister mask.		
	VENTILATION	LOCAL EXHAUST yes	SPECIAL
SECTION IX SPECIAL PRECAUTIONS	MECHANICAL (General)		OTHER
	PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION Goggles
	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in closed cans at room temperature		
OTHER PRECAUTIONS			

Harold Brown

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Catalyst 7	
CHEMICAL FAMILY		FORMULA		
MEK Peroxide		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	N/A		BASE METAL	N/A		
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Methyl Ethyl Ketone Peroxide					50-60	Unk.
	Di-Methyl Phthalate					40	5 mg/m ²
Hydrogen Peroxide					0-5	1ppm	

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H ₂ O=1)	1.168
	VAPOR PRESSURE (mm Hg.)	Unk.	PERCENT VOLATILE BY VOLUME (%)	N/A
	VAPOR DENSITY (AIR = 1)	N/A	EVAPORATION RATE (_____ = 1)	N/A
	SOLUBILITY IN WATER	Insol.		
	APPEARANCE AND ODOR			
Clear, Colorless liquid, slight odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	225°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	Open Cup				
	EXTINGUISHING Media Use large amounts of H ₂ O preferably applied as spray or Fog. Use dry chemicals (Foam or CO ₂) on small fires				
	SPECIAL FIRE FIGHTING PROCEDURES If fire occurs near peroxide, spray H ₂ O on containers to keep temp. down. Continued exposure to heat can result in formation of flammable vapors.				
	UNUSUAL FIRE AND EXPLOSION HAZARDS Peroxide can also be ignited by acids, strong oxidizers or reducing agents including accelerators.				

SECTION V HEALTH HAZARD DATA	Unknown			
	EFFECTS OF OVEREXPOSURE			
	Unknown			
EMERGENCY AND FIRST AID PROCEDURES				
Skin- Wash with soap and water. Eyes-Wash with plenty of H ₂ O and immediately consult physician				
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	X	CONDITIONS TO AVOID
		STABLE		Avoid overheating
	INCOMPATIBILITY (Materials to avoid)			
	Acids, oxidizing agents, reducing agents including accelerators			
	HAZARDOUS DECOMPOSITION PRODUCTS			
Unknown				
HAZARDOUS POLYMERIZATION	MAY OCCUR	N/A	CONDITIONS TO AVOID	
	WILL NOT OCCUR	N/A		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
	Spilled material must be absorbed onto vermiculite, perlite or absorbent earth and disposed of immediately. See Waste Disposal Methods			
	WASTE DISPOSAL METHOD			
Using a non-sparking shovel, collect the saturated vermiculite and deposit in small shallow piles on newspapers located in an open safe place. Ignite with newspapers with a lighted torch having a long handle and back away. No more than 1 pound should be burned at a time.				
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)			Use a combination chemical cartridge and mechanical
	VENTILATION	filter respirator		
		LOCAL EXHAUST		
		MECHANICAL (General)		OTHER
	PROTECTIVE GLOVES		Yes	EYE PROTECTION
			Yes	
OTHER PROTECTIVE EQUIPMENT				None
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING			
	Materials such as brass, stainless, iron and rubber can not be used as containers. Use Polyethylene			
OTHER PRECAUTIONS				

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Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Catalyst 12-6H, 12-2H, 12-4H, 12-10H
	CHEMICAL FAMILY Polyester Resin	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST amine	trace		ALLOYS			
	OXIDE water	trace		METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS Polyester resin	90-98					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.16
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	red viscous liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	High	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ , dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	No special procedures - avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Mildly irritating to skin with extended contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">Wash with soap and water</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) <p style="text-align: center;">Strong oxidizing agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">CO, aldehydes, acids, etc.</p>		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <p style="text-align: center;">Clean up with a solvent; then with water</p>		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled burning or burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) <p style="text-align: center;">not ordinarily required</p>		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES <p style="text-align: center;">Rubber gloves</p>		
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store in a cool place in closed containers</p>		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

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	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			CATALYST 12-12HFR
CHEMICAL FAMILY		FORMULA	
Polyester Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1361/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST amine	trace		ALLOYS			
	XXXXXX water	trace		METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS Polyester resin	90-98					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.16
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND OOR	red viscous liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	High	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ , dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	No special procedures - avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST Yes - when curing with Part A	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS		

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Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Catalyst 24LV
	CHEMICAL FAMILY Modified aliphatic amine		FORMULA Proprietary
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Modified aliphatic amine	100		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	240 °F	SPECIFIC GRAVITY (H ₂ O=1)	1.00 - 1.03
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR mobile liquid - pink to amber			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) 250 °F C. O. C.	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO₂, dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES no special procedures - avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID heating to decomposition
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic fumes of nitrogen oxides		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wash with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Goggles	
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes by means of oven vents, if oven curing		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Catalyst 50
CHEMICAL FAMILY		FORMULA	
Organo Tin Complex		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	250°	SPECIFIC GRAVITY (H ₂ O=1)	1.2
	VAPOR PRESSURE (mm Hg.)	< 10	PERCENT VOLATILE BY VOLUME (%)	40
	VAPOR DENSITY (AIR = 1)	5	EVAPORATION RATE (_____ = 1)	20
	SOLUBILITY IN WATER	Neg.		
	APPEARANCE AND ODOR	Yellow liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	115°F (T.O.C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
				1.4	11.2
	EXTINGUISHING MEDIA	CO ₂ , Dry Chemicals, Water			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	Toxic Fumes of Hydrogen Chloride formed on combustion				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	Unknown		
	EFFECTS OF OVEREXPOSURE		
	Irritating to eyes and skin on contact. Vapors somewhat irritating.		
EMERGENCY AND FIRST AID PROCEDURES			
Eyes - Wash well with water. If irritation should persist, seek medical aid.			
Skin - Wash well with soap and water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	Strong acids. Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS		
Toxic fumes of Hydrochloric acid			
	MAY OCCUR	CONDITIONS TO AVOID	
HAZARDOUS POLYMERIZATION	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Absorb promptly with paper towels or rags. Remove last traces with a nonflammable solvent		
	WASTE DISPOSAL METHOD		
Burial			
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Yes	
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION
		Safety goggles if there is a chance of splashing	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	Store away from heat and open flame in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Catalyst 15
CHEMICAL FAMILY		FORMULA	
Polyamide		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	trace		BASE METAL			
	CATALYST	Polyamide		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	.91
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Black syrup		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	354 °F T. O. C.	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ , dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None - Avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE - Mildly irritating to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Skin - wash with soap and water		
	Eyes - wash with water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic fumes of nitrogen oxides		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in unopened containers below 80° F		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccofoam VIP - Part B	
CHEMICAL FAMILY		FORMULA		
Polylol		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-134J/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS Polylol			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Organic Filler			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	313°C	SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (= 1)	
	SOLUBILITY IN WATER	Neg.		
	APPEARANCE AND ODOR			
White viscous liquid (Light in Weight)				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	445°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
None					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, Aldehydes, Acids		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent, then wash with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST Yes if heat curing	SPECIAL
		MECHANICAL (General) To maintain TLV - if heat curing	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION Safety Goggles
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccofoam VIP - Part A
CHEMICAL FAMILY Polyurethane Resin	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Diisocyanate		.02	OTHERS		
OTHERS Polyurethane Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.06
VAPOR PRESSURE (mm Hg.)	.01	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR Light Amber Viscous Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 480°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, CO₂, Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE			.02
	EFFECTS OF OVEREXPOSURE			
	Irritating to skin and eyes			
	Prolonged inhalation of vapors may be injurious to lungs			
	EMERGENCY AND FIRST AID PROCEDURES			
Skin - Wash well with soap and water				
Eyes - Wash with water , then seek medical attention				
After prolonged inhalation - Bring to Fresh air and seek medical attention				
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE		CONDITIONS TO AVOID
		STABLE	X	
	INCOMPATIBILITY (Materials to avoid)			
	Water, Alcohols, Strong Bases, Metallic Catalysts			
	HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR	X	CONDITIONS TO AVOID	
	WILL NOT OCCUR		Contact with compounds containing active "H" may cause uncontrldable polymerization of the isocyanate	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
	Absorb in sawdust and treat with isopropyl alcohol - ammonia solution in an open container			
	WASTE DISPOSAL METHOD			
Controlled burning or burial				
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)			
	Canister Mask			
	VENTILATION	LOCAL EXHAUST	GENERAL	
	Mix Resin and Catalyst under a hood or in a well ventilated		area	
	MECHANICAL (General) if necessary to		area if heat curing	
keep under TLV				
PROTECTIVE GLOVES		EYE PROTECTION		
Rubber		Safety Goggles		
OTHER PROTECTIVE EQUIPMENT				
Safety showers and eye-wash stations				
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING			
	Store in tightly closed containers and protect from moisture at temperatures between 50°F and 90°F			
	OTHER PRECAUTIONS			

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
		Eccofoam EFF-14		
CHEMICAL FAMILY		FORMULA		
Epoxy Resin & Amine Hardner		Proprietary		
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)		
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIONALS			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	0.22
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			

APPEARANCE AND ODOR
Pale Yellow Free-Flowing Fine Powder

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	440°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	CO ₂ Foam, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes on extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water - skin. Wash eyes with water and seek medical aid		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Acids, Aldehydes, nitrogen oxide fumes		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VIII - SPECIAL PROTECTION INFORMATION	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	WASTE DISPOSAL METHOD		
	RESPIRATORY PROTECTION (Specify type)		
SECTION IX SPECIAL PRECAUTIONS	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION Safety goggles
	OTHER PROTECTIVE EQUIPMENT Use vented oven when curing		
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep in closed containers			
OTHER PRECAUTIONS			

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	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccofoam FPH-FR	
	CHEMICAL FAMILY		FORMULA	
Urethane Foam Prepolymer		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS	Polyurethane Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Toluene Diisocyanate					25-30	0.02

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	484	SPECIFIC GRAVITY (H ₂ O=1)
	VAPOR PRESSURE (mm Hg.)	.01	PERCENT VOLATILE BY VOLUME (%)
	VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ = 1)
	SOLUBILITY IN WATER		
	APPEARANCE AND ODOR		
Pink Liquid; Pungent Odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	270°F (T.O.C.)			
	EXTINGUISHING MEDIA			
	Foam, CO ₂ Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES			
None				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	EFFECTS OF OVEREXPOSURE		
	Irritating to skin and eyes. Prolonged inhalation of vapors may be injurious to lungs		
	EMERGENCY AND FIRST AID PROCEDURES		
	Skin - Wash well with soap and water Eyes - Wash with water; then get medical attention After prolonged inhalation - bring to fresh air and get medical attention		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	Water, alcohols, strong bases, metallic catalysts		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS DECOMPOSITION PRODUCTS		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
			Contact with compounds containing active "H" may cause uncontrollable polymerization of the isocyanate
SECTION VIII - SPECIAL PROTECTION INFORMATION	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Absorb in sawdust and treat with isopropyl alcohol ammonia solution in an open container		
	WASTE DISPOSAL METHOD		
	Controlled burning or burial		
SECTION IX SPECIAL PRECAUTIONS	RESPIRATORY PROTECTION (Specify type)		
	Canister Mask		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Mix resin and catalyst under a fume hood or in a well ventilated area	MECHANICAL (General)
	If necessary to keep under TLV	OTHER	
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
			Goggles
	OTHER PROTECTIVE EQUIPMENT		
	Safety showers and eye wash stations		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	Must be stored in tightly closed containers and protected from moisture.		
	Store at temperatures between 50°F and 90°F		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Urethane Foam Prepolymer		Eccofoam FPH	
CHEMICAL FAMILY		FORMULA		
Urethane Foam Prepolymer		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S: A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS	Polyurethane Resin	100				
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Toluene Diisocyanate					25-30	0.02 ppm

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	484	SPECIFIC GRAVITY (H ₂ O=1)
	VAPOR PRESSURE (mm Hg.)	.01	PERCENT VOLATILE BY VOLUME (%)
	VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ = 1)
	SOLUBILITY IN WATER		
	APPEARANCE AND ODOR		
Pink Liquid; Pungent Odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	270°F (T. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	None				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

.02 PPM

SECTION V
HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

Irritating to skin and eyes. Prolonged inhalation of vapors may be injurious to lungs

EMERGENCY AND FIRST AID PROCEDURES

Skin - Wash well with soap and water

Eyes - Wash with water; then get medical attention

After prolonged inhalation - bring to fresh air and get medical attention

SECTION VI
REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

Water, alcohols, strong bases, metallic catalysts

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION

MAY OCCUR

X

CONDITIONS TO AVOID

Contact with compounds containing active "H" may cause uncontrolable polymerization of the isocyanate

WILL NOT OCCUR

SECTION VII
SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb in sawdust and treat with isopropyl alcohol ammonia solution in an open container

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Canister Mask

VENTILATION

LOCAL EXHAUST Mix resin and catalyst

SPECIAL

under a fume hood or in a well ventilated area

MECHANICAL (General)

OTHER

If necessary to keep under TLV

PROTECTIVE GLOVES

Rubber Gloves

EYE PROTECTION

Goggles

OTHER PROTECTIVE EQUIPMENT

Safety showers and eye wash stations

SECTION IX
SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Must be stored in tightly closed containers and protected from moisture.

Store at temperatures between 50°F and 90°F

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccofoam FPF	
CHEMICAL FAMILY		FORMULA		
Urethane Foam Prepolymer		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS	Polyurethane Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Toluene Diisocyanate					25-30	0.02

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	484	SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)	.01	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)	6	EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Pink Liquid; Pungent Odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	270°F (T. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	None				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE			.02
	EFFECTS OF OVEREXPOSURE			
	Irritating to skin and eyes. Prolonged inhalation of vapors may be injurious to lungs			
	EMERGENCY AND FIRST AID PROCEDURES			
	Skin - Wash well with soap and water Eyes - Wash with water; then get medical attention After prolonged inhalation - bring to fresh air and get medical attention			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE		CONDITIONS TO AVOID
		STABLE	X	
	INCOMPATIBILITY (Materials to avoid)			
	Water, alcohols, strong bases, metallic catalysts			
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
	Absorb in sawdust and treat with isopropyl alcohol ammonia solution in an open container			
	WASTE DISPOSAL METHOD			
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)			
	Canister Mask			
	VENTILATION	LOCAL EXHAUST	Mix resin and catalyst	SPECIAL
		MECHANICAL (General)	If necessary to keep under TLV	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION	Goggles
OTHER PROTECTIVE EQUIPMENT				
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING			
	Must be stored in tightly closed containers and protected from moisture. Store at temperatures between 50°F and 90°F			
	OTHER PRECAUTIONS			

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MATERIAL SAFETY DATA SHEET

Bureau Budget No. 45-R0338

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	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccofoam TP	
	CHEMICAL FAMILY		FORMULA	
Urethane Foam Prepolymer		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS Polyurethane Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
	Toluene Diisocyanate					25-30	0.02

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	484	SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)	.01	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)	6	EVAPORATION RATE (_____ =1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Pink Liquid; Pungent Odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	270°F (T. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	EFFECTS OF OVEREXPOSURE			
	Irritating to skin and eyes. Prolonged inhalation of vapors may be injurious to lungs			
	EMERGENCY AND FIRST AID PROCEDURES			
Skin - Wash well with soap and water				
Eyes - Wash with water; then get medical attention				
After prolonged inhalation - bring to fresh air and get medical attention				
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID	
		STABLE		X
	INCOMPATIBILITY (Materials to avoid)			
	Water, alcohols, strong bases, metallic catalysts			
HAZARDOUS DECOMPOSITION PRODUCTS				
HAZARDOUS POLYMERIZATION	MAY OCCUR	X	CONDITIONS TO AVOID Contact with compounds containing active "H" may cause uncontrollable polymerization of the isocyanate	
	WILL NOT OCCUR			
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
	Absorb in sawdust and treat with isopropyl alcohol ammonia solution in an open container			
	WASTE DISPOSAL METHOD			
Controlled burning or burial				
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)			
	Canister Mask			
	VENTILATION	LOCAL EXHAUST	Mix resin and catalyst	SPECIAL
		MECHANICAL (General)	If necessary to keep under TLV	
	PROTECTIVE GLOVES		Rubber Gloves	EYE PROTECTION
			Goggles	
OTHER PROTECTIVE EQUIPMENT				
Safety showers and eye wash stations				
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING			
	Must be stored in tightly closed containers and protected from moisture.			
	Store at temperatures between 50°F and 90°F			
OTHER PRECAUTIONS				

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

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	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccosil 4553	
CHEMICAL FAMILY		FORMULA		
Organopolysiloxane		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Silicone Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.6
	VAPOR PRESSURE (mm Hg.)	1	PERCENT VOLATILE BY VOLUME (%)	NEG
	VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	NIL
	SOLUBILITY IN WATER	Neg.		
	APPEARANCE AND ODOR	White Viscous Liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	400°F (C. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Water Spray, CO ₂ , Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	Water may cause Frothing			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	Slight or none on normal contact		
	EFFECTS OF OVEREXPOSURE		
	EMERGENCY AND FIRST AID PROCEDURES		
None Required			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid)		
	Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
Scoop up gross quantities. Cover with a dry powder; Brush in; and sweep up.			
Remove remaining dust or powder with a sawdust-type sweeping compound			
WASTE DISPOSAL METHOD			
Incineration			
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	None		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	None	EYE PROTECTION
		None	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	Store at room temperature in closed containers		
	OTHER PRECAUTIONS		

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	Emerson & Cuming, Inc.		828-3300				
	ADDRESS (Number, Street, City, State, and ZIP Code)						
	869 Washington St., Canton, Ma. 02021						
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS				
			Eccosil 4966				
	CHEMICAL FAMILY		FORMULA				
Organopolysiloxane		Proprietary					
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)				
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL							
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____							
SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Silicone Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	High		SPECIFIC GRAVITY (H ₂ O=1)	1.7 1.5		
	VAPOR PRESSURE (mm Hg.)	1		PERCENT VOLATILE BY VOLUME (%)	NEG		
	VAPOR DENSITY (AIR = 1)	NA		EVAPORATION RATE (_____ = 1)	NIL		
	SOLUBILITY IN WATER	Neg.					
	APPEARANCE AND ODOR	Red Viscous Liquid					
SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	400°F (C. O. C.)		FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT	
	EXTINGUISHING MEDIA	Water Spray, CO ₂ , Dry Chemicals					
	SPECIAL FIRE FIGHTING PROCEDURES	Water may cause Frothing					
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None					

