Material Safety Data Sheet
TALSTAR® PROFESSIONAL INSECTICIDE

This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada’s Workplace Hazardous Materials Information System (WHMIS) requirements.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name TALSTAR® PROFESSIONAL INSECTICIDE
Formula code 6339-A
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-encyl)-2,2-dimethylcyclopropanecarboxylate.
Chemical Family Pyrethroid Pesticide
Recommended use Insecticide

2. Hazards identification

Appearance Beige liquid
Physical state liquid
Odor mild
Potential health effects

Acute effects

Eyes May cause slight irritation.
Skin May cause sensitization by skin contact.
Inhalation May cause irritation of respiratory tract. May cause additional effects as listed under "Ingestion".
Ingestion Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause drowsiness and dizziness.

Chronic effects Repeated or prolonged exposure may cause central nervous system effects.

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

3. Composition/information on ingredients

Hazardous ingredients
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 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

Flash Point
> 100 °C / > 212 °F

Method
Tag Closed Cup

Sensitivity to Mechanical Impact
not applicable

Sensitivity to Static Discharge
not applicable

Suitable extinguishing media
Foam. Carbon dioxide (CO₂). Dry chemical. Soft stream or water fog only if necessary.

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

NFPA
Health Hazard 1
Flammability 1
Stability 0
Special Hazards -

6. Accidental release measures

Personal precautions
Isolate and post spill 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
Dike to prevent runoff.

Methods for cleaning up
Absorb with earth, sand or other non-combustible material and transfer to containers for later 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>British Columbia</th>
<th>Quebec</th>
<th>Ontario TWAEV</th>
<th>Alberta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene glycol 57-55-6</td>
<td></td>
<td></td>
<td>TWA: 10 mg/m³ TWA: 50 ppm TWA: 155 mg/m³</td>
<td></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

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Beige liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Beige</td>
</tr>
<tr>
<td>Physical state</td>
<td>liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>mild</td>
</tr>
<tr>
<td>pH</td>
<td>6.7</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>&gt; 100 °C / &gt; 212 °F Tag Closed Cup</td>
</tr>
</tbody>
</table>
TALSTAR® PROFESSIONAL INSECTICIDE

Evaporation rate: not applicable
Autoignition Temperature: not applicable
Vapor pressure: not applicable
Vapor density: No information available
Density: 8.53 lb/gal
Specific Gravity: 1.024 @ 20 °C
Water solubility: Dispersible in water
Percent volatile: No information available
Partition coefficient: not applicable
Viscosity: No information available
Oxidizing properties: not applicable

9.2 Other information

10. Stability and reactivity

Stability: Stable under recommended storage conditions.
Conditions to avoid: Heat, flames and sparks
Hazardous decomposition products: Carbon oxides, Hydrogen chloride, Hydrogen fluoride, Chlorine, Fluorine
Hazardous polymerization: Hazardous polymerization does not occur

11. Toxicological information

Eye contact: Expected to be practically non-irritating, (rabbit)
Skin contact: Non-irritating during normal use, (rabbit)
Ingestion: Large doses of bifenthrin ingested by laboratory animals produced signs of toxicity including convulsions, tremors and bloody nasal discharge.

LD50 Dermal: > 2,000 mg/kg (rabbit)
LD50 Oral: 632 mg/kg (rat)
LC50 Inhalation: 11.58 mg/L 1 hr (rat)

Sensitization: Bifenthrin: May cause sensitization by skin contact.

Chronic Toxicity - Other Ingredient(s)

Chronic Toxicity: Repeated or prolonged exposure may cause central nervous system effects.
Carcinogenicity: Bifenthrin: Not recognized as carcinogenic by Research Agencies (IARC, NTP, OSHA, ACGIH). Did not show carcinogenic effects in animal experiments.
Mutagenicity: Bifenthrin: Not genotoxic
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.

Chronic Toxicity - Other Ingredient(s)

Repeated overexposure to propylene glycol can produce central nervous system depression, hemolysis and minimal kidney damage.
12. Ecological information

Ecotoxicity

<table>
<thead>
<tr>
<th>Active Ingredient(s)</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>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>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Toxicity to algae</th>
<th>Toxicity to fish</th>
<th>Toxicity to microorganisms</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene glycol</td>
<td>19000 mg/L EC50 96 h (Pseudokirchneriella subcapitata)</td>
<td>LC50 51600 mg/L Oncorhynchus mykiss 96 h</td>
<td>Toxicity to microorganisms</td>
<td>EC50 &gt; 10000 mg/L 24 h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50 41 - 47 mL/L Oncorhynchus mykiss 96 h</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50 51400 mg/L Pimephales promelas 96 h LC50 710 mg/L</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pimephales promelas 96 h</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Environmental Fate

<table>
<thead>
<tr>
<th>Active Ingredient(s)</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
Bulk, Non-Bulk

TDG
Proper shipping name
Environmentally hazardous substance, liquid, n.o. s.
Hazard Class: 9
UN/ID No: UN3082
Packing group: III
Marine pollutant: Bifenthrin
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Bifenthrin), 9 PG III

ICAO/IATA

UN/ID No: UN3082
Proper shipping name: Environmentally hazardous substance, liquid, n.o.s.
Hazard Class: 9
Packing group: III
Marine pollutant: Bifenthrin
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Bifenthrin), 9 PG III
Limited quantity: 30 kg G

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>7.9</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories

- Acute Health Hazard: Yes
- Chronic Health Hazard: Yes
- Fire Hazard: no
- Sudden Release of Pressure Hazard: no
- Reactive 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
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

D2B  Toxic materials

16. Other information

Revision Date: 2011-12-14
Reason for revision: (M)SDS sections updated.

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End of Material Safety Data Sheet