1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Talstar® GC granular

Formula code: 1683

Active Ingredient(s): Bifenthrin

Synonyms: FMC 54800; (2-methyl[1,1’-biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate; IUPAC: 2-methylbiphenyl-3-ylmethyl (Z)-(1RS)-cis-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate.

Chemical Family: Pyrethroid Pesticide

Recommended use: Insecticide Miticide

Manufacturer: FMC Corporation

Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103

General Information:
Phone: (215) 299-6000
E-Mail: msdsinfo@fmc.com

Emergency telephone number:
For leak, fire, spill or accident emergencies, call:
+1 800.424.9300 (CHEMTREC - U.S.A.)
+1 703.527.3887 (CHEMTREC - Collect - All Other Countries)

Medical Emergencies:
(800) 331-3148 (U.S.A. & Canada)
+1 (651) 632-6793 (All Other Countries - Collect)

2. HAZARDS IDENTIFICATION

Appearance: Light tan to tan granules

Physical State: Solid

Odor: aromatic, slight musty

Physical or Chemical Hazards: Powdered material may form explosive dust-air mixtures

Flammable properties: Powdered material may form explosive dust-air mixtures

Potential health effects:

Principle Routes of Exposure: Skin contact, Eye contact, Inhalation. Ingestion.

Acute effects:

Eyes: May cause slight irritation.
Skin: May cause sensitization by skin contact.
Inhalation: May cause irritation of respiratory tract.
Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Talstar® GC granular

Chronic effects
Prolonged exposure may cause chronic effects. See Section 11 for additional Toxicological Information.

Environmental hazard
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition/information on ingredients

Hazardous ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>crystalline silica, quartz</td>
<td>14808-60-7</td>
<td>90-100</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>82657-04-3</td>
<td>0.2</td>
</tr>
</tbody>
</table>

4. First aid measures

Eye contact
Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.

Skin contact
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Inhalation
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

Ingestion
Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not induce vomiting or give anything by mouth to an unconscious person.

Notes to physician
This product is a pyrethroid. If large amounts have been ingested, the stomach and intestines should be evacuated. Treatment is symptomatic and supportive. Digestible fats, oils, or alcohol may increase absorption and so should be avoided.

5. Fire-fighting measures

Flammable properties
Powdered material may form explosive dust-air mixtures

Flash Point
not applicable

Special hazards arising from the substance or mixture

Sensitivity to Mechanical Impact
not applicable

Sensitivity to Static Discharge
not applicable

Extinguishing media

Suitable extinguishing media
Use CO2, dry chemical, or foam.

Advice for fire-fighters

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

NFPA

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Flammability</th>
<th>Stability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>
6. Accidental release measures

Personal precautions
Isolate and post spill area. Remove all sources of ignition. Ventilate the area. Wear suitable protective clothing, gloves and eye/face protection. For personal protection see section 8.

Environmental precautions
Keep people and animals away from and upwind of spill/leak. Keep material out of lakes, streams, ponds, and sewer drains

Methods for containment
Use a wet sweeping compound or water to prevent dust formation.

Methods for cleaning up
Sweep up and shovel into suitable containers for disposal. Clean and neutralize spill area, tools and equipment by washing with bleach water and soap. Absorb rinsate and add to the collected waste. Waste must be classified and labeled prior to recycling or disposal. Dispose of waste as indicated in Section 13.

Other
For further clean-up instructions call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification” above.

7. Handling and storage

Handling
Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

Storage
Keep in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep out of reach of children and animals. Store in original container only.

8. Exposure controls/personal protection

Exposure guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>crystalline silica, quartz 14808-60-7</td>
<td>TWA: 0.025 mg/m³</td>
<td></td>
<td>IDLH: 50 mg/m³</td>
<td>Mexico: TWA 0.1 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>British Columbia</th>
<th>Quebec</th>
<th>Ontario TWAEV</th>
<th>Alberta</th>
</tr>
</thead>
<tbody>
<tr>
<td>crystalline silica, quartz 14808-60-7</td>
<td>TWA: 0.025 mg/m³</td>
<td>TWA: 0.1 mg/m³</td>
<td>TWA: 0.10 mg/m³</td>
<td>TWA: 0.025 mg/m³</td>
</tr>
</tbody>
</table>

Occupational exposure controls

Engineering measures
Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Personal protective equipment

General Information
If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.