Slight or none on normal contact

SECTION V HEALTH HAZARD DATA	EFFECTS OF OVEREXPOSURE		
	EMERGENCY AND FIRST AID PROCEDURES		
	None Required		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid)		
	Strong oxidizing agents		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS DECOMPOSITION PRODUCTS		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
SECTION VIII - SPECIAL PROTECTION INFORMATION	Scoop up gross quantities. Cover with a dry powder; Brush in; and sweep up.		
	Remove remaining dust or powder with a sawdust-type sweeping compound		
	WASTE DISPOSAL METHOD		
	Incineration		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	None		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
SECTION IX SPECIAL PRECAUTIONS	PROTECTIVE GLOVES		EYE PROTECTION
	None		None
	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
SECTION IX SPECIAL PRECAUTIONS	Store at room temperature in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

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	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccosil 4952
	CHEMICAL FAMILY Poly Dimethyl Siloxane	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		

SECTION II - HAZARDOUS INGREDIENTS	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____					
	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
	PIGMENTS	S. A.		BASE METAL		
	CATALYST			ALLOYS		
	VEHICLE			METALLIC COATINGS		
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
	ADDITIVES Mineral Filler			OTHERS		
	OTHERS Silicone					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)
	Contains no hazardous ingredients					

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	N. A.	SPECIFIC GRAVITY (H ₂ O=1)	2.28
	VAPOR PRESSURE (mm Hg.)	Low	PERCENT VOLATILE BY VOLUME (%)	Less than 1%
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Negligible		
	APPEARANCE AND ODOR Red Viscous Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) Greater than 400°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT NA	UPPER EXPLOSIVE LIMIT NA
	EXTINGUISHING MEDIA All standard fire fighting agents are OK			
	SPECIAL FIRE FIGHTING PROCEDURES None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE No known Health Hazard		
	EFFECTS OF OVEREXPOSURE N. A.		
	EMERGENCY AND FIRST AID PROCEDURES Eye contact may cause slight irritation. Flush eyes with water. If irritation should persist, seek medical aid		
SECTION VI REACTIVITY DATA	STABILITY.	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) None		
	HAZARDOUS DECOMPOSITION PRODUCTS CO ₂ S ₂ O ₂		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED None		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) None required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES None required		EYE PROTECTION Goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature (between freezing and 80°F)		
	OTHER PRECAUTIONS		

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccosil 4850	
	CHEMICAL FAMILY		FORMULA	
Organopolysiloxane		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Silicone Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.7
	VAPOR PRESSURE (mm Hg.)	1	PERCENT VOLATILE BY VOLUME (%)	NEG
	VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	NIL
	SOLUBILITY IN WATER	Neg.		
	APPEARANCE AND ODOR	White Viscous Liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	400°F (C. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Water Spray, CO ₂ , Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	Water may cause Frothing			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	Slight or none on normal contact		
	EFFECTS OF OVEREXPOSURE		
	EMERGENCY AND FIRST AID PROCEDURES		
	None Required		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Scoop up gross quantities. Cover with a dry powder; Brush in; and sweep up.		
	Remove remaining dust or powder with a sawdust-type sweeping compound		
SECTION VIII - SPECIAL PROTECTION INFORMATION	WASTE DISPOSAL METHOD		
	Incineration		
	RESPIRATORY PROTECTION (Specify type)		
	None		
	VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER	
SECTION IX SPECIAL PRECAUTIONS	PROTECTIVE GLOVES	None	EYE PROTECTION
			None
	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
Store at room temperature in closed containers			
OTHER PRECAUTIONS			

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccosil 4640
	CHEMICAL FAMILY Organopolysiloxane		FORMULA Proprietary
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Mineral Filler			OTHERS			
	OTHERS Silicone Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	0.75
	VAPOR PRESSURE (mm Hg.)	1	PERCENT VOLATILE BY VOLUME (%)	Neg.
	VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	Nil
	SOLUBILITY IN WATER	Neg		
	APPEARANCE AND ODOR	White Viscous Liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	400°F (C. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Water Spray, CO₂, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	Water May cause frothing			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slight or none on normal contact		
	EMERGENCY AND FIRST AID PROCEDURES None required		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Scoop up gross quantities. Cover with a dry powder; brush in and sweep up. Remove remaining dust or powder with a sawdust-type sweeping compound		
	WASTE DISPOSAL METHOD Incineration		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) None		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	None	EYE PROTECTION None
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)

EMERGENC PHONE NO.

Emerson & Cuming, Inc.

828-3300

ADDRESS (Number, Street, City, State, and ZIP Code)

869 Washington St., Canton, Ma. 02021

CHEMICAL NAME AND SYNONYMS

TRADE NAME AND SYNONYMS

Room Temp. Vulcanizing Silicone Rubber

Eccosil 1776

CHEMICAL FAMILY

FORMULA

Proprietary

FEDERAL STOCK NUMBER (FSN)

GROSS WEIGHT (LBS)

OUTSIDE PACKAGE DIMENSIONS (Inches)

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)
Eccosil 1776 contains no hazardous ingredients					

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	NA	SPECIFIC GRAVITY (H ₂ O=1)	1.1
VAPOR PRESSURE (mm Hg.)	NA	PERCENT VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____ = 1)	NA
SOLUBILITY IN WATER	Negligible		

APPEARANCE AND ODOR

Translucent (colorless) Paste-Acetic acid, Odor may be present

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	NA	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA				
All standard firefighting agents are suitable				
SPECIAL FIRE FIGHTING PROCEDURES				
UNUSUAL FIRE AND EXPLOSION HAZARDS				

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S/N 0102-026-1080

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE -Eye contact - May cause some irritation		
	EMERGENCY AND FIRST AID PROCEDURES Flush eyes with water for 15 minutes; then have eye examined by a physician.		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS Temps. above 400° F may produce CO ₂ and SiO ₂		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	No special precaution necessary		
	WASTE DISPOSAL METHOD		
	No special method		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) None - Unless normal ventilation is inadequate		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	Yes
	PROTECTIVE GLOVES		EYE PROTECTION
			Safety Glasses
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Minor concentrations of acetic acid vapor may be produced, only during applic. of and curing period for 1776. Adequate ventilation needed when applied in a confined area.		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccosil 2CN	
CHEMICAL FAMILY		FORMULA		
Organopolysiloxane		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
		HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	0.99
	VAPOR PRESSURE (mm Hg.)	1	PERCENT VOLATILE BY VOLUME (%)	Neg.
	VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____ = 1)	Nil
	SOLUBILITY IN WATER	Neg		
	APPEARANCE AND ODOR	Clear, Slightly Viscous Liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	400°F (C. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Water Spray, CO ₂ Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	Water May cause frothing			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slight or none on normal contact		
	EMERGENCY AND FIRST AID PROCEDURES None required		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Scoop up gross quantities. Cover with a dry powder; brush in and sweep up. Remove remaining dust or powder with a sawdust type sweeping compound		
	WASTE DISPOSAL METHOD Incineration		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) None		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES	None	EYE PROTECTION None
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0336

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE N.O.	
Emerson & Cuming, Inc.		828-3300	
ADDRESS (Number, Street, City, State, and ZIP Code)			
869 Washington St., Canton, Ma. 02021			
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
Epoxy Resin		Eccomold L28	
CHEMICAL FAMILY		FORMULA	
Epichlor Hydrin - Bisphenol A		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR COKE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	580 +	SPECIFIC GRAVITY (H ₂ O=1)	1.16
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	.3% Max
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Insul		
APPEARANCE AND ODOR			
Translucent red viscous liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	235°C T.C.C.	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
			NA	NA
EXTINGUISHING MEDIA				
CO ₂ Dry Chemicals, Foam				
SPECIAL FIRE FIGHTING PROCEDURES				
None - Avoid breathing smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes on extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Skin - Wash with soap and water Eyes - Wash several times with water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO ₂ , Aldehydes, Acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		only while heating with curing agent	
	MECHANICAL (General)		
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place		
	Keep containers tightly closed		
	OTHER PRECAUTIONS Carry out fumes (while heating with curing agent) in vented oven		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS Bis-phenol/Epichlor Hydrin Resin		TRADE NAME AND SYNONYMS Eccobond 51
CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.5
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR Black Viscous Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) Coc 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, CO₂, Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES None - Avoid breathing smoke			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Primary skin irritation on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Remove from skin with water or waterless skin cleaner		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, Aldehydes, Acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean with a cloth with solvents; then with water		
SECTION VIII - SPECIAL PROTECTION INFORMATION	WASTE DISPOSAL METHOD Controlled burning or burial		
	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated MECHANICAL (General)	SPECIAL OTHER
	PROTECTIVE GLOVES Rubber Gloves	EYE PROTECTION Goggles	
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers.		
OTHER PRECAUTIONS			

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-70338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
	Epichlorohydrin/Bisphenol A-Type		Eccobond 24
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.2
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR Clear viscous liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	480°F COC			
	EXTINGUISHING MEDIA Water, spray, Foam, CO ₂ , Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES No. Special procedures - Avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	None Established		
	EFFECTS OF OVEREXPOSURE		
	Primary irritation of skin on prolonged or repeated contact		
EMERGENCY AND FIRST AID PROCEDURES			
Wash with soap or water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	
	INCOMPATABILITY (Materials to avoid)		
	Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS		
CO ₂ , Aldehydes, Acids, etc.			
HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID	
	WILL NOT OCCUR		X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD		
Controlled burning or burial			
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		only if heated	
		MECHANICAL (General)	OTHER
PROTECTIVE GLOVES	EYE PROTECTION		
Rubber Gloves	Goggles		
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	Store in a cool place in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
Epoxy Resin		Eccobond 26 - Part A	
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST Phosphite			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Mineral Filler			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.4
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR			
Off white Paste				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	± 480°F (C. O. C.)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Water, CO ₂ , Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	No special procedure				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE			None established
	EFFECTS OF OVEREXPOSURE			Mildly irritating to skin on extended contact
	EMERGENCY AND FIRST AID PROCEDURES			Wash with soap and water
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE		CONDITIONS TO AVOID
		STABLE	X	
	INCOMPATABILITY (Materials to avoid)			
	Strong oxidizing agents			
HAZARDOUS DECOMPOSITION PRODUCTS				
CO, Aldehydes, Acids				
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID	
	WILL NOT OCCUR	X		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
	Clean up with a solvent, then with soap and water			
WASTE DISPOSAL METHOD				
Controlled burning or burial				
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)			
	Not ordinarily required			
	VENTILATION	LOCAL EXHAUST		SPECIAL
		only if heated		
	MECHANICAL (General)		OTHER	
PROTECTIVE GLOVES		EYE PROTECTION		
Rubber Gloves				
OTHER PROTECTIVE EQUIPMENT				
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING			
	Store in a cool place. Keep caps on tubes tightly closed			
	OTHER PRECAUTIONS			

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccobond 26 - Part B	
CHEMICAL FAMILY		FORMULA		
Mod. Aliphatic Amido-Amine		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST	Mod. Aliph. Amido-Amine		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.4
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR		Off-white paste	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	460°F (C. O. C.)			
	EXTINGUISHING MEDIA			
	Water, CO ₂ , Dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES			
No special procedure				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin on extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Nitrogen oxide fumes		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place. Keep caps on tubes tightly closed		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond 55
	CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.2
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0.3% Max
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR viscous liquid - milky haze			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	NA NA NA				
	EXTINGUISHING MEDIA Foam, CO₂, dry chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES no special procedures - avoid breathing smoke				
	UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE <p style="text-align: center;">none established</p>		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Primary irritation of skin on prolonged or repeated contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">wash with soap and water</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	
	INCOMPATIBILITY (Materials to avoid) <p style="text-align: center;">Strong oxidizing agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">Carbon monoxide, aldehydes, acids, etc.</p>		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <p style="text-align: center;">Wipe up with a solvent; then water</p>		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled burning or burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) <p style="text-align: center;">Not ordinarily required</p>		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		only if heated	
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES <p style="text-align: center;">Rubber Gloves</p>	EYE PROTECTION <p style="text-align: center;">Goggles</p>	
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store at room temperature in closed containers</p>		
	OTHER PRECAUTIONS <p style="text-align: center;">Carry out fumes when curing, in vented ovens</p>		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Eccobond 45
	CHEMICAL FAMILY		FORMULA
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	trace		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS Epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F)	460°F	SPECIFIC GRAVITY (H ₂ O=1)	1.4
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR			
Black viscous liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	465°F (Tag open cup)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , dry chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	None - Avoid Breathing Smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes		
	EMERGENCY AND FIRST AID PROCEDURES Skin - wash with soap and water		
	Eyes - Wash with water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Clean with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (<i>General</i>)	
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Mass. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond 45-Clear
CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	460 °F	SPECIFIC GRAVITY (H ₂ O=1)	1.2
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR Clear viscous liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 465 °F (Tag open cup)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, CO₂, dry chemicals			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes		
	EMERGENCY AND FIRST AID PROCEDURES Skin - wash with soap and water		
	Eyes - wash with water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes, acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place		
	OTHER PRECAUTIONS		

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Eccobond 45LV
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	Trace		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.2
	VAPOR PRESSURE (mm Hg.)	Low	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
	SOLUBILITY IN WATER	Nil		

APPEARANCE AND ODOR
Black viscous liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	465°F (T. O. C.)			
	EXTINGUISHING MEDIA Foam, CO ₂ , Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None - Avoid Breathing Smoke			
UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Primary irritation of skin on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, Aldehydes, Acids, etc.		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST Only if Heated	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Mass. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Epoxy Adhesive		Eccobond Solder 56C	
CHEMICAL FAMILY		FORMULA		
Epoxy Adhesive		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	Metallic Filler ADDITIVES Silver			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	460°F	SPECIFIC GRAVITY (H ₂ O=1)	3.45
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR		Silver Paste	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	High	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	None				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes, acids, etc.		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	WASTE DISPOSAL METHOD Controlled Burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond Solder 57C (Part A)
CHEMICAL FAMILY Epoxy Adhesive	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Metallic Filler (Silver)			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR Silver Paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, CO₂, Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

EXPOSURE

Mildly irritating to skin with prolonged contact

SECTION V
HEALTH HAZARD DATA

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI
REACTIVITY DATA

STABILITY

UNSTABLE

STABLE

X

CONDITIONS TO AVOID

INCOMPATIBILITY (Materials to avoid)

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide Aldehydes, Acids, etc.

HAZARDOUS POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

X

CONDITIONS TO AVOID

SECTION VII
SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

Controlled burning or burial

SECTION VIII - SPECIAL
PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

MECHANICAL (General)

SPECIAL

OTHER

PROTECTIVE GLOVES

Rubber Gloves

EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT

SECTION IX
SPECIAL
PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store at room temperature in closed containers

OTHER PRECAUTIONS

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-20338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.,		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccobond Solder 57C (Part B)	
CHEMICAL FAMILY		FORMULA		
Polyamide		Proprietary		
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)		
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST: Polyamide			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES: Metallic Filler (Silver)			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	.91
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Silver Paste				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	470°F (Tag open cup)			
	EXTINGUISHING MEDIA			
	Foam, CO ₂ , dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES			
None - Avoid breathing smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

DD

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES		
	Skin - wash with soap and water Eyes - wash with water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic fumes of nitrogen oxides		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Goggles	
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in unopened containers below 80°F		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond Solder 58C
	CHEMICAL FAMILY Epoxy Resin		FORMULA Proprietary
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Non Polymeric Amide			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Silver Filler			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	3.8
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Silver Paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) 480°F COC	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Water, CO₂ Foam, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO Aldehydes, Acids, NH₃		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent, then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>)		
	VENTILATION	LOCAL EXHAUST	Yes
		MECHANICAL (<i>General</i>)	
			SPECIAL
		OTHER	
PROTECTIVE GLOVES		EYE PROTECTION	
Rubber Gloves			
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE (Solvent) 200 PPM		
	EFFECTS OF OVEREXPOSURE Narcosis, Headache, Nausea, irritation of skin and mucous membranes; Possible eye burns due to toluene solvent		
	EMERGENCY AND FIRST AID PROCEDURES Inhalation- Remove to fresh air. Use oxygen if indicated Skin- Wash with soap and water Eyes- Flush with water for 15 minutes. Call physician		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heat and open flame
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) CO, CO ₂ , Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Avoid ignition sources. Avoid breathing vapors. Dam and absorb on inert material such as sand. Place in containers.		
	WASTE DISPOSAL METHOD Land fill according to Federal, State and Local regulations		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Self-contained breathing apparatus if exposed to fumes		
	VENTILATION	LOCAL EXHAUST Adequate to keep below TLV & LEL	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Impervious Gloves	EYE PROTECTION Splash Goggles	
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep between 50°F and 100°F in closed containers, away from open flame		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond Solder 66C
	CHEMICAL FAMILY Epoxy Adhesive	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	Metallic Filler ADDITIVES Silver			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	460° F	SPECIFIC GRAVITY (H ₂ O=1)	3.45
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR	Silver Paste		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	High	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ , Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes, acids, etc.		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	WASTE DISPOSAL METHOD Controlled Burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond Solder 68C
	CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		

SECTION II - HAZARDOUS INGREDIENTS	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____																																																												
	<table border="1"> <thead> <tr> <th>PAINTS, PRESERVATIVES, AND SOLVENTS</th> <th>%</th> <th>THRESHOLD LIMIT VALUE (Units)</th> <th>ALLOYS AND METALLIC COATINGS</th> <th>%</th> <th>THRESHOLD LIMIT VALUE (Units)</th> </tr> </thead> <tbody> <tr> <td>PIGMENTS</td> <td></td> <td></td> <td>BASE METAL</td> <td></td> <td></td> </tr> <tr> <td>CATALYST Non Polymeric Amide</td> <td></td> <td></td> <td>ALLOYS</td> <td></td> <td></td> </tr> <tr> <td>VEHICLE</td> <td></td> <td></td> <td>METALLIC COATINGS</td> <td></td> <td></td> </tr> <tr> <td>SOLVENTS</td> <td></td> <td></td> <td>FILLER METAL PLUS COATING OR CORE FLUX</td> <td></td> <td></td> </tr> <tr> <td>ADDITIVES Silver Filler</td> <td></td> <td></td> <td>OTHERS</td> <td></td> <td></td> </tr> <tr> <td>OTHERS Epoxy Resin</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES</td> <td>%</td> <td>THRESHOLD LIMIT VALUE (Units)</td> </tr> <tr> <td colspan="6"> </td> </tr> <tr> <td colspan="6"> </td> </tr> </tbody> </table>	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	PIGMENTS			BASE METAL			CATALYST Non Polymeric Amide			ALLOYS			VEHICLE			METALLIC COATINGS			SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			ADDITIVES Silver Filler			OTHERS			OTHERS Epoxy Resin						HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)												
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	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)																																																							

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	3.8
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (= 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Silver Paste		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) 480°F COC	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Water, CO₂ Foam, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO Aldehydes, Acids, NH₃		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent, then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	Yes
		MECHANICAL (General)	
			SPECIAL
		OTHER	
PROTECTIVE GLOVES		EYE PROTECTION	
Rubber Gloves			
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond Conductive Adhesive 60L Part A
CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Carbon			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	> 580°	SPECIFIC GRAVITY (H ₂ O=1)	
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR Black Paste with Silvery Particles			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 480° F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA CO₂ Foam, Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

