

US EPA ARCHIVE DOCUMENT

6/6/88

TECHNICAL SUPPORT SECTION EFFICACY REVIEW - I

Disinfectants Branch

IN 03-07-88 Out 05-25-88

Reviewed By Srinivas Gowda *WEC 6-6-88* Date 05-25-88

EPA Reg. No. or File Symbol 1130-6

EPA Petition or EUP NO. None

Date Division Received 10-20-87

Type Product Hospital Towelette (Saturated Towelette)

Data Accession No. 403839-01, 403839-02, & 406352-01

Product Manager 31 (Lee)

Product Name BURNISHINE® GERMICIDAL CLOTH

Company Name Burnishine Products

Submission Purpose Amendment to add virucidal, tuberculocidal, "one-step" sanitizer (NFCS), and bactericidal (5 min. contact time) claims with efficacy data and revised labeling.

Type Formulation Single-use disposable towelette saturated with ready-to-use liquid in unit packets.

Active Ingredient(s): %

n-Alkyl (68% C₁₂, 32% C₁₄) dimethyl ethylbenzyl ammonium chlorides.....0.14

n-Alkyl (60% C₁₂, 30% C₁₆, 5% C₁₂, 5% C₁₈) dimethyl benzyl ammonium chlorides.....0.14

Isopropyl alcohol.....8.00

200.0 Introduction

200.1 Use(s)

Single-use disposable saturated towelette for use as a "one-step" disinfectant-cleaner, in hospitals on hard, non-porous surfaces such as tables, carts, baskets, counters, cabinets, and telephones in the presence of moderate amounts organic soil (5% blood serum) at the level of 2800 ppm quaternary. Also, a "one-step" cleaner-sanitizer for non-food-contact surfaces and "one-step" disinfectant cleaner for food contact surfaces with potable water rinse.

200.2 Background Information

The submission received 10-20-87, is an application to add virucidal, tuberculocidal, "one-step" cleaner-sanitizer (non-food contact surfaces), and 5 minutes disinfecting claims to the label. Efficacy data and revised labels were provided.

201.0 Data Summary

201.1 Brief Description of Test

Bactericidal test reports by Terry Vigneault, Northview Laboratories, Inc., 1880 Holste Road, Northbrook, Illinois 60060, dated 03-31-87 (MRID No. 403839-01).

Tuberculocidal and sanitizer (NFCS) test reports by Kyle H. Sibinovic, Shaldra Biotest Inc., P.O. Box 34317 - W. Bethesda, MD 20817, dated 10-10-87 (MRID No. 403839-02).

Virucidal test reports by Philip R. Roane, Integrity Bioservices Inc., 12280 Wilkins Avenue, Rockville, MD 20852, dated 09-28-87 (MRID No. 403839-02).

Confirmatory Tuberculocidal Test reports by Richard Gammon, Presque Isle Cultures, P.O. Box 8191 - Presque Isle, PA. 16505, dated 05-10-88 (MRID No. 406352-01).

201.2 Test Summaries

a. Bactericidal Tests

1. Method: Modified A.O.A.C. Germicidal Spray Products Test Method, modified for testing the towelette.
2. Modifications: 5% blood serum was added to inoculum preparation. The inoculated glass slide (1 towelette per slide) was wiped 10 times with the towelette under a laminar flow hood using sterile surgical gloves. After wiping enough liquid was expressed from the towelette to completely cover the slide. The towelette and the slide were held in individual closed petri dishes to minimize evaporation for a contact time of 5 minutes and subcultured separately in letheen broth for 2 days at 35°C.

3. Samples: "QP" Quick Pick-Up Germicidal Cloths

| <u>Batch No.</u> | <u>Mfg. Dates</u> | <u>Test Dates</u> |
|------------------|-------------------|-------------------|
| "QP" | Not listed | Not listed |

4. Dilution: Undiluted

5. Exposure: 5 minutes
Exposure Temperature: Not Listed

6. Subculture Medium/ Neutralizer: Lethen Broth

7. Incubation: 2 days at 35°C

| <u>Test Bacteria</u> | <u>ATCC No.</u> | <u>Phenol Res.</u> |
|--------------------------------|-----------------|--------------------|
| <u>Staphylococcus aureus</u> | 6538 | 1:65 |
| <u>Pseudomonas aeruginosa</u> | 15442 | 1:85 |
| <u>Salmonella choleraesuis</u> | 10708 | 1:95 |

