SAFETY DATA SHEET
SOLSTICE HERBICIDE

SDS #: 7453-A
Revision date: 2015-04-28
Format: NA
Version 1.01

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name
SOLSTICE HERBICIDE

Other means of identification

Product Code(s) 7453-A

Synonyms
2-[4-(methylsulfonyl)-2-nitrobenzoyl]-1,3-cyclohexanedione; IUPAC name: methyl[2-chloro-4-fluoro-5-(5,6,7,8-tetrahydro-3-oxo-1H,3H-[1,3,4]thiadiazolo[3,4-a]pyridazin-1-ylideneamino)phenylthio]acetate; CAS name: methyl[[2-chloro-4-fluoro-5-[(tetrahydro-3-oxo-1H,3H-[1,3,4]thiadiazolo[3,4-a]pyridazin-1-ylidene)amino]phenyl][thio]acetate

Active Ingredient(s)
Mesotrione, Fluthiacet-methyl

Chemical Family
Benzoylcyclohexanedione, Thiadiazoles

Recommended use of the chemical and restrictions on use

Recommended Use: Herbicide

Restrictions on Use:
Use as recommended by the label

Manufacturer Address

FMC Corporation
1735 Market Street
Philadelphia, PA 19103
(215) 299-6000 (General Information)
msdsinfo@fmc.com (E-Mail General Information)

Emergency telephone number

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

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

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

<table>
<thead>
<tr>
<th>Toxicity Type</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Inhalation (Dusts/Mists)</td>
<td>Category 4</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Category 2</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Category 2</td>
</tr>
</tbody>
</table>
GHS Label elements, including precautionary statements

**EMERGENCY OVERVIEW**

**Hazard Statements**
- H332 - Harmful if inhaled
- H351 - Suspected of causing cancer
- H373 - May cause damage to organs through prolonged or repeated exposure

**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
- P271 - Use only outdoors or in a well-ventilated area
- P260 - Do not breathe dust/fume/gas/mist/vapors/spray

**Precautionary Statements - Response**
- P308 + P313 - IF exposed or concerned: Get medical advice/attention
- P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

**Precautionary Statements - Storage**
- P405 - Store locked up

**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. May be harmful in contact with skin.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical Family**
Benzoylcyclohexanedione, Thiadiazoles.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluthiacet-methyl</td>
<td>117337-19-6</td>
<td>2.2</td>
</tr>
<tr>
<td>Mesotrione</td>
<td>104206-82-8</td>
<td>38.52</td>
</tr>
<tr>
<td>Propylene glycol</td>
<td>57-55-6</td>
<td>1-10</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 person to fresh air. If person is not breathing, contact emergency medical services, 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. 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.

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
Foam. Carbon dioxide (CO₂). Dry chemical. Water spray or fog.

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating and toxic gases and vapors

Explosion data
Not sensitive.

Sensitivity to Mechanical Impact
Not applicable.

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

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
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. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up
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.

7. HANDLING AND STORAGE

Handling
Avoid breathing vapors or mists. 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. Keep/store only in original container.

Incompatible products
None known

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Appropriate engineering controls

Engineering measures
Apply technical measures to comply with the occupational exposure limits. Ensure adequate ventilation, especially in confined areas. 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
For dust, splash, mist or spray exposure, wear chemical protective goggles.

