

Bayer CropScience



Product Name
Wolverine™ Power Pak

Number: 102000019449
Version 1.0
Revision Date: 01/28/2008

Co-Pack content of Product Material Safety Data Sheets:

Material Safety Data Sheet
HUSKIE HERBICIDE

MSDS Number: 102000011554
MSDS Version 1.5
Revision Date: 11/13/2007

Material Safety Data Sheet
PUMA® 1EC HERBICIDE

MSDS Number: 102000000828
MSDS Version 2.1
Revision Date: 01/28/2008



Material Safety Data Sheet

HUSKIE™ HERBICIDE

MSDS Number: 102000011554

MSDS Version 1.4

Revision Date: 11/13/2007

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name HUSKIE™ HERBICIDE
MSDS Number 102000011554
EPA Registration No. 264-1023

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>
Pyrasulfotole	365400-11-9	3.30
Bromoxynil octanoate	1689-99-2	13.40
Bromoxynil heptanoate	56634-95-8	12.90
Mefenpyr-diethyl	135590-91-9	0.83
Naphthalene	91-20-3	5.09

SECTION 3. HAZARDS IDENTIFICATION

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

Emergency Overview Warning! Keep out of the reach of children. May be fatal if swallowed. Harmful if inhaled or absorbed through skin. Moderate eye irritation. Avoid contact with skin, eyes and clothing. Avoid breathing spray mist.

Physical State liquid, clear

Odor aromatic solvent

Appearance amber

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

Immediate Effects

Eye Moderate eye irritation. Do not get in eyes.

Skin Harmful if absorbed through skin. May cause irritation. Avoid contact with skin.

Ingestion May be fatal if swallowed.

Inhalation Harmful if inhaled. Avoid breathing spray mist.



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Chronic or Delayed Long-Term This product contains ingredients that are considered to be probable or suspected human carcinogens (see Section 11 - Chronic). This product or its components may have target organ effects.

SECTION 4. FIRST AID MEASURES

General When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye 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.

Skin 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.

Ingestion 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.

Inhalation 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.

Notes to Physician Hazards Contains hydrocarbon solvents. May pose an aspiration pneumonia hazard.

Treatment There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

SECTION 5. FIRE FIGHTING MEASURES

Flash point 90 °C / 194 °F

Fire and Explosion Hazards In the event of fire the following can be released:
Nitrogen oxides (NOx)
Hydrogen bromide (HBr)
Hydrogen chloride (HCl)
Hydrogen fluoride (HF)
Sulphur oxides
Cyanides

Suitable Extinguishing Media Water, Alcohol-resistant foam, Dry powder, Carbon dioxide (CO2)



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Fire Fighting Instructions Evacuate personnel to safe areas. Avoid contact with spilled product or contaminated surfaces. Keep out of smoke. Fight fire from upwind position. 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

Personal Precautions Keep unauthorized people away. Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment. Evacuate and isolate spill area.

Methods for Cleaning Up Dike area to prevent runoff. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder). Collect and transfer the product into a properly labelled and tightly closed container. Contaminated soil may have to be removed and disposed. Clean contaminated floors and objects thoroughly, observing environmental regulations.

Additional Advice Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact vegetation.

SECTION 7. HANDLING AND STORAGE

Handling Procedures Handle and open container in a manner as to prevent spillage. Use only in area provided with appropriate exhaust ventilation. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

Storing Procedures Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container. Store in a place accessible by authorized persons only.

Work/Hygienic Procedures 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.

Min/Max Storage Temperatures Recommended minimum transport/storage temperature: -20 °C / -4 °F

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General Protection Follow all label instructions. Train employees in safe use of the product.



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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.

- Eye/Face Protection** Tightly fitting safety goggles
- Hand Protection** Chemical resistant nitrile rubber gloves
- Body Protection** Wear long-sleeved shirt and long pants and shoes plus socks.
- Respiratory Protection** 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

Pyrasulfotole	365400-11-9	OES BCS*		0.3 mg/m3
Bromoxynil octanoate	1689-99-2	OES BCS*		0.31 mg/m3
Naphthalene	91-20-3	ACGIH	TWA	10 ppm
		ACGIH	STEL	15 ppm
		NIOSH	REL	10 ppm 50 mg/m3
		NIOSH	STEL	15 ppm 75 mg/m3
		OSHA Z1	PEL	10 ppm 50 mg/m3
		OSHA Z1A	TWA	10 ppm 50 mg/m3
		OSHA Z1A	STEL	15 ppm 75 mg/m3
		US CA OEL	TWA PEL	10 ppm 50 mg/m3
		US CA OEL	STEL	15 ppm 75 mg/m3

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance** amber
- Physical State** liquid, clear
- Odor** aromatic solvent
- pH** 3.9 (10 %)
- Density** approx. 1.14 g/cm³ at 20 °C
- Viscosity** 19.8 mPa.s at 25 °C

SECTION 10. STABILITY AND REACTIVITY

- Hazardous** Thermal decomposition can lead to release of:



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Decomposition Products	Nitrogen oxides (NOx) Hydrogen bromide (HBr) Hydrogen chloride (HCl) Hydrogen fluoride (HF) Sulphur oxides
Hazardous Reactions	Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Only acute toxicity studies have been performed on this product as formulated. The non-acute information pertains to the technical-grade active ingredients, Pyrasulfotole and Bromoxynil, as well as, the herbicide safener, Mefenpyr-diethyl.

