SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: BUCTRIL® BRAND HERBICIDE
Chemical Name: BROMOXYNIL OCTANOATE ESTER; OCTANOIC ACID ESTER OF BROMOXYNIL
Synonym: BROMOXYNIL OCTANOATE ESTER; OCTANOIC ACID ESTER OF BROMOXYNIL
MSDS Identification Number: 000000000029
Chemical Family: 
Chemical Formulation: C15H17Br2NO2
EPA Registration Number: 264-437
Canadian Registration Number:

Aventis CropScience USA LP
2 T.W. Alexander Drive
Research Triangle PK, NC 27709
US

For Product Use Information: (888)-AVENTIS (283-6847) Monday through Friday 8:00AM-4:30PM
For Medical Emergency contact DART: (800) 334-7577 24 Hours/Day
For Transportation Emergency CHEMTREC: (800) 424-9300 24 Hours/Day

Product Use Description: FIFRA regulated use only.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS No.</th>
<th>Concentration % by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>BROMOXYNIL OCTANOATE</td>
<td>1689-99-2</td>
<td>35.160</td>
</tr>
<tr>
<td>Trimethyl benzene (1,2,4)</td>
<td>95-63-6</td>
<td>14.800</td>
</tr>
<tr>
<td>Xileno</td>
<td>1330-20-7</td>
<td>10.000</td>
</tr>
<tr>
<td>ETHYLBENZENE</td>
<td>100-41-4</td>
<td>2.300</td>
</tr>
<tr>
<td>Other ingredients (Trade secret)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information

Emergency Overview

Warning Statements:
WARNING!! HARMFUL IF INHALED, SWALLOWED OR ABSORBED THROUGH SKIN. COMBUSTIBLE LIQUID.

Odor: aromatic odor.

Appearance: brown / liquid.
Immediate Effects

Eye
Causes redness, tearing. Vapors and mists can cause irritation.

Skin
May cause irritation, redness, swelling.

Ingestion
Harmful if ingested. May cause nausea, vomiting, abdominal pain, weakness of arms and/or legs, dizziness, loss of coordination. Aspiration of the swallowed or vomited product can cause severe pulmonary complications.

Inhalation
Harmful if inhaled. May cause upper respiratory tract irritation, coughing, wheezing, nausea, headache, depression.

Chronic or Delayed

Long-Term
Prolonged contact may cause chronic dermatitis, reproductive disorders, developmental problems. This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens.

Medical Conditions

Aggravated by Exposure
Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

SECTION 4. FIRST AID MEASURES

Eye
Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek medical attention.

Skin
In case of contact, immediately wash with plenty of soap and water for at least 15 minutes. Seek medical attention. Remove contaminated clothing and shoes while washing. Clean contaminated clothing and shoes before re-use or discard if they cannot be thoroughly cleaned.

Ingestion
If victim is conscious and alert, give 2-3 glasses of water to drink and do not induce vomiting. Material may enter lungs and cause severe damage. Do not give anything by mouth to an unconscious victim. Seek immediate medical attention. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. Persons attending the victim should avoid direct contact with heavily contaminated clothing and vomitus. Wear impervious gloves while decontaminating skin and hair.

Inhalation
Remove victim from immediate source of exposure and assure that the victim is breathing. If breathing is difficult, administer oxygen, if available. If victim is not breathing, administer CPR (cardio-pulmonary resuscitation). Seek medical attention.

Note to Physician
All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Treat symptomatically. No specific antidote available.
This product is irritating to mucous membranes. If large amounts (greater than 1 ml/kg body weight) of the product have been ingested, the stomach should be evacuated by gastric intubation with the aid of a cuffed endotracheal tube to prevent exposure of the esophagus. After removal of stomach contents, wash stomach by instilling 30-50 g. of activated charcoal in 3-4 ounces of water through the stomach tube and again remove stomach contents. Avoid oily laxatives.

