"DuPont" "Krovar" I DF
GPA00081 Revised 27-JAN-2011 Printed 27-JAN-2011

## CHEMICAL PRODUCT/COMPANY IDENTIFICATION

### Material Identification

"KROVAR" is a registered trademark of DuPont.

"DuPont" is a trademark of DuPont.

### Tradenames and Synonyms

DPX-M2574

### Company Identification

MANUFACTURER/DISTRIBUTOR
E.I. du Pont Canada Company
P.O. Box 2200
Streetsville
Mississauga, Ontario L5M 2H3

PHONE NUMBERS
Product Information : 1-800-387-2122
Medical Emergency : 1-800-441-3637 (24 hours)

## COMPOSITION/INFORMATION ON INGREDIENTS

### Components

| Material | CAS Number | % |
|---|---|---|
| *BROMACIL (5-Bromo-3-sec-butyl-6-methyluracil) | 314-40-9 | 40 % |
| *DIURON [3-(3,4-Dichlorophenyl)-1,1-dimethylurea] | 330-54-1 | 40 % |
| INERT INGREDIENTS | | 20 % |

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

## HAZARDS IDENTIFICATION

### Emergency Overview

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

(HAZARDS IDENTIFICATION - Continued)

Potential Health Effects

Based on animal data, skin contact with Krovar I DF may cause very slight skin irritation with transient discomfort.

Based on animal data, eye contact with Krovar I DF may cause eye irritation with tearing, or blurring of vision.

Based on animal data, ingestion of excessive amounts may cause alterations in red blood cell counts and/or anemia, and spleen, thyroid and liver effects.

Toxicology tests with these active ingredients in which tumors were observed utilized study designs that incorporated excessive exposures over the lifetime of laboratory animals. Levels of human exposure under normal use are many times lower than the no-effect levels in these animal studies.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

| Material | IARC | NTP | OSHA | ACGIH |
|---|---|---|---|---|
| BROMACIL | | | | A3 |
| DIURON | | | | A4 |

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FIRST AID MEASURES

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First Aid

IN ON SKIN OR CLOTHING: 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.

IF IN EYES: 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.

IF INHALED: Move person 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 further treatment advice.

IF SWALLOWED: 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. Do not give anything by mouth to an unconscious person.

(FIRST AID MEASURES - Continued)

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.

## FIRE FIGHTING MEASURES

### Flammable Properties

Autoignition : 420 C (788 F)

May be ignited by heat or open flame.
Lower Explosive Limit: 0.135 g/L

Like most organic powders or crystals, under severe dusting conditions, this material may form explosive mixtures in air.

### Extinguishing Media

Water Spray, Foam, Dry Chemical, CO2.

### Fire Fighting Instructions

Wear self-contained breathing apparatus. Wear full protective equipment. Use water spray. Runoff from fire control may be a pollution hazard.

If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the contamination hazard.

## ACCIDENTAL RELEASE MEASURES

### Safeguards (Personnel)

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

### Spill Clean Up

Shovel or sweep up. Never return to container for reuse. Scoop into bags or boxes with plastic or aluminum shovel.

For minor spills, leaks, etc., follow all precautions indicated on the product label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.

(ACCIDENTAL RELEASE MEASURES - Continued)

Accidental Release Measures

If spill area is on ground near valuable plants or trees, remove top 2 inches of soil after initial clean up.

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## HANDLING AND STORAGE

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Handling (Personnel)

USERS SHOULD: 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 pesticide gets inside. Then wash thoroughly and put on clean clothing.

Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage

Do not contaminate water, food or feed in storage. Store product in original container only. Store in a cool, dry place.

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## EXPOSURE CONTROLS/PERSONAL PROTECTION

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Engineering Controls

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 Control precautions.

Personal Protective Equipment

Some materials that are chemical resistant to this product are listed below. If you want more options, follow the instructions for Category A on the EPA chemical resistance category selection chart.

Pilots, flaggers and groundboom applicators must wear:
- Long-sleeved shirt and long pants.
- Shoes plus socks.

In addition to the above PPE, groundboom applicators must also wear: chemical-resistant gloves made of any waterproof material such as polyethylene or polyvinylchloride.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Mixers, loaders, other applicators, and other handlers must wear:
- Long-sleeved shirt and long pants.
- Shoes plus socks.
- Chemical resistant gloves made of any waterproof material such as polyethylene or polyvinylchloride.
- 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 mixing, loading, or cleaning equipment or spills.

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

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water is:
- Coveralls.
- Chemical resistant gloves made of any Waterproof material.
- Shoes plus socks.

Exposure Guidelines

Applicable Exposure Limits

BROMACIL

| | | |
|---|---|---|
| PEL | (OSHA) | : None Established |
| TLV | (ACGIH) | : 10 mg/m3, 8 Hr. TWA, A3 |
| AEL * | (DuPont) | : 10 mg/m3, 8 & 12 Hr. TWA |

DIURON

| | | |
|---|---|---|
| PEL | (OSHA) | : None Established |
| TLV | (ACGIH) | : 10 mg/m3, 8 Hr. TWA, A4 |
| 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.

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PHYSICAL AND CHEMICAL PROPERTIES

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Physical Data

| | |
|---|---|
| Solubility in Water | : Dispersible |
| Odor | : None |
| Form | : Solid granules |
| Color | : Brown |

## STABILITY AND REACTIVITY

### Chemical Stability

Stable at normal temperatures and storage conditions.

