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DEC 12 1991

Registrant: FMC Corporation
EPA Reg. No: 279-3055
MRID Nos: 419685-01, 419685-02, 419685-03
Pesticide Chemical Code (PCC): 128825
CAS Nos: 82657-04-3 (cis-isomer); 83322-02-5 (trans-isomer)
Chemical Name: [2-Methyl(1,1'-biphenyl)-3-yl]methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate
Common Name: Bifenthrin
Trade Names: Brigade®; Capture®; Talstar®; Biflex®
Use: Insecticide/Miticide

INTRODUCTION

FMC Corporation is proposing to amend the registration for the product Bifenthrin Technical Insecticide/Miticide (TGA1) in order to make changes in the manufacturing process for the active ingredient bifenthrin (See letter of FMC, 7/31/91, Eunice M. Cuirle). The product chemistry information submitted in support of the proposed amended registration is discussed below.
PRODUCT IDENTITY AND COMPOSITION (MRID 419685-01)

61-1: Product Identity and Disclosure of Ingredients

Bifenthrin is the active ingredient (ai) in the TGAI produced by FMC Corporation. Bifenthrin is:

\[ [2\text{-Methyl}(1,1'\text{-biphenyl})-3\text{-yl}]\text{methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate} \]

Cis isomers, 97 % minimum (CAS No. 82657-04-3)
Trans isomers, 3 % maximum (CAS No. 83322-02-5)

Molecular Formula: \( C_{23}H_{22}O_2F_3Cl \)
Molecular Weight: 422.88

Structural Formula:

![Structural formula of Bifenthrin]

The composition of the TGAI is contained in the Confidential Statement of Formula (CSF, EPA Form 8570-4) and is discussed in Confidential Appendix B.
The data satisfy the requirements of 40 CFR 158.155. No additional data are needed.

61-2: Beginning Materials and Manufacturing Process

See Confidential Appendix A for a discussion of the beginning materials and the manufacturing process.
The information submitted satisfies the requirements of 40 CFR 158.160 - 162. No additional information is needed.

61-3: Discussion of the Formation of Impurities

See Confidential Appendix A for a discussion of the formation of impurities.
The information submitted satisfies the requirements of 40 CFR 158.167. No additional information is needed.

ANALYSIS AND CERTIFICATION OF PRODUCT INGREDIENTS (MRID 419685-02)

62-1: Preliminary Analysis

Ten samples of the TGAI were examined for the ai, bifenthrin,
and its impurities. Gas Chromatography (GC) and High Performance Liquid Chromatography (HPLC) procedures were used to determine the components of the TGAI. For a discussion of the results of the analyses, see Confidential Appendix B. The data satisfy the requirements of 40 CFR 158.170 for the TGAI. No additional data are needed.

62-2: Certified Limits

The certified limits are contained in the CSF and are discussed in Confidential Appendix B. The information satisfies the requirements of 40 CFR 158.175 for the TGAI, Bifenthrin Technical. No additional information is needed.

62-3: Enforcement Analytical Methods
Adequate enforcement methods are available and are summarized in Confidential Appendix B. No additional information is needed.

PHYSICAL AND CHEMICAL CHARACTERISTICS (MRID 419685-03)

The physicochemical properties of Bifenthrin Technical are summarized below.

<table>
<thead>
<tr>
<th>Guideline Reference Number (GRN)</th>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>63-2</td>
<td>Color</td>
<td>Off-white to pale tan</td>
</tr>
<tr>
<td>63-3</td>
<td>Physical State</td>
<td>Solid</td>
</tr>
<tr>
<td>63-4</td>
<td>Odor</td>
<td>Very weak, aromatic</td>
</tr>
<tr>
<td>63-5</td>
<td>Melting Point</td>
<td>68 - 70.6 °C</td>
</tr>
<tr>
<td>63-6</td>
<td>Boiling Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>63-7</td>
<td>True Particle Density</td>
<td>1.26 gm/ml at 24.2 °C</td>
</tr>
<tr>
<td>63-8</td>
<td>Solubility</td>
<td>Soluble in methylene chloride, chloroform, acetone, ether, toluene. Acetone, 125g/100 ml. Slightly soluble in n-heptane (8.9g/100 ml) and methanol. Solubility in water, &lt;0.1 ppb</td>
</tr>
<tr>
<td>63-9</td>
<td>Vapor Pressure</td>
<td>1.81x10(-7) torr at 25 °C</td>
</tr>
</tbody>
</table>
63-10 Dissociation Constant  Not applicable due to low water solubility of ai.

63-11 Octanol/Water Partition Coefficient  > 1 x 10(6)

63-12 pH  5.4 - 6.0 at 25°C

63-13 Stability  Thermal: no loss in ai after two years at either 25°C or 50°C.

63-14 Oxidizing or Reducing Action  No potential noted

63-15 Flammability  Not applicable

63-16 Explosibility  Not explodable by impact

63-17 Storage Stability  No loss of ai after two years at 25°C or 50°C.

63-18 Viscosity  Not applicable

63-19 Miscibility  Miscible at all proportions when mixed with aromatic petroleum hydrocarbons or refined vegetable oils.

63-20 Corrosion Characteristics  Compatible with specified containers (high density polyethylene or steel lined with Mobil 285-D118 phenoxy resin)

63-21 Dielectric Breakdown Voltage  Not applicable

The data satisfy the requirements of 40 CFR 158.190 for the Bifenthrin Technical product. No additional data are needed.

CONCLUSION

The submitted information satisfies the product chemistry requirements of 40 CFR 158.150 for the TGAI, Bifenthrin Technical.

Attachments: Confidential Appendices A and B
The material not included contains the following type of information:

___ Identity of product inert ingredients.
___ Identity of product impurities.
___ Description of the product manufacturing process.
___ Description of quality control procedures.
___ Identity of the source of product ingredients.
___ Sales or other commercial/financial information.
___ A draft product label.
___ The product confidential statement of formula.
___ Information about a pending registration action.
___ FIFRA registration data.
___ The document is a duplicate of page(s) ________.
___ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.