DD

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE None Established		
	EFFECTS OF OVEREXPOSURE Primary irritation of skin on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, Aldehydes, Acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VIII - SPECIAL PROTECTION INFORMATION	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then wash with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
SECTION IX SPECIAL PRECAUTIONS	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber	EYE PROTECTION Goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS		

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SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE						
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with prolonged or repeated contact						
	EMERGENCY AND FIRST AID PROCEDURES wash w th soap and water						
SECTION VI REACTIVITY DATA	STABILITY	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">UNSTABLE</td> <td style="width: 20px;"> </td> </tr> <tr> <td style="text-align: center;">STABLE</td> <td style="text-align: center;">X</td> </tr> </table>	UNSTABLE		STABLE	X	CONDITIONS TO AVOID
	UNSTABLE						
	STABLE	X					
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents						
HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids, nitrogen oxides							
HAZARDOUS POLYMERIZATION	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">MAY OCCUR</td> <td style="width: 20px;"> </td> </tr> <tr> <td style="text-align: center;">WILL NOT OCCUR</td> <td style="text-align: center;">X</td> </tr> </table>	MAY OCCUR		WILL NOT OCCUR	X	CONDITIONS TO AVOID	
MAY OCCUR							
WILL NOT OCCUR	X						
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then w th soap and water						
	WASTE DISPOSAL METHOD controlled burning or burial						
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required						
	VENTILATION	LOCAL EXHAUST	SPECIAL				
		MECHANICAL (General)	OTHER				
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION Goggles				
OTHER PROTECTIVE EQUIPMENT							
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in closed containers below 80° F						
	OTHER PRECAUTIONS Carry out fumes when curing in vented oven						

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond 145
	CHEMICAL FAMILY Epoxy Resin and	FORMULA Proprietary	
	Non polymeric amide curing agent		
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	Non Polymeric CATALYST amide	2-10		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Mineral Filler-Silicate	55-60		OTHERS			
	OTHERS Epoxy Resin	35-40					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)	Neg	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Neg		
	APPEARANCE AND ODOR Black thixotropic paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) 460°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO₂ Dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None - avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

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S/N 0102-026-1080

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE - Produces a mild Lachrymatory and irritant effect on the mucous membranes of the nose and eyes		
	EMERGENCY AND FIRST AID PROCEDURES Eyes - Flush immediately with water. Because of the rapid polymerization contact could result in firm adherence of the lids and irritation of eyes and cornea. Seek medical aid. Skin-wash immediately with water as material will adhere to skin and vigorous attempts to remove it by mechanical means can result in skin injury.		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with N, N-Dimethylformamide		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Yes	
		MECHANICAL (General)	OTHER
SECTION IX SPECIAL PRECAUTIONS	PROTECTIVE GLOVES		EYE PROTECTION
	Rubber Gloves		Safety Goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep containers tightly closed		
	OTHER PRECAUTIONS		

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	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Methyl 2 Cyanoacrylate		Eastman 910	
	CHEMICAL FAMILY		FORMULA	
Cyanoacrylate				
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	Thickening Agent VEHICLE Plasticizer Stabilizer	10		METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS Cyanoacrylate	90					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	48 - 49°C	SPECIFIC GRAVITY (H ₂ O=1)	1.0959
	VAPOR PRESSURE (mm Hg.)	2.2	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Cloudy colorless liquid with pungent odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	180°F COC	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO ₂ Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES None				
	UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE 100 ppm		
	EFFECTS OF OVEREXPOSURE Prolonged inhalation may cause headache and drowsiness. Narcosis and anesthesia may occur.		
	EMERGENCY AND FIRST AID PROCEDURES Inhalation - Remove from area, apply artificial respiration. Call physician Contact with eyes - Flush well with water, call physician		
	Ingestion - Induce vomiting, call physician		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		<100°F	Excessive heat
		STABLE	<100°F
	INCOMPATABILITY (Materials to avoid) Polymerizable materials		
HAZARDOUS DECOMPOSITION PRODUCTS Chlorine gas if exposed to high temperatures			
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	Polymerizable materials
		X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with paper towel or clean cloth.		
	WASTE DISPOSAL METHOD Dispose with solvents (excluding polymerizable monomers)		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Face mask for continuous exposure to vapors		
	VENTILATION	LOCAL EXHAUST Positive fresh air exhaust desirable	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves desirable		EYE PROTECTION desirable
OTHER PROTECTIVE EQUIPMENT None			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at temperature below 100°F. Do not store in steel containers, use glass or aluminum		
	OTHER PRECAUTIONS None		

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	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Eccobond 300 (Part B)
CHEMICAL FAMILY		FORMULA	
		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Peroxide Organic			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS MCL, TCE MIBK			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Film former			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	106°F (MCL)	SPECIFIC GRAVITY (H ₂ O=1)	1.32 (MCL)
	VAPOR PRESSURE (mm Hg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	N/A
	VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ = 1)	N/A
	SOLUBILITY IN WATER	N/A		N/A
	APPEARANCE AND ODOR Clear liquid in appearance. Odor predominately chlorinated solvent			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	None	FLAMMABLE LIMITS	None	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Carbondioxide, dry chemicals, foam					
	SPECIAL FIRE FIGHTING PROCEDURES None					
	UNUSUAL FIRE AND EXPLOSION HAZARDS None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE Monomer. 100 ppm		
	EFFECTS OF OVEREXPOSURE Irritating when prolonged inhalation occurs - causes eyes to water		
	EMERGENCY AND FIRST AID PROCEDURES Eye irritation - flush thoroughly with water If swallowed - induce vomiting with heavy doses of salt water or soapy water. Call physician immediately		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Temperatures greater than 100° F
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS None		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID Temperature greater than 100° F -
		WILL NOT OCCUR	X Direct sunlight
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Lift as much material as possible, clean remainder with solvent. Chlorinated solvents recommended due to non-flammability		
	WASTE DISPOSAL METHOD Remove with solid waste materials - avoid mixing with oxidizing agents.		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Face mask (vapor & partical type) for continuous exposure		
	VENTILATION	LOCAL EXHAUST Forced air best MECHANICAL (General)	SPECIAL OTHER
	Yes		
	PROTECTIVE GLOVES Desirable if using large amounts		EYE PROTECTION Yes
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in cool, dry spot. Avoid temperatures greater than 100° F		
	OTHER PRECAUTIONS Read label and product literature prior to working with material		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0334

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond 300 (Part A)
CHEMICAL FAMILY Acrylic Resin	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)
Reactive Monomers				<40	
Polyacrylates				<40	

SECTION III
PHYSICAL DATA

BOILING POINT (°F.) Monomer	200° F	SPECIFIC GRAVITY (H ₂ O=1)	1.03
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	40%
VAPOR DENSITY (AIR=1) Heavier than air		EVAPORATION RATE (_____ = 1)	N/A
SOLUBILITY IN WATER	Negligible		
APPEARANCE AND ODOR Syrup consistency - acrylic monomer odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) Seta Flash Closed Cup 56° F	FLAMMABLE LIMITS Monomer	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Carbon Dioxide, Dry Chemical, Vapor Liquids or Foam			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES		
	Skin - wash with soap and water Eyes - Wash with Water		
SECTION VI REACTIVITY DATA	STABILITY.	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic fumes of nitrogen oxides		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in unopened containers below 80° F		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-20338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.,		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Polyamide		Eccobond Aluminum Part B	
CHEMICAL FAMILY		FORMULA		
Polyamide		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Polyamide			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Aluminum Powder			OTHERS			
	OTHERS Mineral Filler						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.6
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	APPEARANCE AND ODOR		Silvery Grey Viscous Liquid		
	FLASH POINT (Method used)	470°F (TOC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
None - Avoid Breathing Smoke					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE			
	EFFECTS OF OVEREXPOSURE Primary irritation of skin - on prolonged or repeated contact			
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE		CONDITIONS TO AVOID
		STABLE	X	
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents			
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes, acids, etc.			
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
		WILL NOT OCCUR	X	
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water			
	WASTE DISPOSAL METHOD controlled burning or burial			
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required			
	VENTILATION	LOCAL EXHAUST only if heated		SPECIAL
		MECHANICAL (General)		OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Goggles	
OTHER PROTECTIVE EQUIPMENT				
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers			
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens			

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Order No. 45-10238

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
	Bisphenol A/epichlor Hydrin type		Eccobond Aluminum Part A
	CHEMICAL FAMILY	FORMULA	
Epoxy Resin	Proprietary		
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	300000000 Mineral Filler			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Aluminum Powder			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.6
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	< .2%		
	APPEARANCE AND ODOR	Silvery Grey viscous liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	480°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ , Dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None-Avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE <input type="checkbox"/>	CONDITIONS TO AVOID Heating to Decomposition
		STABLE <input checked="" type="checkbox"/>	
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic fumes of Nitrogen oxides		
HAZARDOUS POLYMERIZATION	MAY OCCUR <input type="checkbox"/>	CONDITIONS TO AVOID	
	WILL NOT OCCUR <input checked="" type="checkbox"/>		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wash with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST Only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves	EYE PROTECTION Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond 286 - Part B
	CHEMICAL FAMILY Mod. Aliphatic Amine	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Mod. Aliphatic Amine			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS Mineral Filler						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	± 310	SPECIFIC GRAVITY (H ₂ O=1)	1.07
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Off-white paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	327°F COC	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO₂, Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES None - Avoid breathing smoke				
	UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE <p style="text-align: center;">None Established</p>		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Primary irritation of skin - on prolonged or repeated contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">Wash with soap and water</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) <p style="text-align: center;">Strong oxidizing agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">Carbon monoxide, aldehydes, acids</p>		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <p style="text-align: center;">Wipe up with a solvent; then wash with water</p>		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled burning or burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) <p style="text-align: center;">Not ordinarily required</p>		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Only if heated	
	MECHANICAL (General)		
PROTECTIVE GLOVES <p style="text-align: center;">Rubber Gloves</p>		EYE PROTECTION	
OTHER PROTECTIVE EQUIPMENT <p style="text-align: center;">Store at room temperature in closed containers</p>			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond 286-Part A
	CHEMICAL FAMILY Epoxy Resin		FORMULA Proprietary
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Epoxy Resin			OTHERS			
	OTHERS Mineral Filler						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.2
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR Off-white paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) 480° F COC	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Water Spray, Foam, CO₂, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None-Avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Irritating to skin and eyes		
	EMERGENCY AND FIRST AID PROCEDURES skin - wash with soap and water eyes - wash with water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Acids, Aldehydes, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Sweep up; then wash with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Goggles	
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Eccobond 104 Part B
CHEMICAL FAMILY		FORMULA	
Anhydride		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Anhydride			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	White finely-divided powder		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA			
	SPECIAL FIRE FIGHTING PROCEDURES Foam, CO ₂ , dry chemicals			
	UNUSUAL FIRE AND EXPLOSION HAZARDS			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to Decomposition
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Aldehydes, acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to Decomposition
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Aldehydes, acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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Solvent

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE			200 PPM
	EFFECTS OF OVEREXPOSURE			
	Irritating to eyes and mucous membranes. Narcotic in high concentrations			
	EMERGENCY AND FIRST AID PROCEDURES			
Eyes- Wash with water				
Inhalation- Remove to fresh air and seek medical aid				
SECTION VI REACTIVITY DATA	STABILITY		CONDITIONS TO AVOID	
	UNSTABLE			
	STABLE	X	Strong oxidizing agents	
	INCOMPATIBILITY (Materials to avoid)			
HAZARDOUS DECOMPOSITION PRODUCTS				
Emits toxic fumes				
HAZARDOUS POLYMERIZATION		MAY OCCUR		CONDITIONS TO AVOID
		WILL NOT OCCUR		X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
	Wipe up with rag; then wash with soap and water			
	WASTE DISPOSAL METHOD			
	Controlled burning or burial			
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)			
	VENTILATION	LOCAL EXHAUST		SPECIAL
		Yes		
		MECHANICAL (General)		OTHER
PROTECTIVE GLOVES		EYE PROTECTION		
Rubber Gloves		Safety Goggles		
OTHER PROTECTIVE EQUIPMENT				
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING			
	Store in tightly closed containers at room temperatures			
OTHER PRECAUTIONS				

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-RD338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		8 28-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccobond Solder V9I (Part B)	
	CHEMICAL FAMILY		FORMULA	
Aliphatic Amine (Mod.)		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	Modified Aliphatic Amine						
	VEHICLE			METALLIC COATINGS			
	SOLVENTS	AN Ether		200 PPM	FILLER METAL PLUS COATING OR CORE FLUX		
	ADDITIVES				OTHERS		
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
Solvent							

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	150	SPECIFIC GRAVITY (H ₂ O=1)	0.89
	VAPOR PRESSURE (mm Hg.) 15°C	114	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)	2.5	EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Clear Mobile Liquid-Ether-Like Odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	1°F (TCC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT	
				2.3%	11.8%	
	EXTINGUISHING MEDIA					
	Foam, Dry Chemicals, CO ₂ , Carbon Tetrachloride					
	SPECIAL FIRE FIGHTING PROCEDURES					
Emits toxic fumes when heated to decomposition						
UNUSUAL FIRE AND EXPLOSION HAZARDS						
Moderate explosion hazard (as ethers) on exposure to air						

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Mildly irritating to skin with prolonged contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) <p style="text-align: center;">Strong oxidizing Agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">Carbon monoxide, Aldehydes, Acids, etc.</p>		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled burning or burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Yes	
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store at room temperature in closed containers</p>		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Eccobond Solder V91 (Part A)
	CHEMICAL FAMILY		FORMULA
Epoxy Adhesive		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	460°F	SPECIFIC GRAVITY (H ₂ O=1)
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)
	SOLUBILITY IN WATER	Nil	
	APPEARANCE AND ODOR		
Silver Paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	High	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	None				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Irritating to skin on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Nitrogen oxide fumes, CO, Aldehydes, Acids, etc.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wash with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes by means of oven vents; if oven curing		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond Solder 72C Part B
	CHEMICAL FAMILY Modified Aliphatic Amine	FORMULA Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		

SECTION II - HAZARDOUS INGREDIENTS	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____																																																												
	<table border="1"> <thead> <tr> <th>PAINTS, PRESERVATIVES, AND SOLVENTS</th> <th>%</th> <th>THRESHOLD LIMIT VALUE (Units)</th> <th>ALLOYS AND METALLIC COATINGS</th> <th>%</th> <th>THRESHOLD LIMIT VALUE (Units)</th> </tr> </thead> <tbody> <tr> <td>PIGMENTS</td> <td></td> <td></td> <td>BASE METAL</td> <td></td> <td></td> </tr> <tr> <td>CATALYST Mod. Aliphatic Amine</td> <td></td> <td></td> <td>ALLOYS</td> <td></td> <td></td> </tr> <tr> <td>VEHICLE Epoxy Resin</td> <td></td> <td></td> <td>METALLIC COATINGS</td> <td></td> <td></td> </tr> <tr> <td>SOLVENTS</td> <td></td> <td></td> <td>FILLER METAL PLUS COATING OR CORE FLUX</td> <td></td> <td></td> </tr> <tr> <td>ADDITIVES</td> <td></td> <td></td> <td>OTHERS</td> <td></td> <td></td> </tr> <tr> <td>OTHERS</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES</td> <td>%</td> <td>THRESHOLD LIMIT VALUE (Units)</td> </tr> <tr> <td colspan="6"> </td> </tr> <tr> <td colspan="6"> </td> </tr> </tbody> </table>	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	PIGMENTS			BASE METAL			CATALYST Mod. Aliphatic Amine			ALLOYS			VEHICLE Epoxy Resin			METALLIC COATINGS			SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			ADDITIVES			OTHERS			OTHERS						HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)												
	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)																																																							
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	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)																																																							

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	+ 240°F	SPECIFIC GRAVITY (H ₂ O=1)	1.00 - 1.03
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Amber viscous liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) + 250°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO₂ Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES None - Avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent then wash with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	Yes
	PROTECTIVE GLOVES		EYE PROTECTION
Rubber Gloves			
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccobond Solder 70C	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Polyamide			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Silver coated Metallic Filler			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	4.3
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (=1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR		Silvery - Black Paste	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	High	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
None					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slightly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	Heating to Decomposition		
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing Agents		
HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes Acids, NH ₃			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond 99
CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST Non-Polymeric Amide			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR Black Paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 480°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, Carbon Monoxide, Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES None-Avoid Breathing Smoke			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

DD

Toxicity - Not established Carcinogenic - Not indicated

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	See Section II		
	EFFECTS OF OVEREXPOSURE		
	Impairment of judgment and coordination due to anesthetic properties of vapors. Exposure to high vapor concentrations may result in irritation of the respiratory tract.		
	EMERGENCY AND FIRST AID PROCEDURES		
Inhalation: Remove to fresh air. Contact with skin: Wash with soap and water. Eye Contact: Flush eyes with water for 15 minutes; call a physician.			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	None		
	HAZARDOUS DECOMPOSITION PRODUCTS		
Carbon combustion products, HCl			
HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID	
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Provide adequate ventilation. Scoop bulk of material into container for disposal. Clean up with rags and solvent.		
	WASTE DISPOSAL METHOD		
	Allow solvent to evaporate; dispose of solids in landfill.		
	RESPIRATORY PROTECTION (Specify type)		
SECTION VIII - SPECIAL PROTECTION INFORMATION	VENTILATION	LOCAL EXHAUST	SPECIAL
	To maintain TLV	MECHANICAL (General)	OTHER
		PROTECTIVE GLOVES	
	Impervious		Goggles or face shield
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	Avoid prolonged and repeated breathing of vapor or contact with skin or eyes. Use with adequate ventilation. Keep container closed.		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Eccobond 87-H (NF)
	CHEMICAL FAMILY Neoprene/resin solution	FORMULA *Proprietary	
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
	PIGMENTS			BASE METAL		
	CATALYST			ALLOYS		
	VEHICLE			METALLIC COATINGS		
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
	ADDITIVES			OTHERS		
	OTHERS					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%
Methylene chloride					*	500 ppm
1, 1, 1-Trichloroethane					*	350 ppm 1900 mg/m ³
Toluene					*	200 ppm
Chlorobenzene					*	75 ppm 350 mg/m ³
Isopropanol					*	400 ppm 980 mg/m ³

