1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name

Disarm™ C Fungicide

Other means of identification

Product Code(s)

FO001139-A

Synonyms

FLUOXASTROBIN: (E)-(2-[6-(2-chlorophenoxy)-5-fluoropyrimidin-4-yloxy]phenyl)(5,6-dihydro-1,4,2-dioxazin-3-yl)methanone O-methyloxime (IUPAC name); (1E)-(2-[[6-(2-chlorophenoxy)-5-fluoro-4-pyrimidinyl]oxy]phenyl][5,6-dihydro-1,4,2-dioxazin-3-yl)methanone O-methyloxime (CAS name)

CHLOROTHALONIL: tetrachloroisophthalonitrile (IUPAC name); 2,4,5,6-tetrachloro-1,3-benzenedicarbonitrile (CAS name)

Active Ingredient(s)

Fluoxastrobin, Chlorothalonil

Chemical Family

Strobiluron fungicide, Broad spectrum, nonsystemic fungicide

Recommended use of the chemical and restrictions on use

Recommended Use:

Fungicide

Restrictions on Use:

Use as recommended by the label

Manufacturer Address

FMC Corporation
2929 Walnut Street
Philadelphia, PA 19104
(215) 299-6000 (General Information)
msdsinfo@fmc.com (E-Mail General Information)

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

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral

Category 4
Acute toxicity - Inhalation (Dusts/Mists) Category 4
Serious eye damage/eye irritation Category 2B
Skin sensitization Category 1
Carcinogenicity Category 2
Specific target organ toxicity (single exposure) Category 3

GHS Label elements, including precautionary statements

**EMERGENCY OVERVIEW**

**Warning**

**Hazard Statements**
H302 - Harmful if swallowed
H317 - May cause an allergic skin reaction
H320 - Causes eye irritation
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H351 - Suspected of causing cancer

**Precautionary Statements - Prevention**
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P281 - Use personal protective equipment as required
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P272 - Contaminated work clothing should not be allowed out of the workplace
P280 - Wear protective gloves

**Precautionary Statements - Response**
P308 + P313 - If exposed or concerned: Get medical advice/attention
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention
P302 + P352 - IF ON SKIN: Wash with plenty of water and soap
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
P363 - Wash contaminated clothing before reuse
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
P330 - Rinse mouth

**Precautionary Statements - Storage**
P405 - Store locked up
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

**Precautionary Statements - Disposal**
P501 - Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**
No hazards not otherwise classified were identified.

**Other Information**

Very toxic to aquatic life with long lasting effects.
3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Family: Strobiluron fungicide, Broad spectrum, nonsystemic fungicide.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorothalonil</td>
<td>1897-45-6</td>
<td>38.4</td>
</tr>
<tr>
<td>Fluoxastrobin</td>
<td>361377-29-9</td>
<td>2.44</td>
</tr>
<tr>
<td>Propylene glycol</td>
<td>57-55-6</td>
<td>5-10</td>
</tr>
</tbody>
</table>

Synonyms are provided in Section 1.

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 further treatment advice.

**Inhalation**
Move to fresh air. If person is not breathing, call 911 (within the U.S. and Canada) or an ambulance, then give artificial respiration, preferably 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. Do not induce vomiting unless told to do so by a poison control center or doctor. Have person sip a glass of water if able to swallow.

Most important symptoms and effects, both acute and delayed
None known.

Indication of immediate medical attention and special treatment needed, if necessary
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**
Water spray, Foam, Dry chemical, Carbon dioxide (CO₂).

**Specific Hazards Arising from the Chemical**
Not flammable

**Hazardous Combustion Products**
May decompose at high temperatures forming toxic gases.

**Explosion data**
Not sensitive.

**Sensitivity to Mechanical Impact**
Not sensitive.

**Sensitivity to Static Discharge**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

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

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

**Environmental Precautions**
See Section 12 for additional Ecological Information.

**Methods for Containment**
Dike to prevent runoff. Absorb with earth, sand or other non-combustible material and...
Disarm™ C Fungicide

transfer to containers for later disposal.

Methods for cleaning up

Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. To clean the floor and all objects contaminated by this material, use damp cloth. Place used cleaning materials into closed receptacles.

7. HANDLING AND STORAGE

Handling

Handle in accordance with good industrial hygiene and safety practice. Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal.

Storage

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

Incompatible products

Strong oxidizing agents, Strong acids, Strong bases

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

<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 aerosol only</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA: 50 ppm aerosol and vapor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA: 155 mg/m³ aerosol and vapor</td>
<td></td>
</tr>
</tbody>
</table>

Appropriate engineering 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.

Individual protection measures, such as personal protective equipment

Eye/face Protection

If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Skin and Body Protection

Wear long-sleeved shirt, long pants, socks, and shoes.

Hand Protection

Rubber/latex/neoprene or other suitable chemical resistant gloves. Use protective gloves made of chemical materials such as nitrile or neoprene. Wash the outside of gloves with soap and water before reuse. Check regularly for leaks.

Respiratory Protection

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Respiratory protection must be provided in accordance with current local regulations.

Hygiene measures

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

General information

If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers.