9. Survival of Inoculum on Control Carriers:

| <u>Test Organisms</u> | <u>Organisms/Cylinder</u> |
|------------------------|---------------------------|
| <u>S. aureus</u> | 1.1 x 10 ⁶ |
| <u>P. aeruginosa</u> | 1.0 x 10 ⁶ |
| <u>S. choleraesuis</u> | 1.0 x 10 ⁶ |

10. Test Results:

| <u>Organism</u> | <u>Batch No.</u> | <u>Type Carrier</u> | <u># Carriers Tested</u> | <u># Positives/Total Carriers Tested</u> | |
|------------------------|------------------|---------------------|--------------------------|--|------------------|
| | | | | <u>Primary</u> | <u>Secondary</u> |
| <u>S. aureus</u> | "QP" | Slide | 60 | 0/60 | 0/60 |
| | | Towelette | 60 | 0/60 | 0/60 |
| <u>S. choleraesuis</u> | " | Slide | 60 | 0/60 | 0/60 |
| | | Towelette | 60 | 0/60 | 0/60 |
| <u>P. aeruginosa</u> | " | Slide | 60 | 0/60 | 0/60 |
| | | Towelette | 60 | 0/60 | 0/60 |

11. Conclusions: Satisfactory performance vs. test organisms. However, testing was conducted on only one of the two samples required to support the efficacy. Also, the time/temperature employed for drying the microorganisms on the carrier was not specified.

b. Virucidal Tests:

1. Method: Modified A.O.A.C. Use-Dilution Method
2. Modifications: Virus suspensions containing 10% Fetal Bovine Serum was dried on replicate petri dishes. The disinfectant solution was dispensed in accordance with the directions for application such that 0.5 ml was delivered to the surface of each of the petri dishes. The viruses were each propagated on the appropriate tissue culture and were assayed either on the same line or on a second acceptable line.

3. Samples:

| <u>Batch No.</u> | <u>Mfg.Dates</u> | <u>Test Dates</u> |
|------------------|------------------|-------------------|
| 06237 | 04-13-87 | Not Listed |
| 06257 | " | " |

4. Dilution: Undiluted
5. Exposure: 2 minutes at 20°C
6. Recovery Medium/Neutralizer/Diluent: Not listed
7. Incubation Time and Temperature:

| | |
|-------------------------------------|------------|
| Herpes Simplex Type II | Not Listed |
| Influenza A ₂ /Honk kong | " |

8. Test Virus Host System:

| | |
|-------------------------------------|------------|
| Herpes Simplex Type II | Not Listed |
| Influenza A ₂ /Honk kong | " |

9. Assay System for Virus Recovery:

| | |
|-------------------------------------|-------------------------|
| Herpes Simplex Type II | > + 2 Cytopathic Effect |
| Influenza A ₂ /Honk kong | " |

10. Drying Time and Temperature: Not Listed

11. Method for Estimating 50 Per Cent end-point: Reed-Muench Method.

12. Test Viruses

| |
|-------------------------------------|
| Herpes Simplex Type 2 |
| Influenza A ₂ /Honk kong |

13. Test Results

ID-50 or LD-50 (-log 10)

| <u>Test Virus</u> | <u>Batch No.</u> | <u>Virus Control</u> | <u>Virus + Disinf.</u> | <u>Toxicity Control</u> | <u>Virus Inacti.</u> |
|--------------------------------------|------------------|----------------------|------------------------|-------------------------|----------------------|
| Herpes Simplex Type II | 06237 | 6.5 | 2.5 | 2.5 | 4.0 |
| | 06257 | 6.5 | 2.5 | 2.5 | 4.0 |
| Influenza A ₂ / Honk kong | 06237 | 6.5 | 2.5 | 2.5 | 4.0 |
| | 06257 | 6.5 | 2.5 | 2.5 | 4.0 |

14. Conclusions: The submitted data/test reports are incomplete and cannot be evaluated because the following procedural informations were not provided:

Volume of virus suspension inoculated and surface area of the petridish.

Time, temperature, and exposure conditions employed in the drying procedure.

Method (s) used in propagating the virus stock and composition of the virus inoculum.

Time and temperature employed during incubation of sub-cultures.