SECTION III PHYSICAL DATA	BOILING POINT (°F.) estimated	40° C (104° F)	SPECIFIC GRAVITY (H ₂ O=1)	1.24	980 mg/m ³
	VAPOR PRESSURE (mm Hg.)	220 mm Hg (est.)	PERCENT VOLATILE BY VOLUME (% Wt.)	85%	
	VAPOR DENSITY (AIR = 1)	3.4 (estimated)	EVAPORATION RATE (_____ = 1)	NA	
	SOLUBILITY IN WATER	Insoluble			
	APPEARANCE AND ODOR Yellow solution. Solvent odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	NA	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	NA			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Acute Oral LD. -50, 4000 mg/kg		
	Not a skin sensitizer		
	EMERGENCY AND FIRST AID PROCEDURES Skin Contact -- Wash with soap and water		
	Eyes - Flush with water for at least 15 minutes. Get medical attention		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing materials		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, CO ₂ , Aldehydes and other organics		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Soak up spills promptly		
	WASTE DISPOSAL METHOD Bury or controlled burning		
	RESPIRATORY PROTECTION (Specify type) Approved organic mask		
	VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER	
SECTION VIII - SPECIAL PROTECTION INFORMATION	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid unnecessary personal contact		
SECTION IX SPECIAL PRECAUTIONS	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-20338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Eccobond-PDQ (Part B)
CHEMICAL FAMILY	FORMULA	
MOD Lewis Acid	Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST MOD Lewis Acid			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H ₂ O=1)	1.2
VAPOR PRESSURE (mm Hg.) 20°C	1-2	PERCENT VOLATILE BY VOLUME (%)	<0.1
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ = 1)	<1
SOLUBILITY IN WATER			
APPEARANCE AND ODOR			
Dark Brown Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
350°F C. O. C.			
EXTINGUISHING MEDIA			
Dry Chemical, CO ₂ , H ₂ O			
SPECIAL FIRE FIGHTING PROCEDURES			
None			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST Only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-60338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Eccobond PDQ Part A	
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (=1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR			
Thick Liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	C. O. C. high (480° F)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , dry chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	no special procedures - avoid breathing smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Primary irritation of skin - on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes, acids, etc.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves	EYE PROTECTION Goggles	
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccobond 276	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR			
Black viscous liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	± 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	None - Avoid Breathing Smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids, nitrogen oxides		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) not ordinarily required		
	VENTILATION	LOCAL EXHAUST while heating	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES	rubber gloves	EYE PROTECTION Goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in closed containers below 80°F		
	OTHER PRECAUTIONS Carry out fumes when curing in vented oven		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Eccobond 144A
CHEMICAL FAMILY	FORMULA	
Epoxy Resin	Proprietary	
FEDERAL STOCK NUMBER (FSN)		OUTSIDE PACKAGE DIMENSIONS (Inches)
Polyamide Curing Agent		
GROSS WEIGHT (LBS)		
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST	Polyamide		ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES	Mineral Filler		OTHERS		
OTHERS	Epoxy Resin				
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	
VAPOR PRESSURE (mm Hg.)	Neg	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Neg		
APPEARANCE AND ODOR			
Black thixotropic paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
460°F (COC)			
EXTINGUISHING MEDIA			
Foam, CO ₂ Dry chemicals			
SPECIAL FIRE FIGHTING PROCEDURES			
None- avoid breathing smoke			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
none			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to Decomposition
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General) Only if heated	
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Mass. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccobond 285	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS Epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR			
Black Viscous Liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	C. O. C. 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , dry chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	No special procedures - avoid breathing smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Mildly irritating to skin with extended contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">Wash with soap and water</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	HEATING TO DECOMPOSITION <p style="text-align: center;">Heating to Decomposition</p>		
	INCOMPATIBILITY (Materials to avoid) <p style="text-align: center;">Strong oxidizing agents</p>		
HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">CO, aldehydes, acids, Nitric Oxides</p>			
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <p style="text-align: center;">Clean up with a solvent; then with water</p>		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled burning or burial</p>		
	RESPIRATORY PROTECTION (Specify type) <p style="text-align: center;">Not ordinarily required</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	VENTILATION	LOCAL EXHAUST	SPECIAL
		Only if heated	
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store at room temperature in closed containers</p>		
	OTHER PRECAUTIONS <p style="text-align: center;">Use a vented oven when curing at elevated temperatures</p>		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Eccobond 281
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR			
Black Viscous Liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	480°F COC			
	EXTINGUISHING MEDIA			
	Foam, CO ₂ , dry chemicals			
SPECIAL FIRE FIGHTING PROCEDURES				
No special procedures - avoid breathing smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slightly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
			Heating to decomposition
		STABLE	X
	INCOMPATABILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, Aldehydes Acids			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Yes	
		MECHANICAL (<i>General</i>)	OTHER
PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

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Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Epoxy Resin		Eccobond Paste E	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)
	SOLUBILITY IN WATER		
	APPEARANCE AND ODOR		
Black Paste			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	480° F (COC)			
	EXTINGUISHING MEDIA			
	Foam, Carbon Monoxide, Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES				
None - Avoid Breathing Smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slightly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to Decomposition
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids, NH ₃		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	Yes
		MECHANICAL (<i>General</i>)	
	PROTECTIVE GLOVES		EYE PROTECTION
	Rubber Gloves		
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

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Bureau Budget No. 45-R0338

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	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccobond Paste 88 T	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)		
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST	Non-Polymeric Amide		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Black Paste		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	480°F (COC)			
	EXTINGUISHING MEDIA	Foam, Carbon Monoxide, Dry Chemicals		
	SPECIAL FIRE FIGHTING PROCEDURES	None - Avoid Breathing Smoke		
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None		

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slightly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to Decomposition
		STABLE	
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids, NH ₃		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

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	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Eccobond Paste 88	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)		
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST	Non-Polymeric Amide		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Black Paste		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	480°F (COC)			
	EXTINGUISHING MEDIA	Foam, Carbon Monoxide, Dry Chemicals		
	SPECIAL FIRE FIGHTING PROCEDURES	None - Avoid Breathing Smoke		
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Irritating to Skin		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to Decomposition
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong Oxidizing Agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Toxic Fumes of Nitrogen Oxides		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wash up with soap and water		
	WASTE DISPOSAL METHOD Burial or Controlled Burning		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) Not Ordinarily Required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (<i>General</i>)	
	PROTECTIVE GLOVES	Rubber	EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS		

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	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
	Modified Aliphatic Amine		Eccobond Conductive Adhesive 60L Part B	
CHEMICAL FAMILY		FORMULA		
Modified Aliphatic Amine		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST Modified Aliphatic Amine			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Carbon			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	> 625	SPECIFIC GRAVITY (H ₂ O=1)	< 1.0
	VAPOR PRESSURE (mm Hg.)	< 0.01	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR	Black Paste		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	325°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ , Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

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SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Stycast 35
CHEMICAL FAMILY		FORMULA
Polystyrene Resin		Proprietary
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
 PHYSICAL DATA

BOILING POINT (°F.)	293	SPECIFIC GRAVITY (D ₂₀ =1)	1.05
VAPOR PRESSURE (mm Hg.) 68° F	4.5	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	3.6	EVAPORATION RATE (Ether = 1)	< 1
SOLUBILITY IN WATER 68° F	0.029%		
APPEARANCE AND ODOR Clear Liquid with aromatic odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
TOC 98° F		1.1	6.1
EXTINGUISHING MEDIA Dry chemical, water fog, foam or CO ₂			
SPECIAL FIRE FIGHTING PROCEDURES Equipment which contains this material should be cooled by water stream			
if exposed to fire			

SECTION V HEALTH HAZARD DATA	100 ppm		
	EFFECTS OF OVEREXPOSURE Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)		
EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O ₂ relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Alkylation Catalysts (H ₂ SO ₄ , H ₃ PO ₄ , BF ₃ , AlCl ₃) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)		
HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating			
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.		
	WASTE DISPOSAL METHOD All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Bureau of Mines approved industrial canister gas masks up to 2%. Air or O ₂ supplied full face masks above 2%		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER Good natural ventilation normally sufficient
	PROTECTIVE GLOVES Rubber or insoluble plastic		EYE PROTECTION Chemical safety goggles if eye contact possible
OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35D		
	OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 35D
CHEMICAL FAMILY		FORMULA	
Polystyrene Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H ₂ O=1)	1.05
	VAPOR PRESSURE (mm Hg.) 68° F	4.5	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)	3.6	EVAPORATION RATE (Ether = 1)	< 1
	SOLUBILITY IN WATER 68° F	0.029%		
	APPEARANCE AND ODOR Clear Liquid with aromatic odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	TOC 98° F		1.1	6.1
	EXTINGUISHING MEDIA Dry chemical, water fog, foam or CO ₂			
	SPECIAL FIRE FIGHTING PROCEDURES Equipment which contains this material should be cooled by water stream			
if exposed to fire				

SECTION V HEALTH HAZARD DATA	100 ppm		
	EFFECTS OF OVEREXPOSURE Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)		
SECTION VI REACTIVITY DATA	EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O ₂ relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water		
	STABILITY	UNSTABLE	CONDITIONS TO AVOID
SECTION VII SPILL OR LEAK PROCEDURES	STABLE	X	
	INCOMPATABILITY (Materials to avoid) Alkylation Catalysts (H ₂ SO ₄ , H ₃ PO ₄ , BF ₃ , AlCl ₃) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)		
	HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating		
SECTION VIII - SPECIAL PROTECTION INFORMATION	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F
		WILL NOT OCCUR	
SECTION IX SPECIAL PRECAUTIONS	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.		
	WASTE DISPOSAL METHOD All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Bureau of Mines approved industrial canister gas masks up to 2%. Air or O ₂ supplied full face masks above 2%.		
	VENTILATION	LOCAL EXHAUST	SPECIAL
SECTION VIII - SPECIAL PROTECTION INFORMATION	MECHANICAL (General)		OTHER Good natural ventilation normally sufficient
	PROTECTIVE GLOVES Rubber or insoluble plastic		EYE PROTECTION Chemical safety goggles if eye contact possible
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35D		
SECTION IX SPECIAL PRECAUTIONS	OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

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	Emerson & Cuming, Inc.		828-3300				
	ADDRESS (Number, Street, City, State, and ZIP Code)						
	869 Washington St., Canton, Ma. 02021						
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS				
Polystyrene Resin		Stycast 35DA					
CHEMICAL FAMILY		FORMULA					
Polystyrene Resin		Proprietary					
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)				
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL							
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____							
SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
SECTION III PHYSICAL DATA	BOILING POINT (°F.)	293		SPECIFIC GRAVITY (H ₂ O=1)	3.55		
	VAPOR PRESSURE (mm Hg.) 68° F	4.5		PERCENT VOLATILE BY VOLUME (%)			
	VAPOR DENSITY (AIR=1)	3.6		EVAPORATION RATE (Ether = 1)	< 1		
	SOLUBILITY IN WATER 68° F	0.029%					
	APPEARANCE AND ODOR White opaque with aromatic odor						
SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	TOC 98° F		FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT	
					1.1	6.1	
	EXTINGUISHING MEDIA Dry chemical, water fog, foam or CO ₂						
	SPECIAL FIRE FIGHTING PROCEDURES Equipment which contains this material should be cooled by water stream						
	HAZARDOUS REACTION CONDITIONS if exposed to fire						

SECTION V HEALTH HAZARD DATA	100 ppm		
	EFFECTS OF OVEREXPOSURE Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)		
EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O ₂ relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Alkylation Catalysts (H ₂ SO ₄ , H ₃ PO ₄ , BF ₃ , AlCl ₃) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)		
	HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	X
		WILL NOT OCCUR	
CONDITIONS TO AVOID Excessive heat will deplete inhibitor runaway polymerization usually requires >150° F			
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.		
	WASTE DISPOSAL METHOD All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Bureau of Mines approved industrial canister gas masks up to 2%. Air or O ₂ supplied full face masks above 2%		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER Good natural ventilation normally sufficient
	PROTECTIVE GLOVES Rubber or insoluble plastic		EYE PROTECTION Chemical safety goggles if eye contact possible
OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70° F. Do not use copper or copper alloys while using Stycast 35D		
	OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.		

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SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
Polystyrene Resin		Stycast 35DT	
CHEMICAL FAMILY		FORMULA	
Polystyrene Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H ₂ O=1)	1.5
	VAPOR PRESSURE (mm Hg.) 68° F	4.5	PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)	3.6	EVAPORATION RATE (Ether = 1)	< 1
	SOLUBILITY IN WATER 68° F	0,029%		
	APPEARANCE AND ODOR			
White Opaque with aromatic odor				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	TOC 98° F		1.1	6.1
	EXTINGUISHING MEDIA			
	Dry chemical, water fog, foam or CO ₂			
	SPECIAL FIRE FIGHTING PROCEDURES			
Equipment which contains this material should be cooled by water stream				
HAZARDOUS REACTIONS				
if exposed to fire				

SECTION V HEALTH HAZARD DATA	100 ppm			EFFECTS OF OVEREXPOSURE Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)
	EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O ₂ relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE		CONDITIONS TO AVOID
		STABLE	X	
	INCOMPATIBILITY (Materials to avoid) Alkylation Catalysts (H ₂ SO ₄ , H ₃ PO ₄ , BF ₃ , AlCl ₃) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)			
	HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating			
	HAZARDOUS POLYMERIZATION	MAY OCCUR	X	CONDITIONS TO AVOID Excessive heat will deplete inhibitor runaway polymerization usually requires >150°F
		WILL NOT OCCUR		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.			
	WASTE DISPOSAL METHOD All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.			
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Bureau of Mines approved industrial canister gas masks up to 2%. Air or O ₂ supplied full face masks above 2%			
	VENTILATION	LOCAL EXHAUST	SPECIAL	
		MECHANICAL (General)	OTHER Good natural ventilation normally sufficient	
	PROTECTIVE GLOVES		EYE PROTECTION	
Rubber or insoluble plastic		Chemical safety goggles if eye contact possible		
OTHER PROTECTIVE EQUIPMENT				
Rubber boots and slicker suit if splashing likely				
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70°F. Do not use copper or copper alloys while using Stycast 35D			
	OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion			

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Stycast 35DS
CHEMICAL FAMILY		FORMULA
Polystyrene Resin		Proprietary
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Silica Microballoons			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	293	SPECIFIC GRAVITY (H ₂ O=1)	0.7
VAPOR PRESSURE (mm Hg.) 68° F	4.5	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	3.6	EVAPORATION RATE (Ether = 1)	< 1
SOLUBILITY IN WATER 68° F	0.029%		
APPEARANCE AND ODOR			
White opaque with an aromatic odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
TOG 98° F		1.1	6.1
EXTINGUISHING MEDIA			
Dry chemical, Water fog, Foam or CO ₂			
SPECIAL FIRE FIGHTING PROCEDURES			
Equipment which contains this material should be cooled by water stream if exposed to fire			

SECTION V HEALTH HAZARD DATA	EFFECTS OF OVEREXPOSURE Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)		
	EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation: Lie down and keep warm; O ₂ relieves coughing. Eye contact: Irrigate 15 min. with water. Skin: Wash thoroughly with soap and water.		
SECTION VI ACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Alkylation Catalysts (H ₂ SO ₄ , BF ₃ , AlCl ₃), Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating		
	HAZARDOUS POLYMERIZATION	MAY OCCUR WILL NOT OCCUR	CONDITIONS TO AVOID Excessive heat will deplete inhibitor runaway polymerization usually requires >150° F)
SECTION VIII - SPECIAL PROTECTION INFORMATION	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35DS may be absorbed by dry earth or equivalent and hauled to a disposal area.		
	WASTE DISPOSAL METHOD All quantities of Stycast 35DS or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.		
SECTION IX SPECIAL PRECAUTIONS	RESPIRATORY PROTECTION (Specify type) Bureau of Mines approved industrial canister gas mask: upto 2%. Air or O ₂ supplied full face masks above 2%		
	VENTILATION	LOCAL EXHAUST MECHANICAL (General)	SPECIAL OTHER Good natural ventilation normally sufficient
SECTION IX SPECIAL PRECAUTIONS	PROTECTIVE GLOVES Rubber or insoluble plastic		EYE PROTECTION Chemical safety goggles if eye contact pos
	OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely.		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70° F. Do not use copper or copper alloys while using Stycast 35DS		
	OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.		