SECTION 5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point</td>
<td>38 °C / 100 °F</td>
</tr>
<tr>
<td>Flammability Class</td>
<td>FLAMMABLE</td>
</tr>
<tr>
<td>Method Used</td>
<td>Tagliabue Closed Cup</td>
</tr>
<tr>
<td>Auto Ignition Temperature</td>
<td>454 °C</td>
</tr>
<tr>
<td>Lower Flammable Limit</td>
<td>1 % (V)</td>
</tr>
<tr>
<td>Upper Flammable Limit</td>
<td>6 % (V)</td>
</tr>
<tr>
<td>Fire and Explosion Hazards</td>
<td>Product will burn under fire conditions. Under fire conditions, toxic, corrosive fumes are emitted. Vapors may travel a considerable distance to a source of ignition and flash back along vapor trail.</td>
</tr>
</tbody>
</table>

Suitable Extinguishing Media
- Recommended (small fires): dry chemical, carbon dioxide.
- Recommended (large fire): alcohol foam, polymer foam.
- Not recommended: water (fire could spread readily as a burning liquid).

Fire Fighting Instructions
Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Keep unnecessary people away, isolate hazard area and deny entry. Evacuate residents who are downwind of fire. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later. Persons who may have been exposed to contaminated smoke should be immediately examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

SECTION 6. ACCIDENTAL RELEASE MEASURES

General and Disposal
Evacuation Procedures and Safety:
Wear appropriate protective gear for the situation. See Personal Protection Information in Section 8. Eliminate all sources of ignition until the area is determined to be free from explosion or fire hazards.

Cleanup and Disposal of Spill:
Pump any free liquid into an appropriate closed container (see Section 7: Handling and Storage). Recover material, if possible. Absorb with an inert absorbent. Shovel up into an appropriate closed container (see Section 7: Handling and Storage). Decontaminate tools and
Material Safety Data Sheet

BUCTRIL® BRAND HERBICIDE

MSDS Number: 000000000029

MSDS Version 3

Page 4 of 9

Land Spill or Leaks

Containment of Spill:
Dike spill using absorbent or impervious materials such as earth, sand or clay. Follow procedure described below under Cleanup and Disposal of Spill.

Environmental and Regulatory Reporting:
Prevent material from entering public sewer system or any waterways. If spilled on the ground, the affected area should be removed to a depth of one or two inches and placed in an appropriate container for disposal. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

SECTION 7. HANDLING AND STORAGE

Handling Procedures
Do not get on skin or in eyes. Do not ingest. Avoid breathing vapors and mists. If freezing occurs, thaw and remix before using.

Storing Procedures
Store in an area that is away from ignition sources, away from food, feedstuffs, fertilizers and seed. Discolors but does not pit steel. Expected shelf life if stored at recommended temperatures: 8 weeks.

Work/Hygienic Procedures
Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material:

1. Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.

2. Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.

3. Wash exposed skin promptly to remove accidental splashes of contact with this material.

Min/Max Storage Temperatures
-16 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls
Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures: local exhaust ventilation at the point of generation.

Eye/Face Protection
Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material. Eye contact should be prevented through use of chemical safety glasses with side shields or splash proof goggles. An emergency eye wash must be readily accessible to
Body Protection
Skin contact should be prevented through use of suitable protective clothing, gloves and footwear, selected with regard for use conditions and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Respiratory Protection
When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations. Under normal conditions, in the absence of other airborne contaminants, the following devices should provide protection from this material up to the conditions specified by the appropriate OSHA, WHMIS or ANSI standard(s): Air-purifying (half-mask/full-face) respirator with cartridges/canister approved for use against pesticides. Under conditions immediately dangerous to life or health, or emergency conditions with unknown concentrations, use a full-face positive pressure air-supplied respirator equipped with an emergency escape air supply unit or use a self-contained breathing apparatus unit.