Respiratory protection
For dust, splash, mist or spray exposures wear a filtering mask.

Eye/face protection
For dust, splash, mist or spray exposure, wear chemical protective goggles or a face-shield.

Skin and body protection
Wear long-sleeved shirt, long pants, socks, shoes, and gloves.

Hand protection
Protective gloves
Hygiene measures

Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking, chewing gum or using tobacco. Shower or bathe at the end of working. Remove and wash contaminated clothing before re-use. Launder work clothing separately from regular household laundry.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Light tan to tan granules</td>
</tr>
<tr>
<td>Color</td>
<td>Light tan to tan</td>
</tr>
<tr>
<td>Physical State</td>
<td>Solid</td>
</tr>
<tr>
<td>Odor</td>
<td>aromatic, slight musty</td>
</tr>
<tr>
<td>pH</td>
<td>not applicable</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>No information available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No information available</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>not applicable</td>
</tr>
<tr>
<td>Flash Point</td>
<td>not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>not applicable</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>not applicable</td>
</tr>
<tr>
<td>Flammable properties</td>
<td>Powdered material may form explosive dust-air mixtures</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>not applicable</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No information available</td>
</tr>
<tr>
<td>Density</td>
<td>1.39 g/mL</td>
</tr>
<tr>
<td>Relative density</td>
<td>No information available</td>
</tr>
<tr>
<td>Bulk density</td>
<td>1.39 g/mL</td>
</tr>
<tr>
<td>Water solubility</td>
<td>No information available</td>
</tr>
<tr>
<td>Percent volatile</td>
<td>No information available</td>
</tr>
<tr>
<td>Partition coefficient:</td>
<td>not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No information available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>not applicable</td>
</tr>
</tbody>
</table>

10. Stability and reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>Stable</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Excessive heat, Extreme risk of explosion by shock, friction, fire or other sources of ignition</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Carbon oxides, Hydrogen chloride, Hydrogen fluoride</td>
</tr>
<tr>
<td>Hazardous polymerization</td>
<td>Hazardous polymerization does not occur.</td>
</tr>
</tbody>
</table>

11. Toxicological information

Acute toxicity
Large doses of bifenthrin ingested by laboratory animals produced signs of toxicity including convulsions, tremors and bloody nasal discharge. Bifenthrin does not cause acute delayed neurotoxicity. Experience to date indicates that contact with bifenthrin may occasionally produce skin sensations such as rashes, numbing, burning or tingling. These sensations are reversible and usually subside within 12 hours.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td>Non-irritating. Product dust may cause mechanical eye irritation.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Non-irritating during normal use.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>LD50 Dermal</td>
<td>&gt; 2,000 mg/kg (rabbit)</td>
</tr>
<tr>
<td>LD50 Oral</td>
<td>&gt; 5,000 mg/kg (rat)</td>
</tr>
<tr>
<td>LC50 Inhalation:</td>
<td>No information available</td>
</tr>
</tbody>
</table>
Sensitization  
Bifenthrin: May cause sensitization by skin contact.

Chronic Toxicity - Other Ingredient(s)

Chronic Toxicity  
Prolonged exposure may cause chronic effects. See Section 11 for additional Toxicological Information.

Carcinogenicity  
Bifenthrin: Did not show carcinogenic effects in animal experiments. This product contains crystalline silica (quartz) in a non-respirable form. Inhalation of crystalline silica is unlikely to occur from exposure to this product. However, if granules are pulverized or crushed into a fine, respirable powder, silica exposure via inhalation is probable.

