



## Material Safety Data Sheet

### BRONATE ADVANCED™ HERBICIDE

MSDS Number: 102000003214

MSDS Version 2.1

Revision Date: 06/06/2007

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

**Product Name** BRONATE ADVANCED™ HERBICIDE  
**MSDS Number** 102000003214  
**EPA Registration No.** 264-690

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	18.70
Bromoxynil heptanoate	56634-95-8	18.10
MCPA-2-ethylhexyl	26544-20-7	40.00
Dodecyl benzene sulphonate, calcium salt	26264-06-2	2.70
2-Methylpropan-1-ol	78-83-1	1.40
Naphthalene	91-20-3	0.68

#### SECTION 3. HAZARDS IDENTIFICATION

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

**Emergency Overview** Caution! Harmful if swallowed. Hazard to humans and domestic animals. Keep out of the reach of children.

**Physical State** liquid

**Odor** hydrocarbon-like

**Appearance** light to dark brown

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

**Immediate Effects**

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

**Skin** Harmful if absorbed through skin. May cause irritation, redness, swelling.



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<b>Ingestion</b>	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. Harmful if swallowed.
<b>Inhalation</b>	May cause upper respiratory tract irritation, coughing, wheezing, nausea, headache, depression. Harmful if inhaled.
<b>Chronic or Delayed Long-Term</b>	This product contains ingredients that are considered to be probable or suspected human carcinogens (see Section 11 - Chronic). Prolonged contact may cause chronic dermatitis, developmental problems. Prolonged contact can cause liver damage, kidney damage, central nervous system damage, anemia.
<b>Medical Conditions Aggravated by Exposure</b>	Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.
<b>Potential Environmental Effect</b>	Toxic to fish and wildlife.

**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>	Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Contains hydrocarbon solvents. May pose an aspiration pneumonia hazard.
<b>Treatment</b>	There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.



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**SECTION 5. FIRE FIGHTING MEASURES**

<b>Flash point</b>	60.6 °C / 141.1 °F
<b>Fire and Explosion Hazards</b>	Heating can lead to increased pressure with risk of explosion. Dangerous gases are evolved in the event of a fire.
<b>Suitable Extinguishing Media</b>	Carbon dioxide (CO2), Dry chemical, Foam
<b>Unsuitable Extinguishing media</b>	High volume water jet
<b>Fire Fighting Instructions</b>	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>	Isolate hazard area. Keep unauthorized people away. Remove all sources of ignition. Avoid contact with spilled product or contaminated surfaces.
<b>Methods for Cleaning Up</b>	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. Clean contaminated floors and objects thoroughly, observing environmental regulations.
<b>Additional Advice</b>	Use personal protective equipment. 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>	Use only in area provided with appropriate exhaust ventilation. Handle and open container in a manner as to prevent spillage.  Keep away from heat and sources of ignition.
<b>Storing Procedures</b>	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 and out of the reach of children, preferably in a locked storage area. Protect from freezing.
<b>Work/Hygienic Procedures</b>	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.



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Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

**Min/Max Storage Temperatures** Do not transport or store below -16 °C / 3 °F  
 Do not transport or store above 38 °C / 100 °F

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

- General Protection** Train employees in safe use of the product. Follow all label instructions.  
  
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 with side-shields
- 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
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



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#### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	light to dark brown
<b>Physical State</b>	liquid
<b>Odor</b>	hydrocarbon-like
<b>pH</b>	3.8 (1 %) at 25 °C (as aqueous solution)
<b>Density</b>	approx. 1.166 g/cm <sup>3</sup> at 20 °C

#### SECTION 10. STABILITY AND REACTIVITY

<b>Conditions to Avoid</b>	Heat, flames and sparks. Static electricity. Freezing
<b>Incompatibility</b>	mineral acids Strong bases Strong oxidizing agents
<b>Hazardous Decomposition Products</b>	Thermal decomposition nitrogen oxides (NO <sub>x</sub> ) Sulphur oxides hydrogen chloride (HCl) hydrogen bromide (HBr) Carbon oxides
<b>Hazardous Reactions</b>	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 and MCPA.