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SECTION V HEALTH HAZARD DATA	100 ppm		
	EFFECTS OF OVEREXPOSURE Irritation to eyes and respiratory tract normally provides good warning above 400 ppm and systemic injury unlikely unless concentration extremely high (1% can be fatal in 30-60 min.)		
EMERGENCY AND FIRST AID PROCEDURES Move patient to fresh air and revive if unconscious. Call physician immediately. Ingestion: Induce vomiting at least three times with milk and raw eggs. Inhalation- Lie down and keep warm; O ₂ relieves coughing. Eye Contact- Irrigate 15 min. with water. Skin- Wash thoroughly with soap and water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Alkylation Catalysts (H ₂ SO ₄ , H ₃ PO ₄ , BF ₃ , AlCl ₃) Halogens, Hydrogen Halides, NaOH, Glycols (Removes Inhibitor)		
	HAZARDOUS DECOMPOSITION PRODUCTS Acrid fumes on heating		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID Excessive heat will deplete inhibitor runaway polymerization usually requires >150° F
		WILL NOT OCCUR	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED All spills and leaks should be immediately flushed to waste treatment facilities with large amounts of water. If water is not available, Stycast 35D may be absorbed by dry earth or equivalent and hauled to a disposal area.		
	WASTE DISPOSAL METHOD All quantities of Stycast 35D or waste contaminated by it should be safely burned in a manner consistent with federal, state and local health and pollution regulations. Water containing it should be air blown and the air burned if contamination is gross.		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Bureau of Mines approved industrial canister gas masks up to 2%. Air or O ₂ supplied full face masks above 2%.		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER Good natural ventilation normally sufficient
	PROTECTIVE GLOVES Rubber or insoluble plastic		EYE PROTECTION Chemical safety goggles if eye contact possible
OTHER PROTECTIVE EQUIPMENT Rubber boots and slicker suit if splashing likely			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Storage temp. below 70° F. Do not use copper or copper alloys while using Stycast 35D		
	OTHER PRECAUTIONS Avoid skin and eye contact; avoid inhalation of vapors; avoid ingestion.		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 2762
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Aluminum Hydroxide	70-80	OTHERS			
	OTHERS	Bisphenol "A" Epichlorhydrin type Epoxy Resin	20-30				
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR			
thick liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	C. O. C.	480° F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA					
	Foam, CO ₂ Dry Chemicals					
	SPECIAL FIRE FIGHTING PROCEDURES					
	None					
UNUSUAL FIRE AND EXPLOSION HAZARDS						
None						

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritat ng to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldenhydres, Acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 3020
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Mineral Filler			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.68
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR	Maroon Viscous Liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	140°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None - Avoid Breathing Smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Primary irritation of skin on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, Aldehydes, Acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		only if heated	
		MECHANICAL (<i>General</i>)	OTHER
SECTION IX SPECIAL PRECAUTIONS	PROTECTIVE GLOVES	EYE PROTECTION	
	Rubber Gloves	Goggles	
	OTHER PROTECTIVE EQUIPMENT Store at room temperature in closed containers		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
SECTION IX SPECIAL PRECAUTIONS	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Stycast HiK	
CHEMICAL FAMILY		FORMULA		
Styrene		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES			OTHERS			
	OTHERS						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	± 2.2
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			

APPEARANCE AND ODOR
White, Hard, Cured Styrene material in Sheet, Rod or Bar Form

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	NA			
	EXTINGUISHING MEDIA			
	CO ₂ Foam, Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES			
None				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0339

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS Bisphenol A/epichlor Hydrin type		TRADE NAME AND SYNONYMS Stycast Aluminum
	CHEMICAL FAMILY Epoxy Resin		FORMULA Proprietary
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Aluminum Powder		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.6
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	< .2%		
	APPEARANCE AND ODOR	Silvery Grey viscous liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	480° F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO₂, Dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None-Avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Primary irritation of skin - on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes, acids, etc.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (<i>General</i>)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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St., Canton, Ma. 02021
SYNONYMS

TRADE NAME AND SYNONYMS

Stycast 3050

SECTION I

CHEMICAL FAMILY Epoxy Resin		FORMULA Proprietary
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.55
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR Maroon viscous liquid			
FLASH POINT (Method used)	140° F. C. O. C.	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, CO ₂ , Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES None - Avoid breathing smoke			
USUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	500 PPM		
	EFFECTS OF OVEREXPOSURE		
	Primary to moderate irritation of skin on prolonged or repeated contact		
EMERGENCY AND FIRST AID PROCEDURES			
Wash with soap and water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS		
Carbon monoxide, Aldehydes, Acids etc.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD		
Controlled burning or burial			
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Yes - to maintain TLV	
		MECHANICAL (General)	OTHER
PROTECTIVE GLOVES		EYE PROTECTION	
Rubber Gloves		Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	Store at room temperature in closed containers		
	OTHER PRECAUTIONS		
Carry out fumes when curing, in vented ovens			

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-20338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
Epoxy Resin		Stycast 2058	
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Mineral Filler			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.59
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR Black viscous Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	490° F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO ₂ , Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES None - Avoid breathing smoke				
	UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Primary irritation of skin - on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide; aldehydes, acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
Bisphenol A/Epichlor Hydrin Type		Stycast 1970
CHEMICAL FAMILY	FORMULA	
Epoxy Resin	Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES	Inorganic Filler & Silver		OTHERS		
OTHERS	Epoxy Resin				
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.9
VAPOR PRESSURE (mm Hg.)	NIL	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	< .2%		
APPEARANCE AND ODOR			
Silvery Grey Viscous Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
480°F (COC)			
EXTINGUISHING MEDIA			
Foam, CO ₂ Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES			
None - Avoid Breathing Smoke			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE PRimary irritation of skin - on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing Agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled Burning or Burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Only if heated	
	MECHANICAL (General)		
PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RISK IN HIS USE OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Stycast 2662	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral filler		OTHERS			
	OTHERS	Epoxy resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.5
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR	thick liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	COC 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	no special procedures - avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	none			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO aldehydes, acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent then soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Stycast 2762
CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR Black viscous liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	+ 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, CO₂ dry chemicals				
SPECIAL FIRE FIGHTING PROCEDURES None - avoid breathing smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Primary irritation of skin - on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide, aldehydes, acids, etc.		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD controlled burning or burial		
	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
SECTION VIII - SPECIAL PROTECTION INFORMATION	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves		EYE PROTECTION Goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-20538

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers) Emerson & Cuming, Inc.		EMERGENCY PHONE NO. 828-3300
ADDRESS (Number, Street, City, State, and ZIP Code) 869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Stycast 2762FT
CHEMICAL FAMILY Epoxy Resin	FORMULA Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S.A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES Mineral Filler			OTHERS		
OTHERS Epoxy resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR thick liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) C. O. C. 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA Foam, CO₂, Dry Chemicals			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, acids, etc.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST X	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
	Epoxy Resin		Stycast 2057
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
	PIGMENTS	S.A.		BASE METAL		
	CATALYST			ALLOYS		
	VEHICLE			METALLIC COATINGS		
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
	ADDITIVES Mineral Filler			OTHERS		
	OTHERS Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.55
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR Black Viscous Liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	490° F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO ₂ , Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES None - Avoid Breathing smoke				
	UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Primary irritation of skin - on prolonged or repeated contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon monoxide; aldehydes, acids, etc.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
SECTION VIII - SPECIAL PROTECTION INFORMATION	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing ; in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)

EMERGENCY PHONE NO.

Dow Chemical Company & Cuming, Inc.

828-3300

Address, Street, City, State, and ZIP Code

Washington St. - Canton, Ma. 02021

COMMON NAME AND SYNONYMS

TRADE NAME AND SYNONYMS

Stycast 2057 FR

FAMILY
Resin

FORMULA

Proprietary

UNIFORMEDOCK NUMBER (FSN)

GROSS WEIGHT (LBS)

OUTSIDE PACKAGE DIMENSIONS (Inches)

NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

HAZARD IDENTITY HEALTH REACTIVITY SPECIFIC HAZARD

RESERVATIVES, SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
			BASE METAL		
			ALLOYS		
epoxy Resin			METALLIC COATINGS		
			FILLER METAL PLUS COATING OR CORE FLUX		
Mineral Filler			OTHERS		
dominated Organic					
osphated Organic					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

% THRESHOLD LIMIT VALUE (Units)

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.70
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
EVAPORATION RATE (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBLE IN WATER	Nil		

APPEARANCE AND ODOR

Black Viscous Liquid

(Method used)

°F (C. O. C.)

FLAMMABLE LIMITS

LOWER EXPLOSIVE LIMIT

UPPER EXPLOSIVE LIMIT

EXTINGUISHING MEDIA

foam, CO₂ Dry Chemicals

FIGHTING PROCEDURES

None - Avoid Breathing Smoke

ADDITIONAL PRECAUTIONS AND EXPLOSION HAZARDS

None

SECTION V HEALTH HAZARD DATA	THRESHOLD	
	EFFECT	PI
	EMERGENCY	W ₂
SECTION VI REACTIVITY DATA	STABILITY	
	INCOMPATIBILITY	
	HAZARD	
	HAZARD POLYMERIZATION	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN	
	WASTE DISPOSAL	
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION	
	VENTILATION	
	PROTECTIVE CLOTHING	
	OTHER PRECAUTIONS	
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS	Sti
	OTHER PRECAUTIONS	Ca

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE <p style="text-align: center;">500 PPM</p>		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Primary to moderate irritation of skin on prolonged or repeated contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">Wash with soap and water</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (<i>Materials to avoid</i>) <p style="text-align: center;">Strong oxidizing agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">Carbon monoxide, Aldehydes, Acids, Methyl Halides, etc.</p>		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <p style="text-align: center;">Clean up with a solvent, then with water</p>		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled burning or burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) <p style="text-align: center;">Not ordinarily required</p>		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		Yes to maintain TLV	
	PROTECTIVE GLOVES <p style="text-align: center;">Rubber Gloves</p>		EYE PROTECTION <p style="text-align: center;">Goggles</p>
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store at room temperature in closed containers</p>		
	OTHER PRECAUTIONS <p style="text-align: center;">Carry out fumes when curing in vented ovens</p>		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-40338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 1495
	CHEMICAL FAMILY		FORMULA
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	Trace		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.91
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR Viscous liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	C.D.C	480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, CO ₂ , dry chemicals					
	SPECIAL FIRE FIGHTING PROCEDURES no special procedures - avoid breathing smoke					
	UNUSUAL FIRE AND EXPLOSION HAZARDS none					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin on extended contact		
	EMERGENCY AND FIRST AID PROCEDURES skin - wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		only if heated	
	MECHANICAL (General)		
PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place		
	Keep containers tightly closed		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR THIRD PERSONS PROXIMATELY CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE ASSUMES THE RESPONSIBILITY FOR PROTECTING THE MATERIAL FROM FIRE AND THEFT.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 1467
	CHEMICAL FAMILY	FORMULA	
Epoxy Resin	Proprietary		
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE Epoxy Resin			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Mineral Filler Halogenated Fillers			OTHERS			
	OTHERS Brominated organic						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.65
	VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR			
Black Viscous liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	140° F			
	EXTINGUISHING MEDIA	Foam, CO ₂ Dry Chemicals		
	SPECIAL FIRE FIGHTING PROCEDURES	None Avoid breathing smoke		
	UNUSUAL FIRE AND EXPLOSION HAZARDS	None		

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE			500 ppm
	EFFECTS OF OVEREXPOSURE			
	Primary to moderate irritation of skin on prolonged or repeated contact			
	EMERGENCY AND FIRST AID PROCEDURES			
Wash with soap and water				
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE		CONDITIONS TO AVOID
		STABLE	X	
	INCOMPATIBILITY (Materials to avoid)			
	Strong oxidizing agents			
	HAZARDOUS DECOMPOSITION PRODUCTS			
Carbon monoxide, aldehydes, acids, methyl halides, etc.				
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
		WILL NOT OCCUR	X	
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
Clean up with a solvent, then with water				
WASTE DISPOSAL METHOD				
Controlled burning or burial				
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)			
	not ordinarily required			
	VENTILATION	LOCAL EXHAUST	SPECIAL	
		Yes to maintain TLV		
	MECHANICAL (General)	OTHER		
	PROTECTIVE GLOVES	EYE PROTECTION		
	Rubber Gloves	Goggles		
	OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING			
	Store at room temperature in closed containers			
	OTHER PRECAUTIONS			
Carry out fumes when heat curing, in vented ovens				

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
Diglycidyl Ether or Bisphenol		Stycast 1217
CHEMICAL FAMILY	FORMULA	
Epoxy Resin	Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS Epoxy Resin	100				
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III
PHYSICAL DATA

BOILING POINT (°F.)	> 580	SPECIFIC GRAVITY (H ₂ O=1)	1.16
VAPOR PRESSURE (mm Hg.) 87°F	6	PERCENT VOLATILE BY VOLUME (%)	.3%
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____ = 1)	None
SOLUBILITY IN WATER	Ins.		
APPEARANCE AND ODOR			
Clear Amber liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	235°C TCC	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA				
CO ₂ , Dry Chemicals, Foam				
SPECIAL FIRE FIGHTING PROCEDURES				
None				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE		
	Mild Skin and eye irritant. Skin Sensitizer		
	EMERGENCY AND FIRST AID PROCEDURES		
Skin contact - Wash with soap and Water			
Eyes - Flush with plenty of water			
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid)		
	HAZARDOUS DECOMPOSITION PRODUCTS		
	CO, CO ₂ , Aldehydes and other organics		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED		
	Clean up with solvent; then wash with water		
	WASTE DISPOSAL METHOD		
	Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
			Safety Glasses
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING		
	Avoid skin and eye contact		
	OTHER PRECAUTIONS		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-20338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 1095
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS Epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	.88
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR			
thick liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	COC 580°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , dry chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	no special procedures - avoid breathing smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
none					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
WILL NOT OCCUR		X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Goggles	
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
Epoxy Resin		Stycast 1090	
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS Epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	0.88
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR			
thick liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	COC	480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA					
	Foam, CO ₂ dry chemicals					
	SPECIAL FIRE FIGHTING PROCEDURES					
	no special procedures - avoid breathing smoke					
UNUSUAL FIRE AND EXPLOSION HAZARDS						
None						

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	EYE PROTECTION	
Rubber gloves	Goggles		
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Stycast 1090SI	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS Epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	0.78
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR			
thick liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	COC 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, CO ₂ , dry chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
no special procedures - avoid breathing smoke					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
none					

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SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves	EYE PROTECTION Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing, in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)				EMERGENCY PHONE NO.		
	Emerson & Cuming, Inc.				828-3300		
	ADDRESS (Number, Street, City, State, and ZIP Code)						
	869 Washington, St., Canton, Ma. 02021						
	CHEMICAL NAME AND SYNONYMS			TRADE NAME AND SYNONYMS			
				Stycast 2851GT			
CHEMICAL FAMILY			FORMULA				
Epoxy Resin			Proprietary				
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)		OUTSIDE PACKAGE DIMENSIONS (Inches)			
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL							
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____							
SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST	Non-Polymeric Amid		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High		SPECIFIC GRAVITY (H ₂ O=1)	2.3		
	VAPOR PRESSURE (mm Hg.)			PERCENT VOLATILE BY VOLUME (%)			
	VAPOR DENSITY (AIR = 1)			EVAPORATION RATE (_____ = 1)			
	SOLUBILITY IN WATER						
	APPEARANCE AND ODOR						
Black Viscous Liquid							
SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	480°F (COC)		FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT	
	EXTINGUISHING MEDIA						
	Foam, Carbon Monoxide, Dry Chemicals						
	SPECIAL FIRE FIGHTING PROCEDURES						
	None - Avoid Breathing Smoke						
UNUSUAL FIRE AND EXPLOSION HAZARDS							
None							

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slightly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to decomposition
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids, NH ₃		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
SECTION VIII - SPECIAL PROTECTION INFORMATION	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington, St., Canton, Ma. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Stycast 2851 MT	
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST	Non-Polymeric Amid		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.72
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Black Viscous Liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	480°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, Carbon Monoxide, Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	None - Avoid Breathing Smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slightly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to decomposition
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids, -NH ₃		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VIII - SPECIAL PROTECTION INFORMATION	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
SECTION IX SPECIAL PRECAUTIONS	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington, St., Canton, Ma. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Stycast 2851KT	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST	Non-Polymeric Amid		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.8
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR			
Black Viscous Liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	480°F (COC)	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA				
	Foam, Carbon Monoxide, Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES				
	None - Avoid Breathing Smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Slightly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to decomposition
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids, NH ₃		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
SECTION VIII - SPECIAL PROTECTION INFORMATION	VENTILATION	LOCAL EXHAUST Yes	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES	Rubber Gloves	EYE PROTECTION
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Carry out fumes when curing in vented ovens		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)				EMERGENCY PHONE NO.		
	Emerson & Cuming, Inc.				828-3300		
	ADDRESS (Number, Street, City, State, and ZIP Code)						
	869 Washington, St., Canton, Ma. 02021						
	CHEMICAL NAME AND SYNONYMS			TRADE NAME AND SYNONYMS			
				Stycast 2851 FT			
CHEMICAL FAMILY			FORMULA				
Epoxy Resin			Proprietary				
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)		OUTSIDE PACKAGE DIMENSIONS (Inches)			
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL							
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____							
SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST	Non-Polymeric Amid		ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES	Mineral Filler		OTHERS			
	OTHERS	Epoxy Resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)
SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High		SPECIFIC GRAVITY (H ₂ O=1)	2.3		
	VAPOR PRESSURE (mm Hg.)			PERCENT VOLATILE BY VOLUME (%)			
	VAPOR DENSITY (AIR=1)			EVAPORATION RATE (_____ = 1)			
	SOLUBILITY IN WATER						
	APPEARANCE AND ODOR						
Black Viscous Liquid							
SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)			FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT	
	480°F (COC)						
	EXTINGUISHING MEDIA						
	Foam, Carbon Monoxide, Dry Chemicals						
	SPECIAL FIRE FIGHTING PROCEDURES						
None - Avoid Breathing Smoke							
UNUSUAL FIRE AND EXPLOSION HAZARDS							
None							



SECTION V HEALTH HAZARD DATA	EFFECTS OF OVEREXPOSURE			
	Slightly irritating to skin with prolonged contact			
EMERGENCY AND FIRST AID PROCEDURES				
Wash with soap and water				
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID	
			Heating to decomposition	
		STABLE	X	
	INCOMPATIBILITY (<i>Materials to avoid</i>)			
Strong oxidizing agents				
HAZARDOUS DECOMPOSITION PRODUCTS				
Carbon Monoxide, Aldehydes, Acids, NH ₃				
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID	
	WILL NOT OCCUR	X		
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
	Wipe up with a solvent; then with water			
	WASTE DISPOSAL METHOD			
Controlled burning or burial				
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>)			
	Not ordinarily required			
	VENTILATION	LOCAL EXHAUST	Yes	SPECIAL
		MECHANICAL (<i>General</i>)		OTHER
PROTECTIVE GLOVES		Rubber Gloves	EYE PROTECTION	
OTHER PROTECTIVE EQUIPMENT				
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING			
	Store at room temperature in closed containers			
	OTHER PRECAUTIONS			
Carry out fumes when curing in vented ovens				

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
	Emerson & Cuming, Inc.		828-3300	
	ADDRESS (Number, Street, City, State, and ZIP Code)			
	869 Washington, St., Canton, Mass. 02021			
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
			Stycast 2850KT	
CHEMICAL FAMILY		FORMULA		
Epoxy Resin		Proprietary		
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL				
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____				

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES Mineral Filler			OTHERS			
	OTHERS Epoxy Resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.8
	VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER			
	APPEARANCE AND ODOR Blue Viscous Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	C. O. C. 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA Foam, Carbon Monoxide, Dry Chemicals				
	SPECIAL FIRE FIGHTING PROCEDURES None - Avoid Breathing Smoke				
	UNUSUAL FIRE AND EXPLOSION HAZARDS None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE - Slightly irritating to skin with prolonged contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID Heating to Decomposition
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Wipe up with a solvent; then with water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) Not ordinarily required		
	VENTILATION	LOCAL EXHAUST Yel	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber Gloves	EYE PROTECTION Goggles	
SECTION IX SPECIAL PRECAUTIONS	OTHER PROTECTIVE EQUIPMENT		
	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at room temperature in closed containers		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-20338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
Emerson & Cuming, Inc.		828-3300
ADDRESS (Number, Street, City, State, and ZIP Code)		
869 Washington St., Canton, Ma. 02021		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
		Stycast 2850GT
CHEMICAL FAMILY		FORMULA
Epoxy Resin		Proprietary
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL		
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____		

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	S. A.		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS Epoxy Resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	Nil		
APPEARANCE AND ODOR			
Black Viscous Liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	C. O. C. 480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA				
Foam, Carbon Monoxide, Dry Chemicals				
SPECIAL FIRE FIGHTING PROCEDURES				
None - Avoid Breathing Smoke				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE <u>Slightly irritating to skin with prolonged contact</u>		
	EMERGENCY AND FIRST AID PROCEDURES <u>Wash with soap and water</u>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID <u>Heating to Decomposition</u>
		STABLE	<u>X</u>
	INCOMPATIBILITY (Materials to avoid) <u>Strong oxidizing agents</u>		
	HAZARDOUS DECOMPOSITION PRODUCTS <u>Carbon Monoxide, Aldehydes Acids</u>		
	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
	WILL NOT OCCUR	<u>X</u>	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <u>Wipe up with a solvent; then with water</u>		
	WASTE DISPOSAL METHOD <u>Controlled Burning or Burial</u>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) <u>Not ordinarily required</u>		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		<u>Yel</u>	
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES <u>Rubber Gloves</u>		EYE PROTECTION <u>Goggles</u>
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <u>Store at room temperatures in closed containers</u>		
	OTHER PRECAUTIONS <u>Use a vented oven when curing at elevated temperatures</u>		

