



**Material Safety Data Sheet**  
**WOLVERINE™ HERBICIDE**

MSDS Number: 102000018340  
 MSDS Version 1.0  
 Revision Date: 01/23/2009

**SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION**

**Product Name** WOLVERINE™ HERBICIDE  
**MSDS Number** 102000018340

Bayer CropScience  
 2 T.W. Alexander Drive  
 Research Triangle PK, NC 27709  
 USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)  
 For Product Information call: 1-866-99BAYER (1-866-992-2937)

**SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Bromoxynil octanoate	1689-99-2	4.95
Bromoxynil heptanoate	56634-95-8	4.79
Fenoxaprop-P-ethyl	71283-80-2	4.47
Pyrasulfotole	365400-11-9	1.94
Mefenpyr-diethyl	135590-91-9	
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	

**SECTION 3. HAZARDS IDENTIFICATION**

*NOTE: Please refer to Section 11 for detailed toxicological information.*

**Emergency Overview** Danger! Harmful if swallowed. Causes irreversible eye damage. Do not get in eyes or on clothing. Harmful if inhaled or absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin.

**Physical State** liquid, clear

**Odor** aromatic

**Appearance** amber

**Routes of Exposure** Eye contact, Skin Absorption, Inhalation, Ingestion

**Immediate Effects**

**Eye** Corrosive - causes irreversible eye damage. Do not get in eyes.

**Skin** Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin. May cause skin irritation.



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<b>Ingestion</b>	Harmful if swallowed. Do not take internally.
<b>Inhalation</b>	Harmful if inhaled. Do not breathe vapours or spray mist.
<b>Chronic or Delayed Long-Term</b>	This product or its components may have target organ effects. This product contains ingredients that are considered to be probable or suspected human carcinogens (see Section 11 - Chronic). This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.
<b>Medical Conditions Aggravated by Exposure</b>	Individuals with allergic history or pre-existing dermatitis should use extra care in handling this product.
<b>Potential Environmental Effect</b>	Toxic to fish and aquatic invertebrates.

**SECTION 4. FIRST AID MEASURES**

<b>General</b>	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
<b>Eye</b>	Hold eye 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 eye. Call a physician or poison control center immediately.
<b>Skin</b>	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.
<b>Ingestion</b>	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.
<b>Inhalation</b>	Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.
<b>Notes to Physician Hazards</b>	Contains hydrocarbon solvents. May pose an aspiration pneumonia hazard.
<b>Treatment</b>	Treat symptomatically. There is no specific antidote.

**SECTION 5. FIRE FIGHTING MEASURES**

<b>Flash point</b>	220 °F / 104 °C Test type: closed cup
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<b>Suitable Extinguishing Media</b>	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
<b>Fire Fighting Instructions</b>	Avoid contact with spilled product or contaminated surfaces. Evacuate personnel to safe areas. Keep out of smoke. Fight fire from upwind position. Cool closed containers/ tanks exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.  Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

<b>Personal Precautions</b>	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment.
<b>Methods for cleaning up</b>	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder). Keep in suitable, closed containers for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations. Decontaminate tools and equipment following cleanup.
<b>Additional Advice</b>	Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact vegetation.

**SECTION 7. HANDLING AND STORAGE**

<b>Handling Procedures</b>	Avoid contact with skin, eyes and clothing. Handle and open container in a manner as to prevent spillage. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.  Keep away from heat and sources of ignition.
<b>Storing Procedures</b>	Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed.
<b>Work/Hygienic Procedures</b>	Handle in accordance with good industrial hygiene and safety practice. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.  Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.
<b>Min/Max Storage Temperatures</b>	Protect from freezing.



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**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

<b>General Protection</b>	Follow all label instructions. Train employees in safe use of the product.  Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.
<b>Eye/Face Protection</b>	Chemical resistant goggles must be worn.
<b>Hand protection</b>	Chemical resistant nitrile rubber gloves
<b>Body Protection</b>	Wear long-sleeved shirt and long pants and shoes plus socks.
<b>Respiratory Protection</b>	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

**Exposure Limits**

Bromoxynil octanoate	1689-99-2	OES BCS*		0.31 mg/m3
Fenoxaprop-P-ethyl	71283-80-2	OES BCS*		2.6 mg/m3
Pyrasulfotole	365400-11-9	OES BCS*		0.3 mg/m3
Solvent Naphtha (petroleum), heavy aromatic	64742-94-5	TX ESL	ST ESL	460 ppm
		TX ESL	AN ESL	46 ppm

\*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	amber
<b>Physical State</b>	liquid, clear
<b>Odor</b>	aromatic
<b>pH</b>	6.3 - 6.9 (10 %)
<b>Density</b>	1.03 g/cm <sup>3</sup> at 20 °C

**SECTION 10. STABILITY AND REACTIVITY**

<b>Conditions to Avoid</b>	Freezing Heat, flames and sparks.
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**Hazardous Reactions**      No hazardous reactions known.  
    Stable under recommended storage conditions.

**SECTION 11. TOXICOLOGICAL INFORMATION**

Only acute toxicity studies have been performed on the formulated product. The non-acute information pertains to the technical-grade active ingredients, bromoxynil, pyrasulfotole and fenoxaprop-p-ethyl, as well as, the herbicide safener, mefenpyr-diethyl.

**Acute Oral Toxicity**              female rat: LD50: 1,105 mg/kg

**Acute Dermal Toxicity**          rat: LD50: > 2,000 mg/kg

**Acute Inhalation Toxicity**      rat: LC50: > 2.02 mg/l  
 Exposure time: 4 h  
 Determined in the form of liquid aerosol.  
 highest concentration tested  
 Deaths: 1/5 males; 0/5 females

rat: LC50: > 8.08 mg/l  
 Exposure time: 1 h  
 Determined in the form of liquid aerosol.  
 Extrapolated from the 4 hr LC50.

