1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Echelon® 4SC Herbicide

Recommended use: Herbicide

Active Ingredient(s): Sulfentrazone, Prodiamine

Synonyms:
- FMC 97285; 2’,4’-dichloro-5’-(4-difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl) methanesulfonanilide; N-[2,4-dichloro-5-{4-(difluoromethyl)}-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]phenyl] methanesulfonamide
- 5-dipropylylano-α,α,α-trifluoro-4,6-dinitro-o-toluidine;
- 2,6-dinitro-N1,N1-dipropyl-4-trifluoromethyl-m-phenylenediamine;
- 2,4-dinitro-N3,N3-dipropyl-6-(trifluoromethyl)-1,3-benzenediamine

Chemical Family: Triazolinones; Dinitro aniline

2. Hazards identification

Appearance: Yellow liquid

Physical state: liquid

Odor: mild phenolic

Potential health effects

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

Acute effects:
- Eyes: May cause slight irritation.
- Skin: Substance may cause slight skin irritation.
- Inhalation: May cause irritation of respiratory tract. May cause additional effects as listed under "Ingestion".
- Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause central nervous system depression.

Chronic effects: Effects are expected to be similar to those that are seen with acute toxicity.
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>prodiamine</td>
<td>29091-21-2</td>
<td>27.28</td>
</tr>
<tr>
<td>Sultentrazone</td>
<td>122836-35-5</td>
<td>13.64</td>
</tr>
<tr>
<td>Glycerin</td>
<td>56-81-5</td>
<td>5-10</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.

5. Fire-fighting measures

Flash Point
> 100 °C / > 112 °F

Sensitivity to Mechanical Impact
not applicable

Sensitivity to Static Discharge
not applicable

Suitable extinguishing media

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. 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.
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.

8. Exposure controls/personal protection

Exposure guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerin 56-81-5</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 15 mg/m³ TWA: 5 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>Mexico: TWA 10 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>Glycerin 56-81-5</td>
<td>TWA: 10 mg/m³ TWA: 3 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 10 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>Yellow liquid</td>
</tr>
<tr>
<td>Color</td>
<td>yellow</td>
</tr>
<tr>
<td>Physical state</td>
<td>liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>mild phenolic</td>
</tr>
<tr>
<td>pH</td>
<td>6.35 (1% solution)</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>
</tbody>
</table>
10. Stability and reactivity

Stability

Stable

Conditions to avoid

Excessive heat

Hazardous decomposition products

None known

Hazardous polymerization

Hazardous polymerization does not occur

11. Toxicological information

Acute Toxicity

Signs of toxicity in laboratory animals included intermittent tremors, decreased activity, prostration, shallow breathing, ocular discharge, salivation and decreased food consumption.

Eye contact

Slightly or non-irritating (rabbit)

Skin contact

Slightly or non-irritating (rabbit)

LD50 Dermal

> 5000 mg/kg (rat)

LD50 Oral

> 5000 mg/kg (rat)

LC50 Inhalation:

> 2.19 mg/L (rat)

Sensitization

Non-sensitizing

Chronic Toxicity - Other Ingredient(s)

Chronic Toxicity

Effects are expected to be similar to those that are seen with acute toxicity.

Carcinogenicity

Sulfentrazone, Prodiamine: Did not show carcinogenic effects in animal experiments.

Mutagenicity

Sulfentrazone, Prodiamine: Did not show mutagenic effects in animal experiments.

Reproductive toxicity

Offspring Toxicity (sulfentrazone): LOAEL = 33 mg/kg/day for males; 40 mg/kg/day for females. Prodiamine: No toxicity to reproduction.

Neurological Effects

Sulfentrazone: Altered motor activity and FOB effects, which reverse after single exposure, with no signs of histopathology

Developmental Toxicity

Sulfentrazone: NOAEL of 10 mg/kg/day in the developmental toxicity study in rat. NOAEL of 14 mg/kg/day in a 2-generation reproduction study. Prodiamine: Not teratogenic in animal studies.
**Target Organ Effects**

Sulfentrazone: Hematopoietic System. In long-term feeding studies with prodiamine, the NOEL was 200 ppm in rats, and 500 ppm in mice. Toxicity was identified in the liver and thyroid of rats at 3200 ppm, where decreased body-weight gains, liver enlargement and alterations, and species specific benign thyroid tumors were seen. At 5000 ppm in mice, both decreased body weight gains and increased liver weights were reported, but no compound related tumors were observed.