Acute Oral Toxicity	female rat: LD50: > 300 mg/kg female rat: LD50: < 2,000 mg/kg
Acute Dermal Toxicity	male/female combined rat: LD50: > 4,000 mg/kg
Acute Inhalation Toxicity	male/female combined rat: LC50: > 5 mg/l Exposure time: 4 h Determined in the form of liquid aerosol. Highest attainable concentration. male/female combined rat: LC50: > 20 mg/l Exposure time: 1 h Determined in the form of liquid aerosol. Extrapolated from the 4 hr LC50.
Skin Irritation	rabbit: Mild skin irritation.
Eye Irritation	rabbit: Moderate eye irritation.
Sensitization	guinea pig: Non-sensitizing.
Chronic Toxicity	Pyrasulfotole caused liver, kidney, thyroid and/or eye effects in chronic dietary studies in rats and dogs. Bromoxynil caused decreased body weight gains, changes in hematological parameters and/or liver effects in chronic studies in rats and dogs. Mefenpyr-diethyl affected the liver and/or red blood cells in chronic dietary studies in rats and dogs.

Assessment Carcinogenicity

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 potential relevant for human risk assessment.



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

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

ACGIH

Naphthalene 91-20-3 Group A4

NTP

Naphthalene 91-20-3

IARC

Naphthalene 91-20-3 Overall evaluation: 2B

OSHA

None.

Reproductive & Developmental Toxicity

REPRODUCTION

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

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

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

DEVELOPMENTAL TOXICITY

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

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

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

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

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

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

Mutagenicity

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

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

Mefenpyr-diethyl did not cause genotoxicity in a battery of in vitro and in vivo tests.



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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 allow to get into surface water, drains and ground water. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Do not apply when weather conditions favor runoff or drift. Drift or runoff from treated areas may adversely affect non-target plants.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance Follow container label instructions for disposal of wastes generated during use in compliance with the product label. It is best to use all of the product in accordance with label directions. If it is necessary to dispose of unused product, please follow container label instructions and applicable local guidelines. Do not contaminate water, food, or feed by disposal.

Container Disposal Do not re-use empty containers. Triple rinse containers. Puncture container to avoid re-use. Follow advice on product label and/or leaflet.

RCRA Classification The RCRA Classifications may be on the individual component(s) and not necessarily on the product as a whole.

91-20-3 Naphthalene
 US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261): U165

91-20-3 Naphthalene
 US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]): U165

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:
 Non-Bulk Packagings (Less than or equal to 119 gallons)
 Not Regulated for domestic surface transportation

Bulk Packagings (greater than 119 gallons)
 NA1993, Combustible Liquid, N.O.S.(Petroleum Distillates) // PG III // Marine Pollutant(Bromoxynil)

FREIGHT DESCRIPTION:
 Compounds Tree or Weedkilling, other than poison, Having a density of greater than 20 LBS. per cubic foot



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SECTION 15. REGULATORY INFORMATION

EPA Registration No. 264-1023

US Federal Regulations

TSCA list

Bromoxynil octanoate 1689-99-2
 Naphthalene 91-20-3

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

Naphthalene 91-20-3

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%
 Naphthalene 91-20-3 0.1%

US States Regulatory Reporting

CA Prop65

This product contains a chemical known to the State of California to cause cancer.

Naphthalene 91-20-3

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
 Naphthalene 91-20-3 CA, CT, IL, MN, NJ, PA, RI

Canadian Regulations

Canadian Domestic Substance List

Naphthalene 91-20-3

Environmental

CERCLA

Naphthalene 91-20-3 100 lbs

Clean Water Section 307 Priority Pollutants

None.

Safe Drinking Water Act Maximum Contaminant Levels

None.

International Regulations

European Inventory of Existing Commercial Substances (EINECS)

Bromoxynil octanoate 1689-99-2
 Bromoxynil heptanoate 56634-95-8
 Naphthalene 91-20-3



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SECTION 16. OTHER INFORMATION

NFPA 704 (National Fire Protection Association):

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

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

Reason to Revise: Updated Section 2: COMPOSITION/INFORMATION ON INGREDIENTS; Updated Section 3: HAZARDS IDENTIFICATION; Updated Section 4: FIRST AID MEASURES; Updated Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION; Updated Section 10: STABILITY AND REACTIVITY.