Mutagenicity  
Bifenthrin: Not genotoxic.

Reproductive toxicity  
Bifenthrin: No toxicity to reproduction.

Neurological Effects  
Tremors were associated with chronic exposure of laboratory animals to bifenthrin, which may disappear with continued exposure.

Developmental Toxicity  
Bifenthrin: Not teratogenic in animal studies.

Target Organ Effects  
Bifenthrin: A slight increase in male mouse urinary bladder tumors at the highest dose was probably not of toxicological concern. Repeated overexposure to crystalline silica for extended periods has caused acute silicosis.

Chronic Toxicity - Other Ingredient(s)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
<th>NIOSH - Target Organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>crystalline silica, quartz</td>
<td>A2</td>
<td>1</td>
<td>Known</td>
<td>X</td>
<td>eyes, respiratory system</td>
</tr>
</tbody>
</table>

12. Ecological information

Ecotoxicity

Bifenthrin (82657-04-3)

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Duration</th>
<th>Species</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bifenthrin</td>
<td>EC50</td>
<td>Aquatic organisms</td>
<td>0.11 - 0.57</td>
<td>µg/L</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>96 h LC50</td>
<td>Fish</td>
<td>0.1 - 2.0</td>
<td>µg/L</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>LD50 Oral</td>
<td>Bobwhite quail</td>
<td>&gt;1800</td>
<td>mg/kg</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>LD50 Oral</td>
<td>Mallard duck</td>
<td>&gt;2150</td>
<td>mg/kg</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>LD50</td>
<td>Bee</td>
<td>0.1</td>
<td>µg/bee</td>
</tr>
</tbody>
</table>

Environmental Fate

Bifenthrin (82657-04-3)

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Type of Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bifenthrin</td>
<td>Bioconcentration factor (BCF)</td>
<td>1709</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>Half-life in soil</td>
<td>~85 days</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>log Pow</td>
<td>6.6</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>Mobility in soil</td>
<td>Not expected to reach groundwater</td>
</tr>
<tr>
<td>Bifenthrin</td>
<td>Stability in water</td>
<td>Stable to hydrolysis over a wide range of pH values.</td>
</tr>
</tbody>
</table>
13. Disposal considerations

Waste disposal methods
Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance.

Contaminated packaging
Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions.

14. Transport information

DOT
This material is not a hazardous material as defined by U.S. Department of Transportation at 49 CFR Parts 100 through 185.

Packaging Type
Non-Bulk, Bulk

Additional information
This material is not a hazardous material as defined by U.S. Department of Transportation at 49 CFR Parts 100 through 185.

TDG
Proper shipping name
Environmentally hazardous substance, solid, n.o. s.

Hazard Class
9

UN/ID No
UN3077

Packing group
III

Marine pollutant
Bifenthrin

ICAO/IATA
UN/ID No
UN3077

Proper shipping name
Environmentally hazardous substance, solid, n.o. s.

Hazard Class
6.1

Packing group
III

Marine pollutant
Bifenthrin

IMDG/IMO
Proper shipping name
Environmentally hazardous substance, solid, n.o. s.

Hazard Class
9

UN/ID No
UN3077

Packing group
III

EmS No.
F-A, S-F

Marine pollutant
Bifenthrin

15. Regulatory information

U.S. Federal Regulations
SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bifenthrin</td>
<td>82657-04-3</td>
<td>0.2</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories
- Acute Health Hazard: No
- Chronic Health Hazard: yes
- Fire Hazard: No
CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

International Regulations

Mexico - Grade
Slight risk, Grade 1

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Carcinogen Status</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>crystalline silica, quartz</td>
<td></td>
<td>Mexico: TWA 0.1 mg/m³</td>
</tr>
</tbody>
</table>

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
D2A Very toxic materials

16. Other information

Revision Date: 2011-08-18
Reason for revision: (M)SDS sections updated: 11, 15.

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Prepared By
FMC Corporation

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End of Material Safety Data Sheet