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MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 2850FT
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS	S. A.		BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	2.3
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	Nil		
	APPEARANCE AND ODOR	thick liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	C. O. C.				
	EXTINGUISHING MEDIA	Foam, CO ₂ , Dry Chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None				

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE mildly irritating to skin and eyes with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES Wash		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS Carbon Monoxide, Aldehydes, Acids, etc.		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type)		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		X	
		MECHANICAL (General)	OTHER
SECTION IX SPECIAL PRECAUTIONS	PROTECTIVE GLOVES		EYE PROTECTION
	Rubber Gloves		Goggles
	OTHER PROTECTIVE EQUIPMENT		
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store at Room Temperature in closed containers		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDEE OR TO NO PERSONS PROBABLY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, VENDOR ASSUMES NO LIABILITY FOR INJURY TO VENDEE OR TO NO PERSONS PROBABLY CAUSED BY IMPROPER USE OF THE MATERIAL. EACH USER SHOULD SAFELY USE THE MATERIAL AND FOLLOW ALL INSTRUCTIONS. PLEASE ADVISE THE PERSONNEL OF THE MATERIAL.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.	
Emerson & Cuming, Inc.		828-3300	
ADDRESS (Number, Street, City, State, and ZIP Code)			
869 Washington St., Canton, Mass. 02021			
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS	
		Stycast 2651MM	
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS	Trace		BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES mineral filler			OTHERS		
OTHERS epoxy resin					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.55
VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER	nil		
APPEARANCE AND ODOR			
Viscous liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	C. D. C	480° F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
EXTINGUISHING MEDIA					
Foam, CO ₂ , dry chemicals					
SPECIAL FIRE FIGHTING PROCEDURES					
no special procedures - avoid breathing smoke					
UNUSUAL FIRE AND EXPLOSION HAZARDS					
none					

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin on extended contact		
	EMERGENCY AND FIRST AID PROCEDURES skin - wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATIBILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST only if heated	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place		
	Keep containers tightly closed		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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Emerson & Cuming, Inc. MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-RD338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
	Epoxy Resin		Stycast 2651-40
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)		GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
	PIGMENTS	S. A.		BASE METAL		
	CATALYST			ALLOYS		
	VEHICLE			METALLIC COATINGS		
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
	ADDITIVES mineral filler			OTHERS		
	OTHERS Epoxy resin					
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%

SECTION III - PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.5
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR			
thick liquid				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used)	C. O. C.	480°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA					
	Foam, CO ₂ , dry chemicals					
	SPECIAL FIRE FIGHTING PROCEDURES					
no special procedures - avoid breathing smoke						
UNUSUAL FIRE AND EXPLOSION HAZARDS						
none						

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SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE <p style="text-align: center;">Mildly irritating to skin with extended contact</p>		
	EMERGENCY AND FIRST AID PROCEDURES <p style="text-align: center;">wash with soap and water</p>		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (<i>Materials to avoid</i>) <p style="text-align: center;">Strong oxidizing agents</p>		
	HAZARDOUS DECOMPOSITION PRODUCTS <p style="text-align: center;">CO, aldehydes, acids</p>		
SECTION VII SPILL OR LEAK PROCEDURES	HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID
		WILL NOT OCCUR	X
	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED <p style="text-align: center;">Clean up with a solvent; then with soap and water</p>		
	WASTE DISPOSAL METHOD <p style="text-align: center;">Controlled burning or burial</p>		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (<i>Specify type</i>) <p style="text-align: center;">not ordinarily required</p>		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		only if heated	
		MECHANICAL (<i>General</i>)	OTHER
PROTECTIVE GLOVES	EYE PROTECTION		
Rubber gloves		Goggles	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING <p style="text-align: center;">Store in a cool place in closed containers</p>		
	OTHER PRECAUTIONS <p style="text-align: center;">Use a vented oven when curing at elevated temperatures</p>		

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

VENDOR ASSUMES NO RESPONSIBILITY FOR INJURY TO VENDOR OR THIRD PERSONS SOLELY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PRECAUTIONS ARE NOT TAKEN TO AS SPECULATED IN THE DATA SHEET. ADDITIONAL LIABILITY AND NO RESPONSIBILITY FOR INJURY TO VENDOR OR TO BE OBTAINED FROM THE MATERIAL IF REASONABLE SAFETY PRECAUTIONS ARE NOT TAKEN TO AS SPECULATED IN THE DATA SHEET.

Emerson & Cuming, Inc. MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.
	Emerson & Cuming, Inc.		828-3300
	ADDRESS (Number, Street, City, State, and ZIP Code)		
	869 Washington St., Canton, Mass. 02021		
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
			Stycast 2651
CHEMICAL FAMILY		FORMULA	
Epoxy Resin		Proprietary	
FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)	
MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL			
FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____			

SECTION II - HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
	PIGMENTS			BASE METAL			
	CATALYST			ALLOYS			
	VEHICLE			METALLIC COATINGS			
	SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
	ADDITIVES mineral filler			OTHERS			
	OTHERS Epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	THRESHOLD LIMIT VALUE (Units)

SECTION III PHYSICAL DATA	BOILING POINT (°F.)	High	SPECIFIC GRAVITY (H ₂ O=1)	1.5
	VAPOR PRESSURE (mm Hg.)	nil	PERCENT VOLATILE BY VOLUME (%)	0
	VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (_____ = 1)	
	SOLUBILITY IN WATER	nil		
	APPEARANCE AND ODOR	thick liquid		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) (TCC)	460°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	EXTINGUISHING MEDIA	Foam, CO ₂ , dry chemicals			
	SPECIAL FIRE FIGHTING PROCEDURES	no special procedures - avoid breathing smoke			
	UNUSUAL FIRE AND EXPLOSION HAZARDS	none			

Emerson & Cuming, Inc.

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 45-R0338

SECTION I	MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers)		EMERGENCY PHONE NO.					
	Emerson & Cuming, Inc.		828-3300					
	ADDRESS (Number, Street, City, State, and ZIP Code)							
	869 Washington St., Canton, Mass. 02021							
	CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS					
			Stycast 2651					
SECTION II - HAZARDOUS INGREDIENTS	CHEMICAL FAMILY		FORMULA					
	Epoxy Resin		Proprietary					
	FEDERAL STOCK NUMBER (FSN)	GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)					
	MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL							
	FLAMMABILITY _____ HEALTH _____ REACTIVITY _____ SPECIFIC HAZARD _____							
SECTION III	HAZARDOUS INGREDIENTS	PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)	
		PIGMENTS			BASE METAL			
		CATALYST			ALLOYS			
		VEHICLE			METALLIC COATINGS			
		SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX			
		ADDITIVES mineral filler			OTHERS			
		OTHERS Epoxy resin						
	HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES						%	THRESHOLD LIMIT VALUE (Units)
SECTION III	BOILING POINT (°F.)		High	SPECIFIC GRAVITY (H ₂ O=1)		1.5		
	VAPOR PRESSURE (mm Hg.)		nil	PERCENT VOLATILE BY VOLUME (%)		0		
	VAPOR DENSITY (AIR=1)			EVAPORATION RATE (_____ = 1)				
	SOLUBILITY IN WATER		nil					
	APPEARANCE AND ODOR thick liquid							
SECTION IV - FIRE AND EXPLOSION HAZARD DATA	FLASH POINT (Method used) (TCC)		460°F	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT		
	EXTINGUISHING MEDIA Foam, CO ₂ , dry chemicals							
	SPECIAL FIRE FIGHTING PROCEDURES no special procedures - avoid breathing smoke							
	UNUSUAL FIRE AND EXPLOSION HAZARDS none							

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FORM 1813 & GPO 794/043/30
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S/N 0102-026-1080

SECTION V HEALTH HAZARD DATA	THRESHOLD LIMIT VALUE		
	EFFECTS OF OVEREXPOSURE Mildly irritating to skin with extended contact		
	EMERGENCY AND FIRST AID PROCEDURES wash with soap and water		
SECTION VI REACTIVITY DATA	STABILITY	UNSTABLE	CONDITIONS TO AVOID
		STABLE	X
	INCOMPATABILITY (Materials to avoid) Strong oxidizing agents		
	HAZARDOUS DECOMPOSITION PRODUCTS CO, aldehydes, acids		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII SPILL OR LEAK PROCEDURES	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Clean up with a solvent; then with soap and water		
	WASTE DISPOSAL METHOD Controlled burning or burial		
SECTION VIII - SPECIAL PROTECTION INFORMATION	RESPIRATORY PROTECTION (Specify type) not ordinarily required		
	VENTILATION	LOCAL EXHAUST	SPECIAL
		MECHANICAL (General)	OTHER
	PROTECTIVE GLOVES Rubber gloves		EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Store in a cool place in closed containers		
	OTHER PRECAUTIONS Use a vented oven when curing at elevated temperatures		

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GRACE

W. R. Grace & Co.
62 Whittemore Avenue
Cambridge, MA 02140

(617) 876-1400

February 1, 1989

U.S. Environmental Protection Agency, Region 1
Waste Management Division
Post Office Box 6222
Boston, MA 02114

RE: W.R. Grace & Co. - Conn.
Washington Street, Canton, Massachusetts
EPA I.D. No: MAD000843920

Dear Sir or Madam:

This letter and enclosed documents are submitted on behalf of W.R. Grace & Co. - Conn. (Grace) in response to a request for information dated November 25, 1988 and supplemented by a letter dated December 30, 1988 (together hereinafter referred to as the "request"), from Mr. Merrill S. Hohman, Director, Waste Management Division, relating to the above-referenced Grace operation in Canton, Massachusetts. The letter dated December 30, 1988 extended the time for Grace to respond to the "request" until February 1, 1989.

Preliminary Statement

Grace will answer in this letter the questions posed by the EPA information request in accordance with its understanding of that request. Nevertheless, Grace wishes to note that by doing so it does not in any way concede or admit that EPA has authority or jurisdiction to require corrective action in connection with its Canton operation. For the reasons described below, among others, Grace believes that it is not subject to EPA's corrective action permitting or enforcement authority.

We understand from those two letters that EPA's intent in requesting answers to these questions is to identify any releases of hazardous waste or constituents from facilities qualifying for interim status under RCRA Section 3005 that treat, store for 90 days or more, or dispose of hazardous waste, including so-called Solid Waste Management Units (SWMUs), as well as releases of hazardous waste or constituents from facilities which had interim status or should have had interim status as a result of their treatment, storage or disposal activities. We further understand that EPA seeks this information in order to determine the need for response or for enforcement of the corrective action provision of RCRA, as added by the Hazardous and Solid Waste Amendments of 1984 (HSWA), RCRA Sections 3004(u) and 3008.

To the extent that the request is premised on the proposition that the Grace operations are subject to RCRA corrective action, Grace disputes that premise. Simply put, under the Hazardous and Solid Waste Amendments of 1984 (HSWA), EPA may impose corrective action requirements in two circumstances. The first is where there have been releases of hazardous wastes or constituents from any solid waste management unit at a facility "seeking a permit" under RCRA Section 3005(c), 42 U.S.C. Section 6925(c). See RCRA Section 3004(u), 42 U.S.C. Section 6924(u). Because Grace is not seeking a permit under Section 3005(c), as described below, Section 3004(u) does not apply.

Corrective action may also be required under RCRA Section 3008(h), 42 U.S.C. Section 6928(h), where there has been a release from "a facility authorized to operate under Section 3005(e) of this subtitle", 42 U.S.C. Section 6925(e). Grace has not been authorized to operate as an interim status facility since at least 1983, when it withdrew its Part A permit application, as described below. Therefore, this section also does not apply.

The above-referenced Grace operations are not RCRA-permitted or interim status facilities. Grace did submit to EPA a Notification of Hazardous Waste Activity, and under date of November 18, 1980 a General information form, EPA Form 3510-1 (6/80), and a Part A Hazardous Waste Permit Application, EPA Form 3510-3 (6/80), with respect to its operations then existing in Canton. However, on March 29, 1984 Grace submitted to EPA. A copy of the letter requesting change of status is enclosed herewith. In addition, on February 10, 1984 Grace submitted to DEQE on a form approved by DEQE for that purpose a signed certification confirming, among other things, that thenceforward it would not store, treat, or dispose of hazardous waste. A copy of this

letter and certification is enclosed herewith. Grace is advised both by the DEQE Division of Hazardous Waste and by EPA that Grace's change of status request, as to its Canton facility, was granted by DEQE and approved by EPA. Acknowledgment of the change of status was received from the Department of Environmental Quality Engineering on December 27, 1988. We are unable at this time to locate the official documentation from EPA confirming the change of status but will provide you with copies as soon as they have been located.

Since Massachusetts has (then and now) a delegated program under RCRA, EPA approval was not required for a change of status. This was confirmed in the Memorandum of Understanding (MOU) dated March 25, 1986, which specifies procedures for certain federal/state interactions under RCRA. These procedures state that DEQE had authority in the first instance to approve a change in status. Moreover, the MOU states that when DEQE notifies EPA of a decision to approve a change in status, EPA must inform DEQE within two weeks of any disagreement with DEQE's decision; otherwise DEQE's decision stands. Grace is not aware that EPA ever expressed any disagreement with DEQE's decision to approve Grace's change of status. Therefore, since DEQE recognized Grace's change of status and EPA in effect approved it, Grace has not been authorized to operate as an interim status facility since 1984, and it is not subject to the RCRA corrective action provision.

Since neither DEQE nor EPA had taken any administrative action to grant Grace's Part A permit application, we understand that Grace's withdrawal of that application was effective in any event to terminate its previous interim status for its operations covered by the Part A permit application as of the date of withdrawal, which was prior to the enactment of the corrective action provision of HSWA. In short, Grace's Canton operation does not meet the definition of "facility" set forth in the request, because that operation is not conducted on property " on which units subject to RCRA permitting are located."

Response

Grace understands that the information request was issued pursuant to the authority of Section 3007(a) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6927(a), and pursuant to Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. Section 960(e). The request sets forth a number of definitions of terms used in the individual

questions, and the questions themselves request specific information regarding the Grace operations in accordance with their terms and the definitions provided. In those instances where the questions may not be clear, we have been guided by our understanding of statutory and regulatory definitions, by interpretations set forth in EPA's preambles to proposed and final rules as published from time to time in the Federal Register, and by the statement of EPA's purpose in requesting answers to these questions as described in the letters of November 25 and December 30, 1988 and summarized above. We understand that we are not required to provide information that was not requested in those letters, and we have not attempted to do so.

Grace notes in particular that the definition of "Solid Waste Management Unit" (SWMU) which is the subject of question 1, and the description of an "other" unit set forth in question 2, are very precise and limited. Grace understands that a SWMU, for purposes of this request, is a unit which contains or contained solid or hazardous waste, not hazardous constituents nor hazardous substances. Further, a SWMU is understood to be such a unit "from which hazardous waste or hazardous constituents might migrate;" that is, a unit which poses a present threat of release of hazardous waste or hazardous constituents. Accordingly, a unit which no longer contains solid or hazardous waste poses no such threat and therefore is not considered a SWMU. Neither is a unit considered a SWMU, even if it does contain solid or hazardous waste, if there is believed to be no significant threat of release of hazardous waste or hazardous constituents in this connection, Grace understands the term "might migrate" as used in the request to mean a substantial probability of migration and not merely a theoretical possibility of migration.

Grace understands that an "other" unit, on the other hand, is a unit which holds or held hazardous substances, not hazardous waste or hazardous constituents. Further, an "other" unit as described in question 2 is understood to be such a unit form which there has been an actual release of hazardous waste or hazardous constituents. However, we note that RCRA Section 3008(h), on which question 2 is apparently modeled, applies only to releases of hazardous waste, not hazardous constituents.

These disparate definitions correspond roughly to the different terminology used in RCRA Sections 3004(u) and 3008(h), respectively, the two authorities cited by the EPA in the request.

Finally, we note that the definition of "release" in the request excludes "releases otherwise permitted or authorized under the law".

Based on these understanding and the above-described investigation, Grace makes the following response to the items of the request.

REQUEST 1 (a)- (g)

The Canton facility contains no solid waste management units from which there is believed to be a significant threat of the release and migration of hazardous waste or hazardous constituents.

The Canton facility uses, and or, has used the hazardous waste management areas in the locations indicated on the plan of the facility which is attached hereton. Grace will supplement this response by providing the topographical map requested.

The hazardous waste management areas located at the Canton facility, are described as follows:

Waste Management Area #1.

Waste Management Area #1 is an indoor storage unit approximately 16' by 51'. The unit has been in use from 1984 until the present. Wastes generated at the facility are described by type and quantity in the annual report on hazardous wastes submitted to the Massachusetts Department of Environmental Quality Engineering attached hereto.

In 1985 1 gallon of acid was spilled as a result of the breakage of a bottle. The spill was contained within the area, neutralized with calcium carbonate and cleaned up. The Canton Fire was notified of the spill.

In 1986 there was a spill of an epoxy - polyamid mix which was contained in a 5 gallon pail.

Upon information and belief there have been no known releases of hazardous wastes from this unit.

Waste Management Area #2.

Waste Management Area #2 was approximately 15' by 20'. The unit was in use from 1981 to 1985. Wastes generated at the

facility are described by type and quantity in the annual report on hazardous wastes submitted to the Massachusetts Department of Environmental Quality Engineering attached heretofore.

In 1983 there was a spill of 5 gallons of epoxy resin in the unit. The spill was contained in the unit, cleaned up with speed-dry absorbant and disposed of.

In 1983 there was also a reaction of an epoxy/urethane mix in a 55 gallon drum. All but a few gallons were contained in the drum. The overflow was cleaned up with absorbant and disposed of.

Upon information and belief there have been no known releases of hazardous wastes from this unit.

Waste Management Area #3.

Waste management area #3 was approximately 15' by 20'. The unit was used during 1983 and 1984. Wastes generated at the facility are described by type and quantity in the annual report on hazardous wastes submitted to the Massachusetts Department of Environmental Quality Engineering attached hereto.

Upon information and belief there have been no known releases of hazardous waste from this unit.

Waste Management Area #4.

Waste management area #4 was approximately 10' by 15'. The unit was used from 1982 until 1984. Wastes generated at the facility are described by type and quantity in the annual report on hazardous wastes submitted to the Massachusetts Department of Environmental Quality Engineering attached hereto.