9. PHYSICAL AND CHEMICAL PROPERTIES
Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Off-white Gray Suspension</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Off-white light gray</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>4.0 - 5.0</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>100 °C / 212 °F</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not flammable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No information available</td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No information available</td>
</tr>
<tr>
<td>Density</td>
<td>No information available</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.25</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Miscible with water</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No information available</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>No information available</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No information available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No information available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No information available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No information available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No information available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No information available</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>No information available</td>
</tr>
<tr>
<td>Bulk density</td>
<td>10.43 lb/gal</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity                          Not applicable
Chemical Stability                  Stable under recommended storage conditions.
Possibility of Hazardous Reactions  None under normal processing.
Hazardous polymerization            Hazardous polymerization does not occur.
Conditions to avoid                  Heating or temperatures to decomposition
Incompatible materials              Strong oxidizing agents, Strong acids, Strong bases.
Hazardous Decomposition Products    None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Product Information

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 Oral</td>
<td>1,750 mg/kg</td>
</tr>
<tr>
<td>LD50 Dermal</td>
<td>&gt; 5,000 mg/kg</td>
</tr>
<tr>
<td>LC50 Inhalation</td>
<td>&gt; 1.08 mg/L 4 hr</td>
</tr>
</tbody>
</table>

Serious eye damage/eye irritation  Moderately irritating.
Skin corrosion/irritation         Minimally irritating.
Sensitization                    Sensitizer

Information on toxicological effects

Symptoms                        No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure
Chronic toxicity
Chlorothalonil: In dogs, 1 year administration caused a significant decrease in body weight gain and increases in absolute liver and kidney weights. Fluoxastrobin showed reduced body weight and hepatocytomegaly and cytoplasmic changes associated with increased serum liver alkaline phosphatase indicative of cholestasis.

Mutagenicity
Chlorothalonil: Not a mutagen based on the evaluated studies
Fluoxastrobin: Not genotoxic in animal studies

Carcinogenicity
Chlorothalonil: Fore-stomach tumours in rats and mice, kidney tumours in rats ("likely" to be a human carcinogen by US EPA standards) Fluoxastrobin: Not carcinogenic

Neurological effects
Chlorothalonil: No evidence in regulatory studies. Fluoxastrobin: No neurotoxicity observed in animal studies.

Reproductive toxicity
Chlorothalonil: No toxicity to reproduction in animal studies. Fluoxastrobin: In the reproduction study, there was evidence of decreased body weight in offspring, delayed preputial separation, and incomplete ossification.

Developmental toxicity

Aspiration hazard
No information available.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorothalonil 1897-45-6</td>
<td>Group 2B</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

Ecotoxicity

<table>
<thead>
<tr>
<th>Chlorothalonil (1897-45-6)</th>
<th>Duration</th>
<th>Species</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Ingredient(s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96 h EC50</td>
<td>Algae</td>
<td>0.116</td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>96 h LC50</td>
<td>Fish</td>
<td>0.038</td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>48 h EC50</td>
<td>Daphnia magna</td>
<td>0.084</td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>96 h NOEC</td>
<td>Algae</td>
<td>0.033</td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>28 d NOEC</td>
<td>Fish</td>
<td>0.033</td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>21 d NOEC</td>
<td>Daphnia magna</td>
<td>0.0085</td>
<td>mg/L</td>
<td></td>
</tr>
</tbody>
</table>

Persistence and degradability
Chlorothalonil: Moderately persistent. Hydrolytically stable. Not readily biodegradable. Fluoxastrobin: Biodegradation under aerobic conditions could take several months to several years, depending on the soil texture (half life of 29.4 days in sandy loam to 393 days in loamy sand; average half-life of 141 days).

Bioaccumulation
Chlorothalonil: The substance has a low potential to bioaccumulate in the environment.

Mobility
Chlorothalonil: Not expected to reach groundwater. Fluoxastrobin: Low mobility in soil.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods
It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

Contaminated Packaging
Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION
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 does not contain any 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>Chlorothalonil - 1897-45-6</td>
<td>1897-45-6</td>
<td>38.4</td>
<td>0.1</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

Clean Water Act
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

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

FIFRA Information
This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION
Harmful if swallowed.
Harmful if inhaled.
Causes moderate eye irritation.
Repeated or prolonged contact with skin may cause allergic reactions in some people.
This pesticide is toxic to fish, wildlife and aquatic invertebrates.

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>California Prop. 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorothalonil - 1897-45-6</td>
<td>Carcinogen</td>
</tr>
</tbody>
</table>

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorothalonil 1897-45-6</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Propylene glycol 57-55-6</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

International Inventories

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>TSCA (United States)</th>
<th>DSL (Canada)</th>
<th>EINECS/ELINC S (Europe)</th>
<th>ENCS (Japan)</th>
<th>China (IECSC)</th>
<th>KECL (Korea)</th>
<th>PICCS (Philippines)</th>
<th>AICS (Australia)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorothalonil 1897-45-6</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Propylene glycol 57-55-6</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Mexico - Pollutant Release and Transfer Register - Reporting Emissions for Fabrication, Process or Use -Threshold Quantities</th>
<th>Pollutant Release and Transfer Register - Reporting Emissions - Threshold Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorothalonil</td>
<td>100 kg/yr, 2500 kg/yr</td>
<td>100 kg/yr</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Physical hazard</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>X</td>
</tr>
</tbody>
</table>

Revision date: 2016-05-26
Reason for revision: Initial Release

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Page 8 / 9
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Prepared By:

FMC Corporation

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End of Safety Data Sheet