<b>Acute Oral Toxicity</b>	rat: LD50: 530 mg/kg
<b>Acute Dermal Toxicity</b>	rabbit: LD50: > 5,050 mg/kg



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**Acute Inhalation Toxicity** rat: LC50: 2.8 mg/l  
 Exposure time: 4 h  
 Determined in the form of liquid aerosol.

rat: LC50: > 11.2 mg/l  
 Exposure time: 1 h  
 Determined in the form of liquid aerosol.  
 Extrapolated from the 4 hr LC50.

**Skin Irritation** rabbit: Slight irritation.

**Eye Irritation** rabbit: Mild eye irritation.

**Sensitization** guinea pig: Non-sensitizing.

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

MCPA caused liver and/or kidney effects in chronic dietary toxicity studies in rats, mice, 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.

MCPA 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:**

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

MCPA was not a reproductive toxicant in multi-generation reproduction studies in rats.

**DEVELOPMENTAL TOXICITY:**

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

MCPA is not a primary developmental toxicant in rats and rabbits. Developmental effects were observed only at doses that caused maternal toxicity.



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

MCPA caused neurobehavioral effects in acute and subchronic neurotoxicity screening studies in rats.

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

MCPA was not mutagenic or genotoxic based on the overall weight of evidence from a battery of in vitro and in vivo tests.

**SECTION 12. ECOLOGICAL INFORMATION**

**Environmental Precautions** Do not apply when weather conditions favor runoff or drift. 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. Apply this product as specified on the label.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**General Disposal Guidance** Pesticide, spray mixture or rinse water that cannot be used according to label instructions may be disposed of on site or at an approved waste disposal facility.

**Container Disposal** Triple rinse containers. Puncture container to avoid re-use. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning. If burned, stay out of smoke. 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.

78-83-1 2-Methylpropan-1-ol  
 US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261): U140

78-83-1 2-Methylpropan-1-ol  
 US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]): U140

78-83-1 2-Methylpropan-1-ol  
 US. EPA Resource Conservation and Recovery Act: (RCRA) D List of Characteristic Hazardous Wastes (40 CFR 261.21-24): D001

91-20-3 Naphthalene



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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:  
 <119 Gallons: Not regulated for Domestic Surface Transportation

BULK:  
 > 119 Gallons: Combustible Liquid, N.O.S. (Petroleum Distillates) // NA 1993 // PG III Marine Pollutant (Bromoxynil)

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

TDG (Canada):  
 Not regulated for road or rail.

**SECTION 15. REGULATORY INFORMATION**

EPA Registration No. 264-690

**US Federal Regulations**

**TSCA list**

Bromoxynil octanoate	1689-99-2
Dodecyl benzene sulphonate, calcium salt	26264-06-2
2-Methylpropan-1-ol	78-83-1
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





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

Bromoxynil octanoate	1689-99-2	NJ
Dodecyl benzene sulphonate, calcium salt	26264-06-2	CA, CT, IL, PA
2-Methylpropan-1-ol	78-83-1	CA, CT, IL, MN, PA, RI
Naphthalene	91-20-3	CA, CT, IL, MN, NJ, PA, RI

**Canadian Regulations**

**Canadian Domestic Substance List**

Dodecyl benzene sulphonate, calcium salt	26264-06-2
2-Methylpropan-1-ol	78-83-1
Naphthalene	91-20-3

**Environmental**

**CERCLA**

Dodecyl benzene sulphonate, calcium salt	26264-06-2	1,000 lbs
2-Methylpropan-1-ol	78-83-1	5,000 lbs
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
MCPA-2-ethylhexyl	26544-20-7
Dodecyl benzene sulphonate, calcium salt	26264-06-2
2-Methylpropan-1-ol	78-83-1
Naphthalene	91-20-3

**SECTION 16. OTHER INFORMATION**

NFPA 704 (National Fire Protection Association):

Health - 2      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 for general editorial purposes. Updated Sections 11 and 14.

Revision Date: 06/06/2007

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