Upon information and belief there have been no known releases of hazardous waste from this unit.

Waste Management Area #5.

Waste management area #5 was a temporary storage trailer approximately 10' by 40' which was used by a waste disposal firm in 1986.

Upon information and belief there have been no known releases of hazardous waste from this unit.

Waste Accumulation Areas

The facility uses the following satellite accumulation sites:

<u>Location</u>	<u>Wastes Accumulated</u>	<u>Container type</u>
Compressor Room	water & oil	55 gal. drum
Polymer Dept.	styrene monomer	5 gal. drum
	vacuum pump oil	5 gal pail
QC Lab	epoxy, silicone	5 gal pail
	1,1,1-trichloroethane	5 gal pail
Resins	1,1,1-trichloroethane	55 gal drum
	water & amine catalyst	55 gal drum
Silver Production	1,1,1-trichloroethane	55 gal drum
Catalyst Room	water and anhydride	55 gal drum
Special Package	1,1,1-trichloroethane	55 gal drum
Gimble Rings	water and neoprene	55 gal drum
	1,1,1-trichloroethane	5 gal pail

Upon information and belief there have been no known releases of wastes from these satellite accumulation sites.

REQUEST 2 (a) - (g)

Upon information and belief there are no known units at the facility, which hold or have held hazardous substances and from which there have been releases of hazardous waste or hazardous constituents.

Information pertaining to the discovery on November 30, 1987 of an oily product floating on groundwater at the facility is attached hereto, as is the report prepared by Roy Weston entitled "Investigation of Petroleum Contamination at the Emerson & Cuming, Inc. Facility, 869 Washington Street, Canton, Massachusetts. The Weston investigation concluded that the petroleum products are migrating on to the property and as such, are not the result of the past or present operations conducted by Emerson & Cuming on the Washington Street Site.

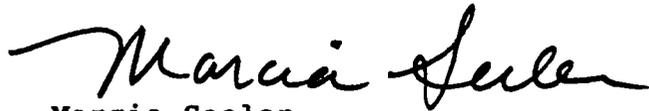
Present facility contact person:

Thomas Phair
Plant Manager
(617) 828 -3300.

USEPA, Region 1
Page 8
February 1, 1989

Unless otherwise indicated, this response is not made on the basis of personal knowledge. This response was prepared by or with the assistance of agents, employees, representatives, or attorneys of Grace, or others believed to have relevant information, and with the advice of counsel, which has been relied upon herein. The answers set forth herein, subject to inadvertent or undiscovered errors or omissions, are based on and therefore necessarily limited by the records and information still in existence, presently recollected, thus far discovered in the course of the preparation of these answers, and currently available to Grace. Grace reserves its right to supplement this response if discovery of additional information makes such supplementation appropriate.

Very truly yours,

A handwritten signature in black ink, reading "Marcia Seeler". The signature is written in a cursive style with a long, sweeping underline that extends to the left.

Marcia Seeler
Assistant Environmental Counsel

3430
3420

GRACE MEMO

to: Plant 1 Foremen
from: Bob Marshall
subject: Sewer Sampling

date: 7-13-83
cc: F. Sheehan
F. Fitts
R. Winterson

Beginning at 7:00 a.m. Thursday, July 14, we will conduct sewer sampling for the MDC. Samples will be taken over a 16 hour period beginning at 7:00 a.m. each day. Frank Sheehan and Frank Fitts will conduct the testing and record meter readings on the attached schedule. We will run the test Thursday, July 14, and Friday, July 15.

Samples will be taken by taking a gallon can and dipping it into the manhole on the far southeast corner of the property (fill can approximate 1/2 full). Seal the can immediately after taking sample. Each shift will accumulate their eight samples, shake thoroughly and pour into a five gallon pail and seal it. The two five gallon pails from each day will be shaken thoroughly and combined into a third five gallon pail. From this third pail, a quart sample will be taken and labelled as follows:

COMPOSITE SEWER SAMPLE
JULY _____, 1983
EMERSON & CUMING
869 WASHINGTON STREET
CANTON, MA
PREPARED BY _____

Remember that samples should always be thoroughly shaken while transferring to ensure that any settled solids are dispersed. Also when the gallon cans, five gallon pails or quart plastic jars are being stored they should be tightly sealed to prevent any evaporation.

Bob Marshall
Bob Marshall



3470

Emerson & Cuming

Dewey and Almy Chemical Division
W. R. Grace & Co.
Canton, Mass. 02021

(617) 828-3300



August 22, 1983

Mr. Wayne T. Grandin
Chief Engineer of Industrial Waste
Metropolitan District Commission
Sewerage Division
20 Somerset Street
Boston, MA 02108

Subject: Permit No. 10-005724

Dear Sir:

Enclosed you will find an analysis of our sewer effluent from the 14th and 15th of July, 1983. The analysis was performed by Arnold Greene Testing Laboratories of Natick, Massachusetts. The first day of sampling, we discharged 5453 gallons. The second day of sampling, we discharged 6665 gallons.

I have also enclosed copies of the test methods that Arnold Greene used and the sampling instructions and operator log sheets for the two days.

Since our neighbor, Brooks Adhesives, discharges into our sewer and the two combine in a common line to discharge to MDC, our operators were instructed to attempt to take the sample between the periodic discharges of Brooks Adhesives. We, therefore, believe the analysis should be representative of our effluent.

I apologize for the tardiness of this report. I misread your letter of October 13, 1982, and thought we were supposed to test every July.

Sincerely,
EMERSON & CUMING

Robert R. Marshall
Plant Manager

RRM:pg



Testing Laboratories Incorporated

East Natick Industrial Park
8 Huron Drive • Natick, MA 01760
(617) 235-7330, 853-5950
Telex 948459 GREENELAB NTIK

Inspection • Evaluation • Analysis
Research • Development



Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

TEST REPORT

TO: <u>Emerson & Cuming, Inc.</u>	DATE <u>7/26/83</u>	MATERIAL _____
<u>Div. of W.R. Grace & Co.</u>	JOB NO. <u>38489-1</u>	HEAT NO. <u>None</u>
<u>869 Washington Street</u>	LAB. NO. <u>0108</u>	SPECIFICATIONS: <u>None</u>
<u>Canton, MA 02184</u>	ORDER NO. <u>1-46409</u>	
ATT: _____		

Sample ID: 2 Sewer Water Composites

7/19/83

Sample #2 15 July 1983
 Composite Sewer Sample
 Emerson & Cuming
 869 Washington Street
 Canton, MA 02021
 Prepared by F. Sheehan

pH	7.3
Ammonia (mg/l)	7.5
Total Kjeldahl-Nitrogen (mg/l)	9
Total Cyanide, (mg/l)	<0.10
Cyanide, Ammen to Cl (mg/l)	<0.10
Total Suspended Solids (mg/l)	1,080
Settleable Solids, (ml/l/hr)	2.0
Total Solids (mg/l)	1,438
Silver (mg/l)	<0.02

SUBSCRIBED TO AND SWORN TO BEFORE ME THIS
DAY OF _____ 19__

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
26th DAY OF July 83
ARNOLD GREENE TESTING LABORATORIES, INC.

NOTARY PUBLIC

James J. Bari
James J. Bari, Manager

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.

THIS REPORT IS RENDERED UPON THE CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND/OR OTHER PURPOSES OVER OUR SIGNATURE OR IN CONNECTION WITH OUR NAME WITHOUT OUR SPECIAL PERMISSION IN WRITING.

- NONDESTRUCTIVE TESTING: MAGNAFLUX • ZYGLO • MILLION VOLT & LOW VOLTAGE X-RAY • ULTRASONIC FLAW DETECTION • AUDIGAGE THICKNESS MEASUREMENT • BORESCOPE • GAMMA-RAY • FILM INTERPRETATION & CONSULTATION
- DESTRUCTIVE TESTING: FATIGUE TESTING • METALLURGICAL INVESTIGATIONS • WET CHEMICAL ANALYSIS • SALT SPRAY • ACID ETCH SPECTROGRAPHIC ANALYSIS • PROCEDURE & WELDER QUALIFICATION • IMPACT • STRESS RUPTURE • ROCKWELL SUPERFICIAL • BRINELL • MICROHARDNESS • MICROPHOTOGRAPHY

3437



Arnold Greene Testing Laboratories Incorporated

East Natick Industrial Park
6 Huron Drive • Natick, MA 01760
(617) 235-7330, 653-5950
Telex 948459 GREENELAB NTIK

Nondestructive • Chemical • Pollution • Metallurgical
Inspection • Evaluation • Analysis
Research • Development



Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

TEST REPORT

TO: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street
Canton, MA 02184

DATE 8/03/83
JOB NO. 38489-2
LAB. NO. 0108

MATERIAL Water
HEAT NO. None
SPECIFICATIONS None

ATT: _____

ORDER NO. 1-46409

Purpose: To determine the presence of methylene chloride and toluene in two water samples submitted for analysis.

Method: The water was quantitatively analyzed for organic contaminants by gas chromatographic/mass spectrometric (GC/MS) technique. The instrument was equipped with a purge and trap concentrator for the analysis of volatile organic contaminants.

Results: 1) July 14, 1983 2) July 15, 1983

Methylene Chloride 3,463 ug/l 952 ug/l

Toluene None Detected 7,085 ug/l

Others found

Trichloroethane 245 ug/l 8,772 ug/l

Trichloroethene 3 ug/l 188 ug/l

Tetrachloroethene None Detected 59 ug/l

Comment: The samples were received 7/19/83 in jars with large head space.

SUBSCRIBED TO AND SWORN TO BEFORE ME THIS
DAY OF _____ 1983

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
3rd DAY OF August 1983

ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril Manager

NOTARY PUBLIC

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.

THIS REPORT IS RENDERED
PURPOSES OVE.

CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND/OR OTHER
RE OR IN CONNECTION WITH OUR NAME WITHOUT OUR SPECIAL PERMISSION IN WRITING.

3437



Arnold Greene Testing Laboratories Incorporated

East Natick Industrial Park
8 Huron Drive • Natick, MA 01700
(617) 235-7330, 653-5950
Telex 948459 GREENCLAB NTIK

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Inspection • Evaluation • Analysis
Research • Development

Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-6500

TEST REPORT

TO: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street
Canton, MA 02184

DATE 8/03/83

MATERIAL Water

JOB NO. 38489-2

HEAT NO. None

LAB. NO. 0108

SPECIFICATION None

ATT: _____

ORDER NO. 46409

Purpose: To determine the presence of dioctylphthalate in two water samples submitted for analysis.

Method: The samples were first pH adjusted to greater than 12 and then extracted with methylene chloride according to EPA procedure. The extract was concentrated and analyzed by Gas Chromatography.

Results:	July 14, 1983	July 15, 1983
Dioctylphthalate	<1 ug/l	<1 ug/l

SUBSCRIBED TO AND SWORN TO BEFORE ME THIS
DAY OF _____ 19__

NOTARY PUBLIC

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
3rd DAY OF August 83 19__

ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril
James J. Baril, Manager

UNLESS STIP

ATED IN WRITING BY YOU. ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.

THIS REPORT IS REPRODUCED
PURPOSE.

THE CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND/OR OTHER
SIGNATURE OR IN CONNECTION WITH THE TEST.



The Commonwealth of Massachusetts

Metropolitan District Commission

20 Somerset Street, Boston 02108

RECEIVED

SEP 27 1983

SEWERAGE DIVISION

September 26, 1983

EMERSON & CUMING
CANTON, MASS. 02021

EMERSON AND CUMING
Dewey and Almy Chemical Division
W. R. Grace and Company
869 Washington Street
Canton, MA 02021

ATTENTION: Robert Marshall

Dear Mr. Marshall:

SUBJECT: Analytical Data

We are in receipt of the recent analysis submitted by your company as performed by Arnold Greene Testing Laboratories of Natick, MA.

The analysis as submitted indicates concentrations of toluene and trichloroethane which are considered by this office to be excessive and in violation of Metropolitan District Commission Rules and Regulations, Article III, Section 2(i).

Therefore, the Division is requiring at this time that your company take all necessary steps to eliminate the concentrations of the aforementioned constituents either by inhouse process modification or by preparing pretreatment plans.

Notification as to your intended action is anticipated prior to October 21, 1983 so that this Division can determine if the Industrial User Discharge Permit which has expired as of August 31, 1983 can be reissued.

If this office can be of further assistance or clarification, please do not hesitate to contact Charles W. Lombardi at 727-1024.

Very truly yours,

WAYNE T. GRANDIN
Chief Engineer of Industrial Waste

JV
JPV/kw

cc: H. Bonne, DWPC
H. Munson, DPW, Canton

3430

GRACE MEMO

to: Distribution

date: September 28, 1983

from: R. R. Marshall

cc:

subject: Plant 1's MDC Industrial User Permit

We submitted a composite sample of Plant 1's sewer effluent for July 14 and 15 to meet the annual requirements for renewing our Industrial User Permit.

As a result of this annual sample, we received a letter from the Chief Engineer of the Metropolitan District Commission notifying us that our levels of toluene and trichloroethane are considered to be excessive and in violation of our Industrial User Permit.

The letter notifies us that we must make in-house process revisions or establish pretreatment facilities to remove the toluene and trichloroethane.

I contacted the MDC and stated that we wished to resample. I explained that our sewer effluent was combined with Brooks Adhesives and that there was no good way to segregate the two, or, therefore, to take an independent sample of Emerson & Cuming's effluent. During our resampling, we will be taking a sample of Brooks effluent prior to combining with Emerson & Cuming's, and then a combined sample downstream. With this manner of sampling, we would hope to show that the source of some of the contaminants could be Brooks Adhesive. The MDC engineer that I spoke to was receptive to this approach.

The only other means for toluene or trichloroethane to enter our sewer effluent would be for an individual to illegally dispose of something. I would hope that our people have been educated enough to realize that any liquid chemical that has to be disposed of must go to a hazardous landfill. Brian Fitzpatrick and Frank Sheehan coordinate this disposal effort.

We will be resampling the week of October 3. Prior to this sampling, we will have notices posted in all production areas to remind our employees of the proper disposal method for any liquid waste as well as the consequences for not adhering to the proper procedure. I would suggest that all R&D and Quality Control employees also be advised of the correct disposal procedures for any liquid chemical.



You will all be advised of the actual date and times that sampling will begin. Needless to say, if our resample uncovers a problem that can not be traced to Brooks Adhesive, we stand a chance of losing our permit to discharge to the MDC sewer. Obviously, this is a worst case scenario, but it does indicate the gravity of the situation, and the need to insure that all of our employees have been informed about proper methods of disposal and are adhering to them.

Bob

Bob Marshall

pg

Distribution

L. W. Watkins
G. F. Winterson
W. A. Mischel
T. J. Phair
E. A. Dahlquist, Sr.
K. King
J. P. Uliano
D. H. Russell
G. A. Peavey
R. Doucette
P. J. Pasquarose
M. J. Micchelli
E. A. Dahlquist, Jr.
B. A. Fitzpatrick



BROOKS
ADHESIVES / COATINGS

BROOKS ADHESIVES CORPORATION 1 875 WASHINGTON ST., P.O. BOX 244
CANTON, MASSACHUSETTS 02021-0244
TELEPHONE: 617 / 828-1150

cc. GFW
WAM
PEF
3430

October 3, 1983

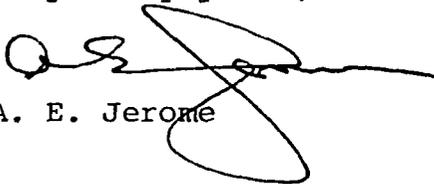
Mr. Bob Marshall, Plant Manager
Emerson & Cuming
59 Walpole Street
Canton, Massachusetts 02021

Dear Bob,

Enclosed is a copy of a memo from our Chief Chemist,
Mr. Jack Loftus, to me regarding waste water analysis.

As you can see, we will comply with the standard as
set by the M.D.C. effective immediately.

Very truly yours,


A. E. Jerome

AEJ/sed

Enclosure



INTER-OFFICE MEMO

TO: Al Jerome

FROM: Jack Loftus

SUBJECT: WASTE WATER

DATE: October 3, 1983

Mr. Bob Marshall, of Emerson & Cuming, called to advise us that the M. D. C. had found high levels of toluol and trichloroethane in the sewer waste water, a sample of which was taken by them on July 15, 1983.

I called Mr. Charles Lombardi, of the M.D.C., and advised him of Bob's call. He said they found 700 parts per billion, which is over the limit. The allowed limit is 10 parts per billion (the drinking water standard).

I see no reason why we cannot be below this allowed limit with only a minor change in our manufacturing procedure.

I thanked Mr. Lombardi for the information and assured him we would comply with the standard.

JL/sed

CC: Mr. Bob Marshall ✓

3430

GRACE MEMO

to: Al Jeroma, Brooks Adhesives
from: Bob Marshall, Emerson & Cuming
subject: Our Telephone Conversation October 3

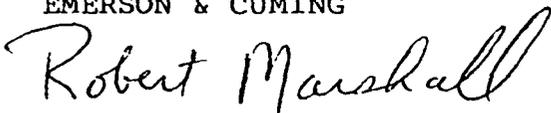
date: October 5, 1983

cc:

To confirm our telephone conversations of October 3, we will be sampling our sewer effluent on Friday, October 7. Due to ~~our~~ inability to obtain a discreet sample representing Emerson & Cuming's discharge without including Brooks Adhesives's discharge, we will be sampling your effluent at the point that it enters our sewer main and also sampling the combined flows further downstream prior to the point where the combined flows enter the MDC system.

We plan on presenting the two samples to the MDC with the argument that our contribution to the combined effluent is the difference between the two.

Respectfully,
EMERSON & CUMING



Robert R. Marshall
Plant Manager

RRM:pg

bcc:

W. A. Mischel
M. Stoler (Cambridge)
G. F. Winterson



GRACE MEMO

3430

to: Plant 1 Supervisors

date: October 5, 1983

from: Bob Marshall

cc: W. A. Mischel
L. W. Watkins
G. F. Winterson

subject: Sewer Effluent

We will be sampling our sewer effluent on Friday, October 7, 1983, beginning at 7:30 a.m. and continuing until 11:00 p.m. that night.

Bob

Bob Marshall

pg





**Arnold Greene
Testing Laboratories
Incorporated**

East Natick Industrial Park
6 Huron Drive • Natick, MA 01760
(617) 235-7330, 653-5950
Telex 948459 GREENELAB NTIK

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Inspection • Evaluation • Analysis
Research • Development



Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

To: Emerson & Cumings
Div. of W.R. Grace & Co.
869 Washington Street

Canton, MA 02184

Date 10/28/83

Job No. 41041-2

Lab No. 0398

Material: Water sample

Heat No. None

Specifications: None

Attn: Anne Herrinton

Order No. 1-47523

Purpose: To determine the presence of volatile solvents in two water samples submitted for analysis.

