Material Safety Data Sheet

DuPont™ Krovar® I DF Herbicide

Version 2.2

Revision Date 03/17/2011 Ref. 130000023993

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	DuPont™ Krovar® I DF Herbicide
Tradename/Synonym	:	DPX-M2574 B10048033 BROMACIL (5-Bromo-3-sec-butyl-6-methyluracil) DIURON [3-(3,4-Dichlorophenyl)-1,1-dimethylurea]
MSDS Number	:	130000023993
Product Use	:	Herbicide
Manufacturer	:	DuPont 1007 Market Street Wilmington, DE 19898
Product Information	:	1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency	:	1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency	:	CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Caution

Harmful if swallowed or absorbed through the skin . Causes moderate eye irritation. Avoid contact with skin, eyes and clothing.

Potential Health Effects

This section includes potential acute adverse effects which could occur if this material is not used according to the label.

Skin	:	May cause: slight irritation, Discomfort.
Eyes	:	May cause: Irritation with discomfort, pain, redness, or visual impairment.

Ingestion

Diuron : May cause: Abnormal decrease in number of red blood cells (anaemia) which could produce tiredness, rapid heartbeat, dizziness, pale skin, leg cramps, shortness of breath

Repeated exposure
Diuron : Adverse effects from repeated exposure may include: Bladder damage altered blood chemistry

Target Organs
Diuron : Blood Urinary system Bladder

Carcinogenicity

Material	IARC	NTP	OSHA
Quartz	1	X	

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Bromacil	314-40-9	40 %
Diuron	330-54-1	40 %
Other Ingredients		20 %

Present as an impurity in the clay component of this product:

Quartz		<1 %

SECTION 4. FIRST AID MEASURES

Skin contact	:	Take off all contaminated clothing immediately. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Eye contact	:	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 poison control center or doctor for treatment advice.
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 poison control center or doctor for treatment advice.
Ingestion	:	Call a physician or poison control centre immediately. Have person sip a glass of water if able to swallow. 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.
General advice	:	Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For medical emergencies involving this product, call toll free 1-800-441-3637. See Label for Additional Precautions and Directions for Use.

SECTION 5. FIRE-FIGHTING MEASURES

Flammable Properties

Flash point	:	no data available
Ignition temperature	:	420 °C (788 °F)
Lower explosion limit	:	0.135 g/l

Fire and Explosion Hazard	:	Dust may form explosive mixture in air.
Suitable extinguishing media	:	Water spray, Foam, Dry chemical, Carbon dioxide (CO2)
Unsuitable extinguishing media	:	High volume water jet, (contamination risk)

Firefighting Instructions	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Prevent fire extinguishing water from contaminating surface water or the ground water system. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. (on small fires) If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Cool containers / tanks with water spray. Control Runoff.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Cleanup	:	Shovel or sweep up. Scoop into bags or boxes with plastic or aluminium shovel. Never return to container for reuse. If spill area is on ground near valuable plants or trees, remove top 2 inches of soil after initial cleanup.
Accidental Release Measures	:	Prevent material from entering sewers, waterways, or low areas. Follow applicable Federal, State/Provincial and Local laws/regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	:	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/PPE immediately if material gets inside. Wash the outside of gloves before removing. Wash thoroughly and put on clean clothing.
Storage	:	Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in original container. Store in a cool, dry place. Keep out of the reach of children.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : Ensure adequate ventilation. When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS. Refer to the product label for additional Engineering Controls.

Personal protective equipment

Skin and body protection : Pilots, flaggers and groundboom applicators must wear:
Long sleeved shirt and long pants
Shoes plus socks
Groundboom applicators must wear:
Chemical resistant gloves made of any waterproof material
Mixers, loaders, applicators and other handlers must wear:
Long sleeved shirt and long pants
Shoes plus socks
Chemical resistant gloves made of any waterproof material
A NIOSH approved dust/mist filtering respirator with any N, R, P, or HE filter or with approval number prefix TC-21C.
Chemical-resistant apron when cleaning equipment, mixing or loading

Protective measures : Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Exposure Guidelines

Exposure Limit Values

Bromacil

PEL:	(OSHA)	1 ppm10 mg/m3	8 hr. TWA	
TLV	(ACGIH)	10 mg/m3	TWA	
AEL *	(DUPONT)	10 mg/m3	8 & 12 hr. TWA	

Diuron

TLV	(ACGIH)	10 mg/m3	TWA	
AEL *	(DUPONT)	1 mg/m3	8 & 12 hr. TWA	Total dust.

