1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name

AUTHORITY® MTZ DF HERBICIDE

Other means of identification

Product Code(s) 6351-A

Synonyms

SULFENTRAZONE (FMC 97285):
2′,4′-dichloro-5′-(4-difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl) methanesulfonanilide (IUPAC name);
N-[2,4-dichloro-5-[4-(difluoromethyl)]-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]phenyl] methanesulfonamide (CAS name)

METRIBUZIN: 4-amino-6-tert-butyl-4,5-dihydro-3-methylthio-1,2,4-triazin-5-one;
4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one

Active Ingredient(s)

Sulfentrazone, Metribuzin

Chemical Family

Triazolinones; Triazinones

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
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 - Inhalation (Dusts/Mists) | Category 4 |
| Serious eye damage/eye irritation | Category 1 |
| Specific target organ toxicity (repeated exposure) | Category 2 |

**GHS Label elements, including precautionary statements**

**Emergency Overview**

**Danger**

**Hazard Statements**
- H318 - Causes serious eye damage
- H332 - Harmful if inhaled
- H373 - May cause damage to organs through prolonged or repeated exposure

**Precautionary Statements - Prevention**
- P271 - Use only outdoors or in a well-ventilated area
- P280 - Wear protective gloves/protective clothing/eye protection/face protection
- P260 - Do not breathe dust/fume/gas/mist/vapors/spray

**Precautionary Statements - Response**
- P314 - Get medical advice/attention if you feel unwell
- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- P310 - Immediately call a POISON CENTER or doctor
- P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
- P312 - Call a POISON CENTER or doctor if you feel unwell

**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** Triazolinones; Triazinones.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metribuzin</td>
<td>21087-64-9</td>
<td>28.7</td>
</tr>
<tr>
<td>Sulfentrazone</td>
<td>122836-35-5</td>
<td>18</td>
</tr>
<tr>
<td>Kaolin</td>
<td>1332-58-7</td>
<td>20-30</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>1-5</td>
</tr>
</tbody>
</table>
4. FIRST AID MEASURES

Eye Contact
Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. 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. 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. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
Central nervous system effects.

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

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Specific Hazards Arising from the Chemical
Finely dispersed particles can form explosive mixtures in air.

Explosion data
Sensitivity to Mechanical Impact
Not sensitive.

Sensitivity to Static Discharge
Not sensitive.

Protective equipment and precautions for firefighters
Wear self-contained breathing apparatus and protective suit.

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.

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
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.

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
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

<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>Metribuzin</td>
<td>TWA: 5 mg/m³</td>
<td>-</td>
<td>TWA: 5 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>(21087-64-9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaolin</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 15 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>Mexico: TWA 10 mg/m³</td>
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<tr>
<td>(1332-58-7)</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td></td>
<td>Mexico: STEL 20 mg/m³</td>
</tr>
<tr>
<td>Toluene</td>
<td>TWA: 20 ppm</td>
<td>TWA: 200 ppm</td>
<td>IDLH: 500 ppm</td>
<td>Mexico: TWA 50 ppm</td>
</tr>
<tr>
<td>(108-88-3)</td>
<td>Ceiling: 300 ppm</td>
<td>TWA: 100 ppm</td>
<td>TWA: 375 mg/m³</td>
<td>Mexico: TWA 188 mg/m³</td>
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<tr>
<td></td>
<td>TWA: 5 mg/m³</td>
<td>STEL: 150 ppm</td>
<td>STEL: 560 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Chemical name</td>
<td>British Columbia</td>
<td>Quebec</td>
<td>Ontario TWA</td>
<td>Alberta</td>
</tr>
<tr>
<td>---------------</td>
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</tr>
<tr>
<td>Metribuzin</td>
<td>TWA: 5 mg/m³</td>
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<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
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<tr>
<td>(21087-64-9)</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>(1332-58-7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>TWA: 20 ppm</td>
<td>TWA: 50 ppm</td>
<td>TWA: 188 mg/m³</td>
<td>TWA: 50 ppm</td>
</tr>
<tr>
<td>(108-88-3)</td>
<td></td>
<td>TWA: 20 ppm</td>
<td>Skin</td>
<td>TWA: 20 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 188 mg/m³</td>
<td>Skin</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
For dust, splash, mist or spray exposure, wear chemical protective goggles.

Skin and Body Protection
Wear long-sleeved shirt, long pants, socks, and shoes.

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:
Brown Granules

Physical State:
Solid

Color:
Brown
10. STABILITY AND REACTIVITY

Reactivity
None under normal use conditions

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
None known

Incompatible materials
None known.

Hazardous Decomposition Products

11. TOXICOLOGICAL INFORMATION

Product Information

LD50 Oral 5000 mg/kg (rat)
LD50 Dermal > 5,000 mg/kg (rat)
LC50 Inhalation > 2.09 mg/L 4 hr (rat)

Serious eye damage/eye irritation Severely irritating to the eyes.
Skin corrosion/irritation Slightly or non-irritating (rabbit).
Sensitization Non-sensitizing

Information on toxicological effects

Symptoms
Signs of toxicity in laboratory animals given sulfentrazone included clonic convulsions, ataxia, hypersensitivity to touch, chromorhinorrhea, abdominogenital staining, decreased locomotion, lacrimation, nasal discharge, and squinting eyes.

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

Chronic toxicity
Sulfentrazone: Prolonged exposure cause decreased hemoglobin content and hematocrit, and increased spleen weight and splenic extramedullary hematopoiesis at high doses in
animal studies.