General Protection
Introductory Remarks:
These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and piping systems for maintenance and repairs. Waste resulting from these procedures should be handled in accordance with Section 13: Disposal Considerations. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

Exposure Limits/Guidelines
Exposure limits represent regulated or recommended worker breathing zone concentrations measured by validated sampling and analytical methods, meeting the regulatory requirements. The following limits apply to this material, where, if indicated, S=skin and C=ceiling limit:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Notes</th>
<th>TWA</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>XYLENE</td>
<td></td>
<td>434 mg/cu m</td>
<td>651 mg/cu m</td>
</tr>
<tr>
<td>ACGIH</td>
<td></td>
<td>100 ppm</td>
<td>150 ppm</td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>100 ppm</td>
<td>655 mg/cu m</td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>435 mg/cu m</td>
<td>150 ppm</td>
</tr>
<tr>
<td>ETHYLBENZENE</td>
<td>Notes</td>
<td>434 mg/cu m</td>
<td>543 mg/cu m</td>
</tr>
<tr>
<td>ACGIH</td>
<td></td>
<td>100 ppm</td>
<td>125 ppm</td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>100 ppm</td>
<td>545 mg/cu m</td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>435 mg/cu m</td>
<td>125 ppm</td>
</tr>
</tbody>
</table>
SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>brown / liquid.</td>
</tr>
<tr>
<td>Odor</td>
<td>aromatic odor.</td>
</tr>
<tr>
<td>pH</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not Available</td>
</tr>
<tr>
<td>Vapor Density (air = 1)</td>
<td>3.5</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.04 20 °C</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>149 °C at 760 mmHg</td>
</tr>
<tr>
<td>Melting/Freezing Point</td>
<td>Freezing Point Range: -16°C to -20°C (3°F to -4°F)</td>
</tr>
<tr>
<td></td>
<td>Melting Point Range: Not Available</td>
</tr>
<tr>
<td>Solubility (in water)</td>
<td>insoluble</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>403.13 g/mol</td>
</tr>
<tr>
<td>Other Information</td>
<td>Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product Information phone number in Section 1 for its exact specifications.</td>
</tr>
</tbody>
</table>

SECTION 10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Stability</td>
<td>This material is stable under normal handling and storage conditions described in Section 7.</td>
</tr>
<tr>
<td>Conditions to Avoid</td>
<td>elevated temperatures</td>
</tr>
<tr>
<td></td>
<td>open flame</td>
</tr>
<tr>
<td></td>
<td>spark</td>
</tr>
<tr>
<td></td>
<td>static electricity</td>
</tr>
<tr>
<td>Incompatibility with</td>
<td>strong oxidizing agents, bases</td>
</tr>
<tr>
<td></td>
<td>mineral acids</td>
</tr>
<tr>
<td>Hazardous Products of</td>
<td>Decomposition Type: thermal hydrogen bromide</td>
</tr>
<tr>
<td>Decomposition</td>
<td>oxides of nitrogen</td>
</tr>
<tr>
<td></td>
<td>oxides of sulfur</td>
</tr>
<tr>
<td></td>
<td>oxides of carbon</td>
</tr>
<tr>
<td>Hazardous Polymerization</td>
<td>not applicable</td>
</tr>
<tr>
<td>(Conditions to avoid)</td>
<td></td>
</tr>
</tbody>
</table>
SECTION 11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity
Toxicological Information and Interpretation
(Rat) LD50 - lethal dose 50% of test species, 780 mg/kg.

Acute Dermal Toxicity
Toxicological Information and Interpretation
(Rabbit) LD50 - lethal dose 50% of test species, 2000 mg/kg.

Acute Inhalation Toxicity
Acute Respiratory Irritation:
No test data found for product.

Skin Irritation
Toxicological Information and Interpretation
(Rabbit) Skin irritation.
Moderately irritating.

Eye Irritation
Toxicological Information and Interpretation
(Rabbit) Eye irritation.
Moderately irritating.

Chronic Toxicity
This product does not contain any substances that are considered by OSHA, NTP, IARC or ACGIH to be probable or suspected human carcinogens.

BROMOXYNIL COMPOUNDS: EPA has classified Bromoxynil as a Class C carcinogen. Based upon the results of rat and rabbit teratogenicity studies, Bromoxynil phenol is considered to be a developmental toxicant. Women of childbearing age should be particularly careful when handling this product to avoid ingestion and skin contact. Although three in vitro genetic toxicity studies were positive for Bromoxynil phenol, four additional in vitro studies and two in vivo studies were negative. Therefore, the weight of evidence indicates that Bromoxynil phenol does not produce genetic toxicity.