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

Hand protection
Protective gloves

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

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.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance
Off-white to beige, Liquid suspension

Physical State
Liquid

Color
Off-white to beige

Odor
Mild Organic

Odor threshold
No information available

pH
3.48 @ 23.5 °C

Melting point/freezing point
Not applicable

Boiling Point/Range
No information available

Flash point
> 100 °C / > 212 °F

Evaporation Rate
No information available

Flammability (solid, gas)
No information available

Flammability Limit in Air
- Upper flammability limit: No information available
- Lower flammability limit: No information available

Vapor pressure
No information available

Vapor density
No information available

Density
1.19 g/mL @ 22.8 °C

Specific gravity
No information available

Water solubility
Dispersible in water

Solubility in other solvents
No information available

Partition coefficient
No information available

Autoignition temperature
No information available
Decomposition temperature: No information available
Viscosity, kinematic: No information available
Viscosity, dynamic: No information available
Explosive properties: No information available
Oxidizing properties: No information available
Molecular weight: No information available
Bulk density: 9.9 lb/gal @ 22.8 °C

10. STABILITY AND REACTIVITY

Reactivity: Not applicable

Chemical Stability: Stable under normal conditions with greater than 10% water content. Upon storage low levels of hydrogen cyanide gas may develop in container headspace.

Possibility of Hazardous Reactions: None under normal processing.

Hazardous polymerization: Hazardous polymerization does not occur.

Conditions to avoid: Do not allow evaporation to dryness. Heat, flames and sparks. Temperatures above 55°C.

Incompatible materials: None known.

Hazardous Decomposition Products: Carbon oxides (COx). Hydrogen cyanide.

11. TOXICOLOGICAL INFORMATION

Product Information

LD50 Oral: > 5000 mg/kg (rat)
LD50 Dermal: > 2000 mg/kg (rat)
LC50 Inhalation: > 2.09 mg/L (rat)

Serious eye damage/eye irritation: Non-irritating.
Skin corrosion/irritation: Non-irritating.
Sensitization: Non-sensitizing

Information on toxicological effects

Symptoms: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic toxicity: Effects are expected to be similar to those that are seen with acute toxicity. Prolonged exposure may cause chronic effects. Possible risks of irreversible effects.

Mutagenicity: Mesotrione, Fluthiacet-methyl: Not genotoxic in laboratory studies.
Carcinogenicity: Mesotrione: No evidence of carcinogenicity from animal studies. Fluthiacet-methyl caused increases in benign pancreatic tumors in male rats at the highest dose, along with pancreatic and liver toxicity. There was an increase in liver tumors at two highest doses in male mice, along with hepatotoxicity, that could both be secondary to liver toxicity. New data indicates that there is no human risk.

Neurological effects: Mesotrione, Fluthiacet-methyl: Not neurotoxic.
Reproductive toxicity: Mesotrione, Fluthiacet-methyl: No toxicity to reproduction in animal studies.

STOT - single exposure: No information available.
STOT - repeated exposure: May cause damage to organs through prolonged or repeated exposure. See listed target organs below.

Target organ effects: Liver, bone marrow, spleen, pancreas, lymphatic system, hematopoietic system, uterus and blood, Eyes.

Neurological effects: Mesotrione, Fluthiacet-methyl: Not neurotoxic.
Aspiration hazard: No information available.
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>Fluthiacet-methyl (117337-19-6)</td>
<td>72 h LC50</td>
<td>Algae</td>
<td>0.00251</td>
<td>mg/L</td>
</tr>
<tr>
<td>96 h LC50</td>
<td>Fish</td>
<td>0.043</td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>48 h EC50</td>
<td>Crustacea</td>
<td>2.3</td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>21 d NOEC</td>
<td>Fish</td>
<td>0.0027</td>
<td>mg/L</td>
<td></td>
</tr>
<tr>
<td>21 d NOEC</td>
<td>Crustacea</td>
<td>0.035</td>
<td>mg/L</td>
<td></td>
</tr>
</tbody>
</table>

<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>Mesotrione (104206-82-8)</td>
<td>96 h LC50</td>
<td>Rainbow trout</td>
<td>&gt;114</td>
<td>ppm</td>
</tr>
<tr>
<td>5 d EC50</td>
<td>Algae</td>
<td>1.9</td>
<td>ppm</td>
<td></td>
</tr>
<tr>
<td>48 h EC50</td>
<td>Daphnia magna</td>
<td>840</td>
<td>ppm</td>
<td></td>
</tr>
<tr>
<td>14 d LD50</td>
<td>Bobwhite quail</td>
<td>&gt;2000</td>
<td>mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

Persistence and degradability

Bioaccumulation
Fluthiacet-methyl: The substance does not have a potential for bioconcentration.