**Mutagenicity**
Sulfentrazone, Metribuzin: Not genotoxic in laboratory studies.

**Carcinogenicity**
Sulfentrazone, Metribuzin: No evidence of carcinogenicity from animal studies.

**Neurological effects**
Sulfentrazone: Clinical signs of neurotoxicity in laboratory animals was observed at high dose levels. Metribuzin: Transient neurobehavioral effects only were observed.

**Reproductive toxicity**

**Developmental toxicity**
Sulfentrazone: Fetal weight decreased; delayed skeletal ossification observed at maternally non-toxic doses are reversible effects and a dose-response is established; malformations observed in fetuses at maternally toxic doses and consistent with the mode of action for protoporphyrorgen oxidase inhibitors. Developmental toxicity testing and results were generated for sulfentrazone with toluene present as an impurity. Metribuzin: Not teratogenic in animal studies.

**STOT - single exposure**
Not classified.

**STOT - repeated exposure**
May cause damage to organs through prolonged or repeated exposure.

**Target organ effects**
Sulfentrazone, Hematopoietic system. Metribuzin: Liver, kidneys, thyroid, testicular effects.

**Neurological effects**
Sulfentrazone: Clinical signs of neurotoxicity in laboratory animals was observed at high dose levels. Metribuzin: Transient neurobehavioral effects only were observed.

**Aspiration hazard**
No information available.

**Chemical name**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td></td>
<td>Group 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>108-88-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

#### Metribuzin (21087-64-9)

<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>Metribuzin</td>
<td>48 h EC50</td>
<td>Daphnia</td>
<td>4.5</td>
<td>mg/L</td>
</tr>
<tr>
<td></td>
<td>96 h LC50</td>
<td>Fish</td>
<td>64-76</td>
<td>mg/L</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>Bird</td>
<td>100-200</td>
<td>mg/L</td>
</tr>
<tr>
<td></td>
<td>72 h EC50</td>
<td>Algae</td>
<td>0.02</td>
<td>mg/L</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>72 h EC50</td>
<td>Algae</td>
<td>32.8</td>
<td>mg/L</td>
</tr>
<tr>
<td></td>
<td>48 h EC50</td>
<td>Crustacea</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>21 d NOEC</td>
<td>Fish</td>
<td>5.9</td>
<td>mg/L</td>
</tr>
<tr>
<td></td>
<td>21 d NOEC</td>
<td>Crustacea</td>
<td>0.51</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

**Persistence and degradability**
Metribuzin: Moderately persistent.

**Bioaccumulation**
Sulfentrazone: The substance does not have a potential for bioconcentration.

**Mobility**
Sulfentrazone: Mobile; Has potential to reach ground water.

### 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.

- **UN/ID no**: UN3077
- **Proper Shipping Name**: Environmentally hazardous substance, solid, n.o.s.
- **Hazard class**: 9
- **Packing Group**: III
- **Marine Pollutant**: Sulfentrazone, Metribuzin.
- **Description**: UN3077, Environmentally hazardous substance, solid, n.o.s. (Sulfentrazone, Metribuzin), 9, PGIII, Marine Pollutant

ICAO/IATA

- **UN/ID no**: UN3077
- **Proper Shipping Name**: Environmentally hazardous substance, solid, n.o.s.
- **Hazard class**: 9
- **Packing Group**: III
- **Description**: UN3077, Environmentally hazardous substance, solid, n.o.s. (Sulfentrazone, Metribuzin), 9, PGIII, Marine Pollutant

IMDG/IMO

- **UN/ID no**: UN3077
- **Proper Shipping Name**: Environmentally hazardous substance, solid, n.o.s.
- **Hazard class**: 9
- **Packing Group**: III
- **EmS No.**: F-A, S-F
- **Marine Pollutant**: Sulfentrazone, Metribuzin
- **Description**: UN3077, Environmentally hazardous substance, solid, n.o.s. (Sulfentrazone, Metribuzin), 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 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>Metribuzin - 21087-64-9</td>
<td>21087-64-9</td>
<td>28.7</td>
<td>1.0</td>
</tr>
<tr>
<td>Toluene - 108-88-3</td>
<td>108-88-3</td>
<td>1-5</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

**Clean Water Act**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):
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. Causes moderate eye irritation. This pesticide is toxic to marine/estuarine invertebrates.

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>Toluene - 108-88-3</td>
<td>Developmental</td>
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</table>

U.S. 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>Metribuzin 21087-64-9</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Kaolin 1332-58-7</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Toluene 108-88-3</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 (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>Metribuzin 21087-64-9</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td>Kaolin 1332-58-7</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mexico - Grade
Serious risk, Grade 3

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Carcinogen Status</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaolin</td>
<td></td>
<td>Mexico: TWA 10 mg/m³</td>
</tr>
<tr>
<td>Toluene</td>
<td></td>
<td>Mexico: TWA 50 ppm</td>
</tr>
</tbody>
</table>

WHMIS Hazard Class
D2A - Very toxic materials
D2B - Toxic materials
16. OTHER INFORMATION

NFPA
Health Hazards  3  Flammability  1  Instability  0  Special Hazards  -
HMIS
Health Hazards  3*  Flammability  1  Physical hazard  0  Personal Protection  X

*Indicates a chronic health hazard.

Revision date: 2016-05-26
Reason for revision: (M)SDS sections updated

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Prepared By:

FMC Corporation

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End of Safety Data Sheet