Procedure: The water was quantitatively analyzed for organic contaminants by Gas Chromatographic/Mass Spectrometric (GC/MS) technique. The instrument was equipped with a purge and trap concentrator for the analysis of volatile organic contaminants. (EPA Method 624.)

Received: 10/10/83 Date analyzed: 10/25/83

Results: #1 Labeled Brooks Glue - October 7, 1983

	ug/l
Methylene Chloride	1,832
1,1 Dichloroethane	221
Trichloroethane	3,234
Trichloroethene	365
Toluene	58.4

#2 Labeled Emerson & Cumings-Brooks Glue Combined-October 7, 1983

Methylene Chloride	1,607
1,1 Dichloroethane	21.7
Trichloroethane	7,486
Trichloroethene	141
Toluene	39.6

Detection Limit: 5ppb

Comment: The presence of other non-priority pollutants is indicated in the analysis.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
28th DAY OF OCTOBER 1983

ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril

James J. Baril, Manager

UNLESS STIPULATED IN WRITING BY YOU, ALL SAMPLES WILL BE RETAINED FOR 30 DAYS AND THEN DISPOSED OF.
THIS REPORT IS RENDERED UPON THE CONDITION THAT IT IS NOT TO BE REPRODUCED WHOLLY OR IN PART FOR ADVERTISING AND / OR OTHER PURPOSES OVER OUR SIGNATURE OR IN CONNECTION WITH OUR NAME WITHOUT OUR SPECIAL PERMISSION IN WRITING.



**Arnold Greene
Testing Laboratories
Incorporated**

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Branch Laboratories:
Springfield, Mass. 01104
(413) 734-6548

Auburn, Mass. 01501
(617) 832-5500

To: Emerson & Cuming, Inc.
Div. of W.R. Grace & Co.
869 Washington Street

Date: 10/31/83

Material: Water sample

Canton, MA 02184

Job No. 41041-1

Heat No. None

Lab No. 0398

Specifications: None

Attn: Anne Herrington

Order No. 1-47523

Sample ID: 2 Water samples

10/10/83

	Brooks Glue Oct 7, 1983 Sample #1	Brooks Combined Oct 7, 1983 Sample #2
Settleable Solids, (ml/l/hr)	6.9	8.0
Ammonia (mg/l)	<0.1	<0.1
Total Solids (mg/l)	16,952	5,402
Total Suspended Solids (mg/l)	13,200	3,920
Total Kjeldahl-Nitrogen (mg/l)	32	49
Cyanide (mg/l)	<0.050	<0.04
Silver (mg/l)	0.05	0.03

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND THIS
31st DAY OF OCTOBER 1983
ARNOLD GREENE TESTING LABORATORIES, INC.

James J. Baril
James J. Baril, Manager

To: Bob Marshall

11/14

From: Bill Fallahan

Subject: Raw Material Purchases

	1980	1981	1982	1983
1,1, Trichloroethane	5,840*	NONE	NONE	NONE
1, Dichloroethane	NONE	NONE	NONE	NONE
Toluene	220 gals.	275 gals.	165 gals.	165 gals.
Trichloroethene	NONE	NONE	NONE	NONE

BFC
11/14/83



WAM

The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

December 1, 1981

9290

RECEIVED

DEC 3 1981

EMERSON & CUMING
CANTON, MASSACHUSETTS

EMERSON & CUMING, INC.
869 Washington Street
Canton, MA 02021

ATTENTION: K. F. Kozik

Gentlemen:

The attached Industrial User Discharge Permit has been prepared on the basis of all available information obtained from correspondence and from the investigation of your industry by Metropolitan District Commission personnel. The Permit is valid as long as all stipulated conditions are complied with and is subject to renewal and change as stated in the Rules and Regulations.

If for any reason you disagree with any conditions set forth in the attached permit, written notification must be submitted to the Commission's Sewerage Division within 10 working days from the date of this letter. The letter shall contain details and facts supporting your disagreement with the permit condition.

If you have questions pertaining to the permit conditions or any information set forth in this letter, please contact R.D. Kubit, Sanitary Engineering Section.

Very truly yours,

Wayne T. Grandin

WAYNE T. GRANDIN
Chief Engineer of Industrial Waste

RDK/dmw

Attachment



The Commonwealth of Massachusetts

SEWERAGE DIVISION

The Town of Canton, Massachusetts and The Metropolitan District Commission

INDUSTRIAL USER DISCHARGE PERMIT

Number: 10 005 724-7

Category: 1

Expiration Date: August 31, 1983

EMERSON & CUMING, INC. 869 Washington Street Canton, MA 02021

Gentlemen:

Pursuant to federal, State, and local regulations EMERSON & CUMING, INC. (Industrial User) is hereby authorized to discharge sanitary sewage into the MDC sewerage system through the Canton sewerage system subject to the conditions set forth in Paragraphs 1, 2, 3, 4, 7, and 8 on the back of this permit.

This permit may be modified by the Metropolitan District Commission (MDC) and the Municipality, acting jointly, as required or authorized by the MDC Sewer User Rules and Regulations, or as required by the federal government or agencies thereof.

Failure on the part of the Industrial User to fulfill any of the specified conditions shall be sufficient cause for immediate revocation of this permit. This permit is further subject to termination upon thirty (30) days written notice to the Industrial User by an authorized representative of the Commission.

Any assignment or transfer of this permit shall automatically make it void.

APPROVED: Town of Canton, Massachusetts

APPROVED: Metropolitan District Commission

JOHN J. McSWEENEY Authorized Municipal Official

WAYNE T. GRANDIN Name

Superintendent of Public Works Title

Chief Engineer of Industrial Waste Title

Signature of John J. McSweeney Acting Supt. Public Works

Signature of Wayne T. Grandin 11-2-81 Date



SEWERAGE DIVISION

The Commonwealth of Massachusetts

INDUSTRIAL USER DISCHARGE PERMIT

Number: 10 005 724-7

Category: 1

Expiration Date: August 31, 1983

ATTACHMENT B

REPORTING REQUIREMENTS

Discharge Reports. Discharge Reports as described below are to be submitted for effluent from the microballoon washing process discharging to the Sanitary Sewerage system free of any uncontaminated water and/or sanitary wastes.

Schedule. Discharge reports described in this Attachment shall be submitted to the MDC annually. The first report shall be submitted within six weeks of receipt of this permit, and reports shall be submitted thereafter by the fifteenth day of September during each year.

Discharge reports for the microballoon washing process shall contain the following information:

Flow Records. Daily records of average flow shall be provided for a period of one day when wastewater flows are truly representative of the Industrial User's normal discharge.

Analytical Data. Analysis for the wastewater parameters and constituents listed below shall be conducted on a composite sample which would represent a typical work day in accordance with Standard Methods. Samples are to be taken after the pretreatment system. All sampling is to be conducted during periods when the flow measurements required by this Attachment are taken.

Total Suspended Solids (TSS)	Total Solids
Settleable Solids	pH
Temperature	Ammonia Nitrogen
Kjeldahl Nitrogen	

The Industrial User shall maintain accurate records of all monitoring activities including: a) the date, exact location, method, and time of sampling and flow measurements, and the names of the person or persons taking such samples and flow measurements; b) the date analyses were performed; c) name of person(s) performing such analyses; d) the analytical techniques/ methods used; and e) the results of those analyses. Copies of these records are to be submitted with the required reports.

All samples collected for the purposes of this permit shall be truly representative of the Industrial User's normal discharge and shall be free of any uncontaminated water and/or sanitary waste.

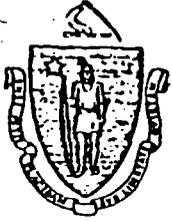
All sampling and analyses shall be performed in accordance with the MDC Rules and Regulations, Article II, Section 7(c).

PERMIT CONDITIONS*

1. The Industrial User shall comply with the "Rules and Regulations Covering Discharge of Sewage, Drainage, Substances, or Wastes to Sewerage Works Within the Metropolitan Sewerage District" or with Federal Regulations if more stringent. (Article II, Section 4 and Article IV, Section 4)**
2. The Industrial User shall allow Metropolitan District Commission (MDC) and Municipal personnel access to premises for inspection or sampling related to conditions of this permit. (Article II, Section 7(b))
3. The Industrial User shall promptly report to the MDC any changes in location, industrial processes, discharges (quantity or quality), or chemical storage procedures. (Article IV, Section 2)
4. The Industrial User shall notify the MDC immediately in the event of any accident, negligence or other occurrence that results in discharge to the public sewerage system of any wastes or process wastewaters not covered by this permit; notification shall be made immediately by phoning the MDC at 727-5253, 7:45 AM to 5:00 PM, Monday through Friday and 523-1212 at all other times and by submitting a written report *within 24 hours*, addressed to the Metropolitan District Commission, Sewerage Division, 20 Somerset Street, Boston, Massachusetts 02108. (Article II, Section 8)
5. The Industrial User shall discharge wastewater in conformance with the information contained in the permit application on file with the MDC Sewerage Division. (Article IV, Section 2)
6. The Industrial User's discharge shall conform to the wastewater flows and characteristics listed in Attachment "A". (Article IV, Section 2(c))
7. The Industrial User shall submit a signed Report as described in Attachment "B" to the municipality and the MDC according to the schedule stated in Attachment "B". (Article IV, Section 2(c))
8. The Industrial User shall comply with the pretreatment requirements and schedule in Attachment "C". (Article II, Section 4 and Article IV, Section 2(c))

* Only the paragraphs cited in the Permit letter are applicable.

** References are to the MDC Rules and Regulations.



SEWERAGE DIVISION

The Commonwealth of Massachusetts

INDUSTRIAL USER DISCHARGE PERMIT

Number: 10 005 724-7

Category: 1

Expiration Date: August 31, 1983

ATTACHMENT C

COMPLIANCE SCHEDULE

The following time period(s) shall be allowed for the industrial user to assure compliance with the MDC Rules and Regulations.

The Industrial User shall within six weeks of receiving this permit submit an Industrial User Permit Application.



The Commonwealth of Massachusetts
Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

October 13, 1982

EMERSON and CUMING
869 Washington Street
Canton MA. 02021

ATTENTION: Paul Firestone

Dear Mr. Firestone:

SUBJECT: Revisions To Industrial User Permit

The enclosed Industrial User Discharge Permit Attachment B has been revised in accordance with the most current information available. The attachment supersedes all previously issued information.

The new attachment should be incorporated in the Industrial User Discharge Permit issued to EMERSON and CUMING on December 1, 1981 and should replace the corresponding material issued at that time.

If you or anyone on your staff have questions pertaining to this matter, please contact John P. Vetere at 727-6570/1.

Very truly yours,

WAYNE T. GRANDIN
Chief Engineer of Industrial Waste

WTG/dmw

Enclosure

cc: R. Marshall
W. Mitchell
T. Rhoads
D. Winterason

BT



SEWERAGE DIVISION

The Commonwealth of Massachusetts

INDUSTRIAL USER DISCHARGE PERMIT

Number: 10 005 724-7

Category: 1

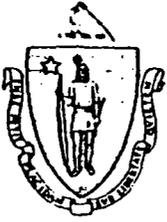
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Metropolitan District Commission
20 Somerset Street, Boston 02108

SEWERAGE DIVISION

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Very truly yours,

WAYNE T. GRANDIN
Chief Engineer of Industrial Waste

WTG/dmw

Enclosure

cc: R. Marshall
W. Michael
T. Rhee
D. Winterson

BT

Emerson & Cuming Unit
Dewey & Almy Chemical Div.
W. R. Grace & Co.
869 Washington Street
Canton, Mass. 02021

March 29, 1984

Jacob Edwards
State Waste Programs
U.S. EPA, Room 1903
JFK Federal Building
Boston, Mass. 02203

Mr Edwards:

Emerson & Cuming formally requests to change our status of Hazardous Waste Storage Facility to Hazardous Waste Generator. Our EPA I.D. Number is MAD 000 843 920. When our Company originally filed its application in November, 1980, the following three process codes were used:

SO2 - Tank Storage 600 gallons
TO3 - Treatment by incineration 20 gallons per hour
SO1 - Drum Storage 1000 gallons

The person who filled out this application is no longer with the Company and was apparently in error when describing our hazardous waste process. We have never incinerated a hazardous waste to the best of my knowledge and have never stored a hazardous waste in a tank. We only accumulate our waste in 55 gallon drums and periodically ship it out to a licensed hazardous waste facility. Our only change is that we will ship all accumulated waste within 90 days.

Thus, Emerson & Cuming, 869 Washington Street, Canton, Mass., EPA I.D. Number MAD 000 843 920, formally requests to change from Storage Facility status to Generator status.



Robert R. Marshall
Plant Manager

RRM/dlg

IED 14 1304

C E R T I F I C A T I O N

I, ROBERT R. MARSHALL, PLANT MANAGER, hereby

(name) (position)

certify that EMERSON & CUMING UNIT, DEWEY & ALMY
CHEMICAL DIV., W. R. GRACE & CO., MAD 000 843 920, which

(name of company) (EPA I.D. #)

notified the U.S. Environmental Protection Agency ("EPA") that it treats, stores and/or disposes of hazardous waste, at all times from this date forward (1) will not accumulate any hazardous waste for more than 90 days; (2) will accumulate hazardous waste in compliance with 310 CMR 30.340; (3) will not store, treat, or dispose of hazardous waste; and (4) will comply with all other applicable requirements of 310 CMR 30.000.

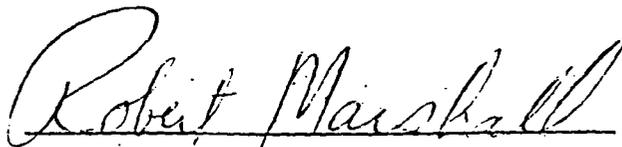
I understand that the Department of Environmental Quality Engineering is deferring applicability of the financial responsibility requirements of 310 CMR 30.900 as a result of EMERSON & CUMING UNIT, DEWEY & ALMY
CHEMICAL DIV., W. R. GRACE & CO. having submitted

(name of company)

a request for change of status and this certification, so long as EMERSON & CUMING UNIT, DEWEY & ALMY
CHEMICAL DIV., W. R. GRACE & CO. abides by the terms of this certification.

(name of company)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment.



(Signature)

869 WASHINGTON ST.
CANTON, MASS. 02021

ROBERT R. MARSHALL FEB. 10, 1984

(Name typewritten)

ANNUAL HAZARDOUS WASTE REPORT

PART 1

MAR 05 1984

This form must be used for submission of Annual Reports by:

- Generators who meet the definition of Large Quantity Generator, or who generate any amount of PCB wastes in concentrations of 50 ppm or greater.
- Facilities which treat, store, use or dispose of hazardous waste at the site of generation.
- Owners/operators of wastewater treatment units (as defined in 310 CMR 30.605).

Please refer to the Part 1 Instructions before completing this form.

1. Type of Report (s): check where applicable

(X) Generator () Treatment, Storage, Disposal Facility and/or Wastewater Treatment Unit

2. Reporting Year: Year ending 19 83

3. EPA Identification Number: MADU00843920

4. Installation's Name: Emerson and Cuming

5. Installation's Address: 869 Washington St. Canton Ma 02056

6. Installation Contact: Robert R Marshall Tel. No.: 617 528 3300

7. Does your installation discharge process wastewater? X Yes ___ No

If No, continue to question 8. If Yes, complete the appropriate line(s):

(a) NPDES Permit Number (b) Municipal sewerage system MDC (Name)

Do any of the wastewater discharges indicated in (a) or (b) involve hazardous waste activity? No

8. Is your installation listed as an Air Quality Source Registration? X Yes ___ No

9. Transportation Services Used: (List name and EPA ID number of each.)

CHEMICAL WASTE MANAGEMENT MAD980523203

10. Certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

In addition, I understand that any material supplied with this application will not be considered confidential unless I have specifically requested that such material be kept confidential and the Department has made a determination of confidentiality in accordance with 310 CMR 3.00, Regulations Governing Access to and Confidentiality of Department Records and Files under the Hazardous Waste Management Act.

Robert R Marshall Authorized Signature of Owner/Operator or Designated Official

2/29/84 Date Signed

ROBERT R MARSHALL Print or Type Name

PLANT MANAGER Title of Person Signing

ATTACH MAILING LABEL IF INCORRECT

PART 2

GENERATOR ANNUAL REPORT

Reproduce additional pages as necessary. Enter the page number of each sheet, as well as the total number of pages, in the lower right corner.

11. Generator's EPA Identification Number:

M	A	D	0	0	0	8	4	3	9	2	0
---	---	---	---	---	---	---	---	---	---	---	---

12. On-Site Treatment as an Integral Part of the Manufacturing Process:
(This is an optional question.)

A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
N/A				

13. Waste Shipped Off-Site: (Complete a separate Part 2 Form for each facility to which waste was shipped.)

a) Name of Facility: CHEMICAL WASTE MANAGEMENT

b) EPA ID Number:

M	A	D	9	8	0	5	2	3	2	0	3
---	---	---	---	---	---	---	---	---	---	---	---

c) Address (Street or P.O. Box): 5 STRATHMORE RD

(City, State and Zip Code): NATICK MA 01760

Line Number	A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
1	STYRENE TOLUENE ACETONE	D001	230	G	D80
2	METHYLENE CHLORIDE / SILICONE	F002	620	G	D80
3	MACHINE OIL	M001	65	G	D80

14. Comments (refer to line number):

PART 2

(Continued)

13. Waste Shipped Off-Site: (Complete a separate Part 2 form for each facility to which waste was shipped.)

a) Name of Facility: EMERSON + CUMING

b) EPA ID Number:

MA	DC	00	8	4	3	9	2	0
----	----	----	---	---	---	---	---	---

c) Address (Street or P.O. Box): 869 WASHINGTON ST

(City, State and Zip Code): CANTON MA 02031

Line Number	A Description of Waste	B Hazardous Waste Number	C Amount of Waste	D Unit of Measure	E Handling Method
4	ZINC CHLORIDE (SOLID)	D002	55	G	D80
5	ALUMINUM CHLORIDE	D002	85	G	D80
6	STYRENE-POLYESTER-ACRYLIC	D001	55	G	D80
7	STYRENE-oil-POXY	D001	75	G	D80
8	STRONT POTASSIUM CYANIDE SOLUTION	F009	1980	G	D80
9	TURPENTINE-ACETONE	D001	110	G	D80

14. Comments: (refer to line number)

PART 3

FACILITY ANNUAL REPORT

18. Most Recent Closure Cost Estimate: WE ARE A SMALL QTY GENERATOR
19. Most Recent Post-Closure Cost Estimate: _____
20. Summary of Incidents When the Contingency Plan was Implemented:

NO INCIDENTS

21. Comments (refer to question and line number):