Revision Date: 11/13/2007

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.



Material Safety Data Sheet
PUMA® 1EC HERBICIDE

MSDS Number: 102000000828
 MSDS Version 2.1
 Revision Date: 01/28/2008

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name PUMA® 1EC HERBICIDE
MSDS Number 102000000828
EPA Registration No. 264-666

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>
Fenoxaprop-P-ethyl	71283-80-2	11.53
Mefenpyr-diethyl	135590-91-9	3.39
Naphthalene	91-20-3	7.37

SECTION 3. HAZARDS IDENTIFICATION

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

Emergency Overview Warning! Causes substantial but temporary eye injury. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling.

Physical State liquid
Odor aromatic
Appearance yellowish
Routes of Exposure Eye contact, Skin contact, Inhalation, Ingestion
Immediate Effects
 Eye Severe eye irritation. Do not get in eyes.
 Skin Severe skin irritation. Do not get on skin or clothing.
 Ingestion Harmful if swallowed. Do not take internally.
 Inhalation Do not breathe vapours or spray mist.



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Chronic or Delayed Long-Term	This product or its components may have target organ effects. This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.
Potential Environmental Effect	Toxic to fish and aquatic organisms.

SECTION 4. FIRST AID MEASURES

General	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
Eye	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.
Skin	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.
Ingestion	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.
Inhalation	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.
Notes to Physician	
Signs and Symptoms	Local: Irritation Systemic: To date no symptoms are known.
Hazards	Risk of pneumonia.
Treatment	There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

SECTION 5. FIRE FIGHTING MEASURES

Flash point	114.5 °C / 238.1 °F
Explosiveness	Not explosive



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Fire and Explosion Hazards	In the event of fire the following can be released: Carbon monoxide (CO) Nitrogen oxides (NOx) Sulphur oxides Hydrogen chloride (HCl)
Suitable Extinguishing Media	Water spray, Alcohol-resistant foam, Carbon dioxide (CO ₂), Dry powder
Unsuitable extinguishing media	High volume water jet
Fire Fighting Instructions	Evacuate personnel to safe areas. Avoid contact with spilled product or contaminated surfaces. 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

Personal Precautions	Keep unauthorized people away. Evacuate and isolate spill area. Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment. Remove all sources of ignition.
Methods for Cleaning Up	Dike area to prevent runoff. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder). Keep in suitable, closed containers for disposal. Collect and transfer the product into a properly labelled and tightly closed container. Contaminated soil may have to be removed and disposed. Clean contaminated floors and objects thoroughly, observing environmental regulations.
Additional Advice	Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13. Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact vegetation.

SECTION 7. HANDLING AND STORAGE

Handling Procedures	Handle and open container in a manner as to prevent spillage. Use only in area provided with appropriate exhaust ventilation. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation. Keep away from heat and sources of ignition.
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Storing Procedures Store in original container. Keep away from direct sunlight. Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from freezing.

Keep away from food, drink and animal feedingstuffs.

Work/Hygienic Procedures 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.

Min/Max Storage Temperatures Recommended minimum transport/storage temperature: 0 °C / 32 °F

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General Protection 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.

Eye/Face Protection Safety glasses / Face shield

Hand Protection Chemical resistant nitrile rubber gloves

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

Respiratory Protection 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

2-Methylpropan-1-ol	78-83-1	ACGIH	TWA		50 ppm
		NIOSH	REL	50 ppm	150 mg/m3
		OSHA Z1	PEL	100 ppm	300 mg/m3
		OSHA Z1A	TWA	50 ppm	150 mg/m3
		US CA OEL	TWA PEL	50 ppm	150 mg/m3
		TX ESL	ST ESL	500 ppm	1520 ug/m3
		TX ESL	AN ESL	50 ppm	152 ug/m3
Fenoxaprop-P-ethyl	71283-80-2	OES BCS*			2.6 mg/m3
Naphthalene	91-20-3	ACGIH	TWA		10 ppm
		ACGIH	STEL		15 ppm
		NIOSH	REL	10 ppm	50 mg/m3
		NIOSH	STEL	15 ppm	75 mg/m3
		OSHA Z1	PEL	10 ppm	50 mg/m3



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OSHA Z1A	TWA	10 ppm	50 mg/m3
OSHA Z1A	STEL	15 ppm	75 mg/m3
US CA OEL	TWA PEL	10 ppm	50 mg/m3
US CA OEL	STEL	15 ppm	75 mg/m3
TX ESL	ST ESL	90 ppm	440 ug/m3

Remarks

Screening levels that have the odor designations represent the levels of constituents in the air at which the odor would be a nuisance.

