

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

PASTUREGARD* HERBICIDE

Effective Date: 2/5/04
Product Code: 56503
MSDS: 007653

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Pasturegard* Herbicide

COMPANY IDENTIFICATION:

Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Fluroxypyr-meptyl: 4-amino-3,5-dichloro-6- fluoro-2-pyridinyloxy acetic acid-1-methylheptyl ester	CAS # 081406-37-3	8.6%
Triclopyr-butotyl: 3,5,6-trichloro-2-pyridyloxy- acetic acid, 2-butoxyethyl ester	CAS # 064700-56-7	25.0%
Other Ingredients, Total, Including		66.4%
Aromatic 100	CAS # 064742-95-6	
Cumene	CAS # 000098-82-8	
1,2,4-trimethylbenzene	CAS # 000095-63-6	
Xylene	CAS # 001330-20-7	

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Yellow to brown liquid with an aromatic odor. May cause eye irritation with corneal injury. May cause skin irritation. The LD₅₀ for skin absorption is >5000 mg/kg. The oral LD₅₀ is ~2389 to ~2675 mg/kg. The aerosol LC₅₀ is >5.6 mg/L for 4 hours. Toxic to aquatic organisms and birds.

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POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause severe irritation with corneal injury, which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapor may cause eye irritation experienced as mild discomfort and redness.

SKIN: Prolonged or repeated contact may cause skin irritation. Repeated contact may cause drying or flaking of skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Did not cause allergic skin reactions when tested in guinea pigs. The LD₅₀ for skin absorption in rats is >5000 mg/kg.

INGESTION: Low toxicity if swallowed. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia. The oral LD₅₀ for rats is ~2675 mg/kg (males) and ~2389 mg/kg (females).

INHALATION: Prolonged excessive exposure may cause adverse effects. Vapor or mist may cause irritation of the upper respiratory tract (nose and throat) and lungs. The aerosol LC₅₀ for rats is >5.6 mg/L for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: In animals, effects have been reported on the following organs: blood, kidney, and liver. Xylene is reported to have cause hearing loss in laboratory animals upon exposure to high concentrations; such effects have not been reported in humans. For the minor component cumene in Aromatic 100, in animals, effects have been reported on the following organs: eyes (cataracts).

CANCER INFORMATION: Xylene was not found to be carcinogenic in a National Toxicology Program bioassay in rats and mice. Triclopyr-butotyl and fluroxypyr-meptyl did not cause cancer in laboratory animals. Triclopyr-butotyl, in long-term animal studies with ethylene glycol butyl ether, small but statistically significant increases in tumors was observed in mice but not rats. The effects are not believed to be relevant to humans.

TERATOLOGY (BIRTH DEFECTS): The solvent, Aromatic 100, has caused birth defects in laboratory animals only at doses producing severe toxicity in the mother. Very high concentrations of solvent (producing severe toxicity to adult animals) induced an increase in cleft palate in mice, which is a common developmental abnormality in mice and is associated with stress to the maternal animals. No malformations were induced at exposures less than those causing severe toxicity to the adult animals. Has been toxic to the fetus in laboratory animals only at doses toxic to the mother. Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects.

REPRODUCTIVE EFFECTS: Aromatic 100 and triclopyr-butotyl, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

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4. FIRST AID:

EYE: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

SKIN: 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.

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 the poison control center or doctor. Never give anything by mouth to an unconscious person.

INHALATION: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 119°F (48°C)

METHOD USED: TCC

FLAMMABLE LIMITS

LFL: Not determined

UFL: Not determined.

HAZARDOUS COMBUSTION PRODUCTS: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds.

OTHER FLAMMABILITY INFORMATION: Dense smoke is produced when product burns. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Vapors are heavier than air and may travel a long distance and accumulate in low-lying areas. Ignition and/or flash back may occur. Container may rupture from gas generation in a fire situation.

EXTINGUISHING MEDIA: Water fog or fine spray, carbon dioxide, dry chemical or foam. Alcohol resistant foams (ATC type) are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.

MEDIA TO BE AVOIDED: Do not use direct water stream.

FIRE-FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Eliminate ignition sources. Consider feasibility of a controlled burn to minimize environmental damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Burning liquids may be moved by flushing the water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Fight fire from protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Contain firewater run-off if possible. Fire water run-off, if not contained may cause environmental damage. Review the "Accidental Release Measures" and "Ecological Information" sections of this MSDS.

PROTECTIVE EQUIPMENT FOR FIREFIGHTERS: Where positive-pressure self-contained breathing apparatus (SCPA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment isn't available or not used, fight fire from a protected location or safe distance.