Data showing quantitative survival of the viruses on hard, surface carriers before and after drying under specified conditions.

Specific descriptions of the method employed for quantitative assay of the infective virus (ID-50), including host cell system used, and the details of the assay procedure.

The manufacturing dates (s), and test date(s) for the product samples.

Technique employed to "resuspend" the virus film after the disinfectant treatment.

Maintainance media/Diluent/Recovery media/Neutralizer employed.

The test results indicating "Percent Inactivation >99.9" requires further explanation. It is not clear whether the results mean that virus was detected or was not detected.

Virus control titres (TCID-50: 10E6.5/ml), toxicity control titres (10E2.5/ml), and virus inactivation (10E4.0/ml) are same for all test viruses. Provide explanation.

In the test report it is not clear if the data were developed by Modified A.O.A.C. Germicidal Spray Products Test or Use-Dilution Test, modified for testing the towelette. Please clarify.

c. Tuberculocidal Test

1. Method: Modified A.O.A.C. Germicidal Spray Products Test. 14th Edition, 1984.
2. Modifications: 5% horse serum as soil.
3. Samples: Burnishine Germicidal Wipes >60 days old.

| <u>Batch No.</u> | <u>Mfg.Dates</u> | <u>Test Dates</u> |
|------------------|------------------|-------------------|
| NE4087A | 02-05-87 | 05-15-87 |
| NE4087B | " | " |
| NE4087C | " | " |

4. Dilution: None (Undiluted)
5. Exposure Time: 10 minutes at 20°C
6. Subculture Medium: Mod. Proskauer Beck Broth (MPB)
7H9 Broth (7H9BR)
TB Both (TBBR) or

Neutralizer: Lethen Broth with Tween 80.

7. Incubation of Subcultures: 90 days at 37°C.

| <u>Test Organism</u> | <u>Phenol Resistance</u> |
|--------------------------------------|-------------------------------|
| <u>Mycobacterium bovis</u> ATCC 1028 | 1:50 No Growth 1:70 Growth |

9. Type of Carriers: Porcelain penicylinders

10. Survival of inoculum on control carriers:

4.60 x 10⁵ to 5.70 x 10⁵

11. Test Results:

| <u>Batch No.</u> | <u># Positives/Total Carriers</u> | | |
|------------------|---------------------------------------|--------------|-------------|
| | <u>MPBBR</u> | <u>7H9BR</u> | <u>TBBR</u> |
| NE4087A | 0/10 | 0/10 | 0/10 |
| NE4087B | 0/10 | 0/10 | 0/10 |
| NE4087C | 0/10 | 0/10 | 0/10 |
| Viability Check | 5/5 | 5/5 | 5/5 |

10. Conclusions: The submitted data demonstrate a satisfactory tuberculocidal performance in the presence of 5% blood serum at a contact time of 10 minutes at 20°C. However, complete procedural information were not provided for towelette testing.

d. Tuberculocidal Test

1. Method: Pre-Saturated or Impregnated Towelettes for Hard Surface Disinfection, Efficacy Data Requirements, US EPA and A.O.A.C. Germicidal Spray Products Test.
2. Modifications: 5% horse serum as soil.
3. Samples: Burnishine Germicidal Wipes >60 days old.

| <u>Batch No.</u> | <u>Mfg.Dates</u> | <u>Test Dates</u> |
|------------------|------------------|-------------------|
| 06237 | 04-13-87 | 06-28-87 |
| 06257 | " | " |

4. Dilution: None (Undiluted)
5. Exposure Time: 10 minutes at 20°C
6. Subculture Medium: Mod. Proskauer Beck Broth (MPB)
7H9 Broth (7H9BR)
TB Both (TBBR) or

Neutralizer: Lethen Broth with Tween 80.