**Skin Irritation**                      rabbit: Moderate skin irritation.

**Eye Irritation**                      rabbit: Corrosive - causes irreversible eye damage.

**Sensitization**                      guinea pig: sensitizing

**Chronic Toxicity**                  Bromoxynil caused clinical signs of toxicity and/or liver effects in chronic studies in rats and dogs.

Pyrasulfotole caused liver, kidney, thyroid and/or eye effects in chronic dietary studies in rats and dogs.

Fenoxaprop-p-ethyl caused liver and/or adrenal effects in long-term dietary studies in rats, mice and dogs.

Mefenpyr-diethyl affected the liver and/or red blood cells in chronic dietary studies in rats and dogs.

**Assessment Carcinogenicity**

Bromoxynil has been classified by EPA as a Group C, possible human carcinogen, based on an increased incidence of liver tumors observed in mice.

Pyrasulfotole caused secondary tumors in rats (corneal) and mice (urinary bladder) at the highest dose tested in oncogenicity studies. Based on these studies, pyrasulfotole did not demonstrate any oncogenic



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potential relevant for human risk assessment.

Fenoxaprop-p-ethyl caused liver and adrenal gland tumors at the highest dose tested in mice. However, there was no evidence of carcinogenicity in a combined chronic/carcinogenicity study in rats treated with fenoxaprop-p-ethyl.

Mefenpyr-diethyl was not carcinogenic in lifetime feeding studies in rats and mice.

**ACGIH**

None.

**NTP**

None.

**IARC**

None.

**OSHA**

None.

**Reproductive & Developmental Toxicity**

**REPRODUCTION**

Bromoxynil did not cause reproductive toxicity in multi-generation studies in rats via the oral and dermal route of exposure.

Pyrasulfotole was not a reproductive toxicant in a two-generation study in rats.

Fenoxaprop-p-ethyl was not a reproductive toxicant in a two-generation study in rats.

Mefenpyr-diethyl was not a reproductive toxicant at non-maternally toxic dose levels in a two-generation study in rats.

**DEVELOPMENTAL TOXICITY**

Bromoxynil is considered a developmental toxicant based on the results of developmental toxicity studies in rats and rabbits.

Pyrasulfotole is not a primary developmental toxicant, however, secondary effects were observed in rats and rabbits.

Fenoxaprop-p-ethyl is not a primary developmental toxicant in rats and rabbits. Developmental effects were observed in both species but were considered secondary to maternal toxicity.

Mefenpyr-diethyl was not a primary developmental toxicant in rats and rabbits. Developmental effects were observed in rabbits but were considered secondary to maternal toxicity.

**Neurotoxicity**

Bromoxynil did not demonstrate the potential to cause neurotoxicity in standard toxicity studies using laboratory animals.

Pyrasulfotole was not a neurotoxicant in acute, subchronic and developmental neurotoxicity screening studies in rats.



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Fenoxaprop-p-ethyl neurotoxicity studies are not required at this time.

Mefenpyr-diethyl neurotoxicity studies are not required at this time.

**Mutagenicity**

Bromoxynil was not mutagenic or genotoxic based on the collective data from a battery of in vitro and in vivo tests.

Pyrasulfotole was not genotoxic in a battery of in vitro and in vivo tests.

Fenoxaprop-p-ethyl was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Mefenpyr-diethyl was mutagenic or genotoxic in a battery of in vitro and in vivo tests.

**SECTION 12. ECOLOGICAL INFORMATION**

**Environmental Precautions**

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**General Disposal Guidance**

Do not contaminate water, food, or feed by disposal. Dispose in accordance with all local, state/provincial and federal regulations. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use 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. Follow advice on product label and/or leaflet.

**Container Disposal**

Triple rinse containers. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke. Follow advice on product label and/or leaflet.

**SECTION 14. TRANSPORT INFORMATION**

**DOT CLASSIFICATION:**

Not regulated for Domestic Surface shipment in the US

**FREIGHT CLASSIFICATION:**

Compounds Tree or Weedkilling, N.O.I., other than poison; having a density of greater than 20 LBS. per cubic foot



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**SECTION 15. REGULATORY INFORMATION**

**US Federal Regulations**

**TSCA list**

Bromoxynil octanoate 1689-99-2  
 Solvent Naphtha (petroleum), heavy aromatic 64742-94-5

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

None.

**SARA Title III - Section 302 - Notification and Information**

None.

**SARA Title III - Section 313 - Toxic Chemical Release Reporting**

Bromoxynil octanoate 1689-99-2 1.0%

**US States Regulatory Reporting**

**CA Prop65**

This product does not contain any substances known to the State of California to cause cancer.

This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Bromoxynil octanoate 1689-99-2 Developmental toxin.

**US State Right-To-Know Ingredients**

Bromoxynil octanoate 1689-99-2 NJ

**Canadian Regulations**

**Canadian Domestic Substance List**

Solvent Naphtha (petroleum), heavy aromatic 64742-94-5

**Environmental**

**CERCLA**

None.

**Clean Water Section 307 Priority Pollutants**

None.

**Safe Drinking Water Act Maximum Contaminant Levels**

None.

**SECTION 16. OTHER INFORMATION**

NFPA 704 (National Fire Protection Association):

Health - 2 Flammability - 1 Reactivity - 0 Others - none

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: New Material Safety Data Sheet.

Revision Date: 01/23/2009

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