SECTION 12. ECOLOGICAL INFORMATION

Ecological Information
For ecotoxicological data call the product information phone number listed in Section 1.

Environmental Fate
For chemical fate data call the product information phone number listed in Section 1.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance
Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS
incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

**Container Disposal**

Consult state and local regulations regarding the proper disposal of container. Any containers or equipment used should be decontaminated immediately after use.

EPA Hazardous Waste - YES

---

**SECTION 14. TRANSPORT INFORMATION**

For Transportation Regulatory Information call the Product Information phone number in Section 1.

**SECTION 15. REGULATORY INFORMATION**

<table>
<thead>
<tr>
<th>Inventory Status</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNITED STATES (TSCA)</td>
<td>Y</td>
</tr>
<tr>
<td>CANADA (DSL)</td>
<td>N</td>
</tr>
<tr>
<td>EUROPEAN UNION (EINECS)</td>
<td>P</td>
</tr>
<tr>
<td>AUSTRALIA (AICS)</td>
<td>Y</td>
</tr>
<tr>
<td>JAPAN (MITI)</td>
<td>N</td>
</tr>
<tr>
<td>SOUTH KOREA (KECL)</td>
<td>N</td>
</tr>
</tbody>
</table>

Y = All ingredients are on the inventory.

E = All ingredients are on the inventory or exempt from listing.

P = One or more ingredients fall under the polymer exemption or are on the no longer polymer list. All other ingredients are on the inventory or exempt from listing.

N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing.

**FEDERAL REGULATIONS**

TSCA Inventory Status:

This product is excluded from TSCA because it is solely for FIFRA regulated use.

**SARA Title III Hazard Classes:**

- Fire Hazard - YES
- Reactive Hazard - NO
- Release of Pressure - NO
- Acute Health Hazard - YES
- Chronic Health Hazard - YES

**SARA 313 Chemicals**

- BROMOXYNIL OCTANOATE (33.4%)
- 1,2,4-TRIMETHYLBENZENE (12.6%)
- XYLENE (10%)

**SARA Extremely Hazardous Substances (EHS)/CERCLA Hazardous Substances**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CERCLA/SARA RQ</th>
<th>SARA EHS TPQ</th>
</tr>
</thead>
</table>
Material Safety Data Sheet

BUCTRIL® BRAND HERBICIDE

XYLENE ........................................ 100 lbs
ETHYLBENZENE .................................. 1000 lbs
UNLISTED HAZARDOUS WASTES - CHARACTERISTIC OF IGNITABILITY

STATE REGULATIONS:
This product contains the following components that are regulated under California Proposition 65.

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Cancer List</th>
<th>Reprod. List</th>
<th>No sign. Risk Lvl</th>
<th>California</th>
<th>*RPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCTANOIC ACID ESTER OF BROMOXYNIL (3,5-DIBROMO-4-HYDROXYBENZONITRILE)</td>
<td>N</td>
<td>Y</td>
<td>ND</td>
<td>ND</td>
<td></td>
</tr>
</tbody>
</table>

* Aventis CropScience Established Exposure Limits.

U.S. STATE RIGHT-TO-KNOW
The following chemicals associated with this product are subject to the right-to-know regulations in these states.


SECTION 16. OTHER INFORMATION

National Fire Protection Association Hazard Ratings--NFPA(R):
  2 Health Hazard Rating--Moderate
  2 Flammability Rating--Moderate
  0 Instability Rating--Minimal

National Paint & Coating Hazardous Materials Identification
  2 Health Hazard Rating--Moderate
  2 Flammability Rating--Moderate
  0 Reactivity Rating--Minimal

Reason for Revisions:
Changes made to Section 15, Regulatory Information.

Disclaimer:
The information herein is given in good faith but no warranty, expressed or implied, is made.

Print Date: 04/09/2001
Supersedes MSDS, which is older than: 04/05/2001