Mobility
Mesotrione: Mobile; Has potential to reach ground water. Fluthiacet-methyl: Slightly mobile; Not expected to reach groundwater.

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.

TDG
Classification below is only applicable when shipped by vessel and is not applicable when shipped by road or rail only.

<table>
<thead>
<tr>
<th>UN/ID no</th>
<th>Proper Shipping Name</th>
<th>Hazard class</th>
<th>Packing Group</th>
<th>Marine Pollutant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN3082</td>
<td>Environmentally hazardous substance, liquid, n.o.s.</td>
<td>9</td>
<td>III</td>
<td>Mesotrione, Fluthiacet-methyl.</td>
<td>UN3082, Environmentally hazardous substance, liquid, n.o.s. (Mesotrione, Fluthiacet-methyl), 9, PGIII, Marine Pollutant</td>
</tr>
</tbody>
</table>

ICAO/IATA

<table>
<thead>
<tr>
<th>UN/ID no</th>
<th>Proper Shipping Name</th>
<th>Hazard class</th>
<th>Packing Group</th>
<th>Marine Pollutant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN3082</td>
<td>Environmentally hazardous substance, liquid, n.o.s.</td>
<td>9</td>
<td>III</td>
<td>Mesotrione, Fluthiacet-methyl.</td>
<td>UN3082, Environmentally hazardous substance, liquid, n.o.s. (Mesotrione, Fluthiacet-methyl), 9, PGIII, Marine Pollutant</td>
</tr>
</tbody>
</table>
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

SARA 311/312 Hazard Categories

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute health hazard</td>
<td>No</td>
</tr>
<tr>
<td>Chronic health hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Fire hazard</td>
<td>No</td>
</tr>
<tr>
<td>Sudden release of pressure hazard</td>
<td>No</td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>No</td>
</tr>
</tbody>
</table>

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 absorbed through skin. Causes moderate eye irritation.
SOLSTICE HERBICIDE is very toxic to algae and moderately toxic to fish.

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals:

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>California Prop. 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide - 13463-67-7</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>crystalline silica, quartz - 14808-60-7</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>Formaldehyde - 50-00-0</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>Naphthalene - 91-20-3</td>
<td>Carcinogen</td>
</tr>
</tbody>
</table>

U.S. State Right-to-Know Regulations
Chemical name | New Jersey | Massachusetts | Pennsylvania
--- | --- | --- | ---
Propylene glycol 57-55-6 | X | | X

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA (United States)</th>
<th>DSL (Canada)</th>
<th>EINECS/ELINCS (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>Propylene glycol 57-55-6 (1-10)</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>

Mexico - Grade

Slight risk, Grade 1

WHMIS Hazard Class

D2A - Very toxic materials

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>Health Hazards</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>Health Hazards</td>
<td>1*</td>
<td>1</td>
<td>0</td>
<td>X</td>
</tr>
</tbody>
</table>

*Indicates a chronic health hazard.

Revision date: 2015-04-28
Revision note: Initial Release

Disclaimer

FMC Corporation believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HERELIN. The information provided herein relates only to the specified product designated and may not be applicable where such product is used in combination with any other materials or in any process. Use of this product is regulated by the U.S. Environmental Protection Agency (EPA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Further, since the conditions and methods of use are beyond the control of FMC Corporation, FMC corporation expressly disclaims any and all liability as to any results obtained or arising from any use of the products or reliance on such information.

Prepared By:

FMC Corporation

FMC Logo and Cadet - Trademarks of FMC Corporation

© 2015 FMC Corporation. All Rights Reserved.

End of Safety Data Sheet