TX ESL	AN ESL
Remarks	

9 ppm 44 ug/m3

Screening levels that have the odor designations represent the levels of constituents in the air at which the odor would be a nuisance.

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	yellowish
Physical State	liquid
Odor	aromatic
pH	5.5 - 7.5 (10 %)
Density	approx. 1.03 g/cm ³ at 20 °C
Water solubility	emulsifiable
Decomposition Temperature	no data available

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	Storage temperature should ideally lie between 0 and 40 °C, however, storage for two weeks at 54 °C has shown no adverse effects regarding product safety or stability.
Conditions to Avoid	Freezing Heat, flames and sparks.



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Incompatibility	no data available
Hazardous Decomposition Products	no data available
Hazardous Reactions	No hazardous reactions known. Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute Oral Toxicity	rat: LD50: 3,254 mg/kg
Acute Dermal Toxicity	rat: LD50: > 5,000 mg/kg
Acute Inhalation Toxicity	rat: LC50: > 5.4 mg/l Exposure time: 4 h Determined in the form of liquid aerosol.
	rat: LC50: > 21.6 mg/l Exposure time: 1 h Determined in the form of liquid aerosol. Extrapolated from the 4 hr LC50.
Skin Irritation	rabbit: Severe skin irritation.
Eye Irritation	rabbit: Severe eye irritation.
Sensitization	guinea pig: Non-sensitizing.
Chronic Toxicity	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

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		
Naphthalene	91-20-3	Group A4
NTP		



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Naphthalene	91-20-3	
IARC		
Naphthalene	91-20-3	Overall evaluation: 2B
OSHA		
None.		

Reproductive & Developmental Toxicity

REPRODUCTION

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

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

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

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

Mutagenicity

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

Mefenpyr-diethyl was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity to Fish

Rainbow trout (*Oncorhynchus mykiss*)
LC50: 1.9 mg/l
Exposure time: 96 h

Lepomis macrochirus (Bluegill sunfish)
LC50: 1.9 mg/l
Exposure time: 96 h

Toxicity to Aquatic Plants

Pseudokirchneriella subcapitata
EC50: 1.47 mg/l
Exposure time: 72 h

Acute Toxicity to Aquatic Invertebrates

Water flea (*Daphnia magna*)
EC50: 4.2 mg/l
Exposure time: 48 h



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Environmental Precautions Drift or runoff from treated areas may adversely affect non-target plants. 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.

Ecological Information Information given is based on data obtained from similar substances.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. Dispose in accordance with all local, state/provincial and federal regulations. Follow advice on product label and/or leaflet.

Container Disposal Triple rinse containers. Puncture container to avoid re-use. Do not re-use empty containers. Follow advice on product label and/or leaflet.

RCRA Classification The RCRA Classifications may be on the individual component(s) and not necessarily on the product as a whole.

91-20-3 Naphthalene
 US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261): U165

91-20-3 Naphthalene
 US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]): U165

SECTION 14. TRANSPORT INFORMATION

DOT / TDG CLASSIFICATION:
 NON-BULK::
 Not regulated for road or rail

BULK: (Packages larger than 119 gallons)
 DOT
 RQ, UN3082, Environmentally Hazardous Substances, Liquid, N.O.S. (Naphthalene), 9, PG III
 RQ for Naphthalene is 100 LBS and is reached at 158 gallons of product

TDG:
 Not regulated for road or rail

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



Material Safety Data Sheet
PUMA® 1EC HERBICIDE

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 MSDS Version 2.1

SECTION 15. REGULATORY INFORMATION

EPA Registration No. 264-666

US Federal Regulations

TSCA list

Naphthalene 91-20-3

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

Naphthalene 91-20-3

SARA Title III - Section 302 - Notification and Information

None.

SARA Title III - Section 313 - Toxic Chemical Release Reporting

Naphthalene 91-20-3 0.1%

US States Regulatory Reporting

CA Prop65

This product contains a chemical known to the State of California to cause cancer.

Naphthalene 91-20-3

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

US State Right-To-Know Ingredients

Naphthalene 91-20-3 CA, CT, IL, MN, NJ, PA, RI

Canadian Regulations

Canadian Domestic Substance List

Naphthalene 91-20-3

Environmental

CERCLA

Naphthalene 91-20-3 100 lbs

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 - 2 Reactivity - 0 Others - none

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

Reason to Revise: Updated Section 2: Composition/Information on Ingredients; Updated Section 3: Hazards Identification; Updated Section 5: Fire Fighting Measures; Updated Section 9: Physical and Chemical Properties; Updated Section 14: Transport Information.



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