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6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Absorb spills with an absorbent material such as HAZORB, ZORBALL, or dirt. Thoroughly wash body areas, which come into contact with this product. Contain spill to keep out of sewers. Report large spills to Dow AgroSciences at 800-992-5994. Vapor explosion hazard, keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Pump with explosion-proof equipment. If available, use foam to smother or suppress fire.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Do not swallow. Do not get in eyes, on skin, or on clothing. Avoid breathing spray mist and vapors. Containers even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion proof equipment may be necessary, depending upon the type of operation. No smoking, open flames or sources of ignition in handling and storage area. Minimize sources of ignition, such as static buildup, heat, spark, or flame. Store in original container with the lid tightly closed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINES:

Fluroxypyr-meptyl: Dow AgroSciences Industrial Hygiene Guide is 10 mg/M³.

Triclopyr-butotyl: Dow AgroSciences Industrial Hygiene Guide is 2 mg/M³ as the acid equivalent, Skin.

Aromatic 100 (xylene range aromatic solvent): none established. Supplier recommends a guideline of 50 ppm for the total product, which is a mixture of petroleum hydrocarbons.

Trimethylbenzene: ACGIH TLV is 25 ppm.

Cumene (isopropyl benzene): ACGIH TLV and OSHA PEL are 50 ppm. OSHA classifies as skin.

Xylene: ACGIH TLV is 100 ppm TWA, 150 ppm STEL, A4. OSHA PEL is 100 ppm TWA.

A 'skin' notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use chemical goggles. Eye wash fountain should be located in the immediate work area. If exposure causes eye discomfort, use a NIOSH approved full-face respirator.

SKIN PROTECTION: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use a NIOSH approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration. For emergency and other conditions where the exposure guideline may be exceeded, use a NIOSH approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: Not determined

VAPOR PRESSURE: Not determined

DENSITY: 1 g/mL @ 20°C

SOLUBILITY IN WATER: Not applicable

SPECIFIC GRAVITY: 1.001

APPEARANCE: Yellow to brown liquid

ODOR: Aromatic

pH: 4 – 5 (1% solution)

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10. STABILITY AND REACTIVITY:

STABILITY (CONDITIONS TO AVOID): Stable under normal storage conditions.

HAZARDOUS DECOMPOSITION: Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Hazardous decomposition products may include and are not limited to hydrogen chloride, organic sulfides and sulfur dioxide. Toxic gases are released during decomposition.

INCOMPATIBLE MATERIALS: Avoid contact with oxidizing materials and bases.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: For triclopyr-butotyl, fluroxypyr-meptyl and Aromatic 100, animal and in-vitro genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:

Based largely or completely on data for the major component(s).
Bioconcentration potential is moderate (BCF is between 100 and 3000 or Log Pow between 3 and 5).

DEGRADATION & PERSISTENCE:

Based largely or completely on data for the major component(s).
Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

ECOTOXICOLOGY:

Based largely or completely on information for triclopyr butoxyethyl ester.
Material is highly toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is between 0.1 and 1 mg/L in the most sensitive species tested).
Material is slightly toxic to birds on an acute basis (LD₅₀ is between 5001 and 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC₅₀ is >5000 ppm).

Based largely or completely on information for fluroxypyr methylheptyl ester.

Not expected to be acutely toxic to aquatic organisms.
Material is practically non-toxic to birds on an acute basis (LD₅₀ is >2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC₅₀ is >5000 ppm).

Based largely or completely on information for Aromatic 100.

Material is moderately toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is between 1 and 10 mg/L in the most sensitive species tested).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Do not contaminate food, feed, or water by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact your State Pesticide or Environmental Control Agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

Non-bulk domestic shipments by land are not regulated.

For air and non-bulk vessel shipments:

FLAMMABLE LIQUID, NOS//(CONTAINS 1,2,4-TRIMETHYLBENZENE, XYLENE)//3//UN1993//PG III

For bulk shipments:

FLAMMABLE LIQUID, NOS//(CONTAINS 1,2,4-TRIMETHYLBENZENE, XYLENE)//3//UN1993//PG III//RQ(XYLENE)

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15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
1,2,4-Trimethylbenzene	000095-63-6	16%
Xylene	001330-20-7	1.5%
Cumene	000098-82-8	1%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard
A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. EPA Hazardous Waste #

Xylene = U239
Cumene = U055

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
Xylene	001330-20-7	NJ1 NJ2 NJ3 PA1 PA3
1,2,4-Trimethylbenzene	000095-63-6	NJ2 NJ3 PA1
Cumene	000098-82-8	NJ2 NJ3 PA1 PA3

NJ1=New Jersey Special Health Hazard Substance (present at greater than or equal to 0.1%).
NJ2=New Jersey Environmental Hazardous Substance (present at greater than or equal to 1.0%).
NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).
PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Category	Rating
Health	3
Flammability	2
Reactivity	0

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA, which may require reporting of releases:

Chemical Name	CAS Number	RQ	% in Product
Xylene	001330-20-7	100 lb.	1.5%
Cumene	000098-82-8	5000 lb.	1%

16. OTHER INFORMATION:

MSDS STATUS: Revised Section: 14
Reference: DR-0362-2875
Replaces MSDS Dated: 2/2/04
Document Code: D03-193-001

The Information Herein Is Given In Good Faith, But No Warranty, Express or Implied, Is Made. Consult Dow AgroSciences for Further Information.