7. Incubation of Subcultures: 90 days at 37°C.

| <u>Test Organism</u> | <u>Phenol Resistance</u> |
|--------------------------------------|-------------------------------|
| <u>Mycobacterium bovis</u> ATCC 1028 | 1:50 No Growth 1:70 Growth |

9. Type of Carriers: Glass Slides plus towelettes residue

9. Survival of inoculum on control carriers:

4.40×10^5 to 5.35×10^5

9. Test Results:

| <u>Batch No.</u> | <u>Positives/Total Carriers</u> [#] | | |
|------------------|--|--------------|-------------|
| | <u>MPBBR</u> | <u>7H9BR</u> | <u>TBBR</u> |
| NE4087A | 0/10 | 0/10 | 0/10 |
| NE4087B | 0/10 | 0/10 | 0/10 |
| NE4087C | 0/10 | 0/10 | 0/10 |
| Viability Check | 5/5 | 5/5 | 5/5 |

10. Conclusions: The submitted data demonstrate a satisfactory tuberculocidal performance in the presence of 5% blood serum at a contact time of 10 minutes at 20°C. However, complete procedural information were not provided for towelette testing.

e. Confirmatory Tuberculocidal Test (Validation data)

1. Method: A.O.A.C., 14th Edition, 1984. Chapter 4.
Directions for pre-saturated or impregnated
towelettes for hard surface disinfection.
DIS/TSS-10A, 04-15-82.

2. Modifications: Not Listed

3. Samples:

| <u>Batch No.</u> | <u>Mfg. Dates</u> | <u>Test Dates</u> |
|---|-------------------|-------------------|
| H10 Disinfectant lot 0288-3140 in wipes. | Not listed | 2-1 to 5-1-88 |
| H10 Disinfectant lot 0888-3140 in wipes. | " | " |

4. Dilution: None (Undiluted)

5. Exposure Time: 10 minutes at 20°C

6. Subculture Medium: Mod. Proskauer Beck Broth (MPB)
Kirchners medium (KM)
TB Both (TB)

7. Incubation of Subcultures: 90 days at 37°C.

| <u>Test Organism</u> | <u>Phenol Resistance</u> |
|---------------------------------------|--------------------------|
| <u>Mycobacterium bovis</u> ATCC 19015 | Not reported |

9. Type of Carriers: Glass Slides

10. Survival of inoculum on control carriers: Not listed.

11. Test Results:

| <u>Batch No.</u> | <u>Positives/Total Carriers</u> | | |
|------------------|---------------------------------|-----------|-----------|
| | <u>MPB</u> | <u>KM</u> | <u>TB</u> |
| 0288-3140 | 0/10 | 0/10 | 0/10 |
| 0888-3140 | 0/10 | 0/10 | 0/10 |
| Viability Check | 3/3 | 3/3 | 3/3 |

10. Conclusions: The submitted data demonstrate a satisfactory tuberculocidal performance at a contact time of 10 minutes at 20°C. However, complete procedural information were not provided for towelette testing. Also, control carrier counts and phenol resistance of the test organism were not reported.

f. Sanitizer Test For Inanimate, Non-Food Contact Surfaces:

1. Method: Pre-saturated or Impregnated Towelettes for Hard Surface Disinfection, Efficacy Data Requirements, US EPA and A.O.A.C. Germicidal Spray Products Test.
2. Modifications: 5% horse serum as soil.
3. Test Samples: Burnishine Germicidal Wipes >60 days old.

| <u>Samples</u> | <u>Mfg. Dates</u> | <u>Test Dates</u> |
|----------------|-------------------|-------------------|
| 06237 | 04-13-87 | 08-15-87 |
| 06257 | " | " |

4. Dilutions: None (Undiluted).
5. Exposure: 5 minutes at 20°C.
6. Subculture Medium/Neutralizer: Lethen Broth with Tween 80
7. Plate Count Medium: Nutrient Agar
8. Incubation: 48 hours at 37°C

9. Test Bacteria: Phenol Res.

Klebsiella pneumoniae ATCC No. 4352 <1:90

10. Test Surface: Glass slide plus towelette residue

11. Survival of inoculum on control carriers:

1.1 x 10⁶ to 1.45 x 10⁶

12. Test Results:

| <u>Batch No.</u> | <u>Type Carrier</u> | <u># Carriers Tested</u> | <u># Positive/Total Carriers Tested</u> |
|------------------|---------------------|--------------------------|---|
| 06237 | Glass slide | 20 | 0/20 |
| | Towelette residue | 20 | 0/20 |
| 06257 | Glass slide | 20 | 0/20 |
| | Towelette residue | 20 | 0/20 |
| Viability Check | Glass slide | 5 | 5/5 |

13. Conclusions: Satisfactory performance vs. test organism. However, test report did not specify any procedure used to insure neutralization of the germicide in subcultures was achieved. Also, complete procedural information were not provided for towelette testing. Data were not also developed against S. aureus.