<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>Glycerin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>respiratory system, skin, eyes, kidneys</td>
</tr>
</tbody>
</table>

### 12. Ecological information

#### Ecotoxicity

**prodiamine (29091-21-2)**

<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>Prodiamine</td>
<td>LC50</td>
<td>Fish</td>
<td>&gt;552</td>
<td>ppb</td>
</tr>
<tr>
<td>Prodiamine</td>
<td>LC50</td>
<td>Aquatic organisms</td>
<td>&gt;658</td>
<td>ppb</td>
</tr>
</tbody>
</table>

**Sulfentrazone (122836-35-5)**

<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>Sulfentrazone</td>
<td>120 h LC50</td>
<td>Algae</td>
<td>31</td>
<td>µg/L</td>
</tr>
<tr>
<td></td>
<td>48 h LC50</td>
<td>Aquatic organisms</td>
<td>60.4</td>
<td>mg/L</td>
</tr>
<tr>
<td></td>
<td>96 h LC50</td>
<td>Fish</td>
<td>94</td>
<td>mg/L</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Bobwhite quail</td>
<td>&gt;2250</td>
<td>mg/kg</td>
</tr>
<tr>
<td></td>
<td>LD50 Dietary</td>
<td>Mallard duck</td>
<td>&gt;5620</td>
<td>ppm</td>
</tr>
</tbody>
</table>

**Environmental Fate**

**prodiamine (29091-21-2)**

<table>
<thead>
<tr>
<th>Active Ingredient(s)</th>
<th>Type of Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prodiamine</td>
<td>Half-life in soil</td>
<td>&lt;57 days</td>
</tr>
<tr>
<td></td>
<td>Stability in water</td>
<td>Stable to hydrolysis over a wide range of pH values</td>
</tr>
</tbody>
</table>

**Sulfentrazone (122836-35-5)**

<table>
<thead>
<tr>
<th>Active Ingredient(s)</th>
<th>Type of Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfentrazone</td>
<td>Bioconcentration factor (BCF)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Half-life in soil</td>
<td>2-18 months</td>
</tr>
<tr>
<td></td>
<td>Log Pow</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Mobility in soil</td>
<td>Potential to reach groundwater</td>
</tr>
<tr>
<td></td>
<td>Stability in water</td>
<td>Stable to hydrolysis over a wide range of pH values</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>log Pow</th>
</tr>
</thead>
</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

TDG

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

Proper shipping name

Environmentally hazardous substance, liquid, n.o.s.

Hazard Class

9

UN/ID No

UN3082

Packing group

III

Marine pollutant

Sulfentrazone

Description

UN3082, Environmentally hazardous substance, liquid, n.o.s. (sulfentrazone), 9, PGIII, Marine Pollutant

ICAO/IATA

UN/ID No

UN3082

Proper shipping name

Environmentally hazardous substance, liquid, n.o.s.

Hazard Class

9

Packing group

III

Marine pollutant

Sulfentrazone

Description

UN3082, Environmentally hazardous substance, liquid, n.o.s. (sulfentrazone), 9, PGIII, Marine Pollutant

IMDG/IMO

Proper shipping name

Environmentally hazardous substance, liquid, n.o.s.

Hazard Class

9

UN/ID No

UN3082

Packing group

III

EmS No.

F-A, S-F

Marine pollutant

Sulfentrazone

Description

UN3082, Environmentally hazardous substance, liquid, n.o.s. (sulfentrazone), 9, PGIII, Marine Pollutant

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
Echelon® 4SC Herbicide

Revision Date: 2012-02-24
Version 1

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.

TSCA Inventory (United States of America)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>U.S. - TSCA (Toxic Substances Control Act) - Section 8(a) - Chemical-Specific Reporting and Recordkeeping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerin</td>
<td>Partially exempt chemical substance under 40 CFR 710.46(b)(2)</td>
</tr>
</tbody>
</table>

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>Glycerin</td>
<td></td>
<td>Mexico: TWA 10 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: Non-controlled

16. Other information

Revision Date: 2012-02-24
Reason for revision: (M)SDS sections updated.

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End of Material Safety Data Sheet