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	solid, granules
Color	:	brown
Odor	:	none
Water solubility	:	dispersible

SECTION 10. STABILITY AND REACTIVITY

Stability	:	Stable at normal temperatures and storage conditions.
Incompatibility	:	None reasonably foreseeable.
Hazardous reactions	:	Hazardous polymerisation does not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

DuPont™ Krovar® I DF Herbicide

Inhalation 4 h LC50	:	> 5.2 mg/l , rat
Dermal LD50	:	> 2,000 mg/kg , rabbit
Oral LD50	:	2,300 mg/kg , rat
Skin irritation	:	slight irritation, rabbit
Eye irritation	:	Moderate eye irritation, rabbit
Sensitisation	:	Animal test did not cause sensitization by skin contact., guinea pig

Bromacil

Repeated dose toxicity	:	The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

Oral
rat
Liver effects, Organ weight changes, Thyroid effects, Reduced body weight gain

Inhalation
rat
Increased liver weight, altered blood chemistry

Carcinogenicity : The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

An increased incidence of tumours was observed in laboratory animals.

Mutagenicity : Did not cause genetic damage in cultured bacterial cells.
Genetic damage in cultured mammalian cells was observed in some laboratory tests but not in others.
Did not cause genetic damage in animals.

Reproductive toxicity : Animal testing showed no reproductive toxicity.

Teratogenicity : Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

Diuron

Repeated dose toxicity :

The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

Oral
rat
Red blood cell destruction causing abnormal decrease in number of red blood cells (anaemia), Spleen effects, bone marrow changes, Kidney effects, Bladder effects, Reduced body weight gain

Oral
dog
Red blood cell destruction causing abnormal decrease in number of red blood cells (anaemia), Spleen effects, bone marrow changes, Reduced body weight gain

Inhalation
rat
Red blood cell destruction causing abnormal decrease in number of red blood cells (anaemia), Spleen effects

Carcinogenicity : The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

An increased incidence of tumours was observed in laboratory animals.

Mutagenicity : Overall weight of evidence indicates that the substance is not mutagenic.

Reproductive toxicity : Animal testing did not show any effects on fertility.

Teratogenicity : Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

Quartz

Repeated dose toxicity : Inhalation
Fluid retention in lungs (pulmonary oedema), lung effects, Inflammation, Chronic lung disease, Fibrosis

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

Bromacil

96 h LC50 : Lepomis macrochirus (Bluegill sunfish) 127 mg/l

96 h LC50 : Oncorhynchus mykiss (rainbow trout) 36 mg/l

72 h ErC50 : Pseudokirchneriella subcapitata (green algae) 0.017 mg/l

NOEC : Algae 0.001 mg/l

48 h EC50 : Daphnia magna (Water flea) 119 mg/l

Diuron

96 h LC50 : Oncorhynchus mykiss (rainbow trout) 14.7 mg/l

72 h EC50	:	Algae 0.018 mg/l
72 h NOEC	:	Algae 0.01 mg/l
48 h EC50	:	Daphnia magna (Water flea) 1.4 mg/l
Additional ecological information	:	Environmental Hazards: For Terrestrial Uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate. See product label for additional application instructions relating to environmental precautions.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal	:	Do not contaminate water, food or feed by disposal. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.
Container Disposal	:	Refer to the product label for instructions.
		In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.

SECTION 14. TRANSPORT INFORMATION

IATA_C	UN number	:	3077
	Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Diuron, Bromacil)
	Class	:	9
	Packing group	:	III
	Labelling No.	:	9MI
IMDG	UN number	:	3077
	Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Diuron, Bromacil)
	Class	:	9
	Packing group	:	III

Labelling No.	:	9
Marine pollutant	:	yes (Diuron, Bromacil)

Not regulated by DOT in single packages containing less than 100 pounds.

SECTION 15. REGULATORY INFORMATION

SARA 313 Regulated Chemical(s)	:	Bromacil , Diuron
Title III hazard classification	:	Acute Health Hazard: Yes Chronic Health Hazard: Yes Fire: No Reactivity/Physical hazard: No Pressure: No
CERCLA Reportable Quantity	:	250 lbs Based on the percentage composition of this chemical in the product.: Diuron
EPA Reg. No.	:	352-505 In the United States this product is regulated by the US Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.
California Prop. 65	:	WARNING! This product contains a chemical known to the State of California to cause cancer.Quartz , Diuron
PA Right to Know Regulated Chemical(s)	:	Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Kaolin , Bromacil , Diuron , Sodium sulphate , Silica gel, precipitated, crystalline-free
NJ Right to Know Regulated Chemical(s)	:	Substances on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances

identified as carcinogens, mutagens or teratogens): Bromacil , Diuron , Silica gel, precipitated, crystalline-free

SECTION 16. OTHER INFORMATION

		NFPA	HMIS
Health	:	1	1
Flammability	:	1	1
Reactivity/Physical hazard	:	0	0

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Contact person : DuPont Crop Protection, Wilmington, DE, 19898, Phone: 1-888-638-7668

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