### Incompatibility with Other Materials

None reasonably foreseeable.

### Polymerization

Polymerization will not occur.

## TOXICOLOGICAL INFORMATION

### Animal Data

Krovar I DF

| | |
|---|---|
| Oral LD50: | 2300 mg/kg in rats (Slightly toxic) |
| Dermal LD50: | > 2000 mg/kg in rabbits (Slightly to moderately toxic) |
| Inhalation 4 hour LC50: | > 5.2 mg/L in rats (Low toxicity) |

Krovar I DF is a slight skin irritant, and a moderate eye irritant, but is not a skin sensitizer in animals.

BROMACIL
Repeated exposure caused liver changes, increased liver, adrenal, and heart weights, decreased kidney and spleen weights, and thyroid changes. Long-term exposure caused reduced weight gain, slight thyroid effects, and liver effects.

Repeated exposure to high concentrations (2 mg/L) caused slightly increased platelet counts, lower serum cholesterol, and slightly increased liver weights. All animals were normal after a 14-day recovery period.

Dogs fed Bromacil for one year had decreased body weight gain in the high dose group. Rats fed Bromacil for two years had reduced body weight gain, increased incidence of thyroid cysts, and at the high dose possible increase in thyroid tumors. Mice fed Bromacil for 18-months had liver lesions in all male groups and an increase in liver tumors in the high dose males.

Animal testing indicates Bromacil does not have reproductive effects. Bromacil is not considered to be a developmental toxicant. Any developmental effects occurred at maternally toxic doses. The weight of evidence suggests that Bromacil does not produce genetic damage in mammalian or bacterial cells cultures or animal studies.

(TOXICOLOGICAL INFORMATION - Continued)

DIURON
Repeated ingestion of Diuron led to increased hemolysis (destruction) of red blood cells and and hemolytic anemia after continued exposure to high doses. Secondary effects as a result of excessive red blood cell hemolysis included enlarged spleens, pigment deposits in the spleen, changes in the bone marrow and kidney. Decreased body weights were also related to repeated ingestion of high doses of Diuron.

In addition to the effects described above, long-term effects observed in rodents after repeated ingestion of high doses also included thickening of the urinary bladder and kidney epithelium and liver toxicity. In chronic feeding studies, an increase in urinary bladder and renal pelvic tumors was observed in high-dose rats. A borderline increase in mammary tumors was observed in high-dose female mice, which is considered equivocal.

The weight of evidence indicates that Diuron does not produce genetic damage in bacterial or mammalian cell cultures, or in animals. Diuron is not considered a developmental toxicant. There was no evidence of developmental toxicity in rabbits. In rats, developmental effects occurred at doses higher than those which produced maternal toxicity. Testing in rats demonstrated no reproductive toxicity.

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## ECOLOGICAL INFORMATION

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Ecotoxicological Information

BROMACIL

AQUATIC TOXICITY:
96 hour LC50 - Bluegill sunfish: 127 mg/L.
96 hour LC50 - Rainbow trout: 36 mg/L.
48 hour LC50 - Daphnia magna: 119 mg/L.
EC50, Freshwater algae: 0.607 mg/L.

BROMACIL
AVIAN TOXICITY:
LD50 - Bobwhite Quail: > 2250 mg/kg

AQUATIC TOXICITY:
Diuron
96-Hour LC50 - Bluegill sunfish: 25 mg/L
96-Hour LC50 - Rainbow trout: 14.7 mg/L
48-Hour EC50 - Daphnia magna: 1.4 mg/L
EC50 - Algae - 0.018 mg/L

AVIAN TOXICITY:
Diuron
LD50 - Bobwhite Quail: 1104 mg/kg

## DISPOSAL CONSIDERATIONS

### Waste Disposal

Do not contaminate water, food, or feed by disposal. Waste resulting from the use of this product may be disposed of on the site or at an approved waste disposal facility.

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.

Bromacil is known to leach through soil and has been found in ground water as a result of normal field use. Users are advised not to apply in areas where soils are permeable, particularly where ground water is used for drinking water. Consult with the pesticide state lead agency for information regarding soil permeability and aquifer vulnerability in your area.

### Container Disposal

For Plastic Containers: Triple rinse (or equivalent). 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.

For Fiber Sacks: Completely empty fiber sack by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then dispose of sack in a sanitary landfill or by incineration if allowed by State and local authorities.

For Fiber Drums With Liners: Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities. If drum is contaminated and cannot be reused, dispose of in the same manner.

For Paper and Plastic Bags: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Container Refilling and Disposal (For Containers up to 250 gal): REFER TO THE PRODUCT LABEL.
If the container is to be refilled, do not rinse with any material or introduce any pesticide other than this product.

(DISPOSAL CONSIDERATIONS - Continued)

Container Disposal for Bulk Containers: REFER TO THE PRODUCT LABEL.
The container must only be refilled with this pesticide product. DO NO REUSE THE CONTAINER FOR ANY OTHER PURPOSE.

Do not transport if the container is damaged or leaking.

Disposal of the container must be in compliance with state and local regulations.

For minor spills, leaks, etc., follow all precautions indicated on the product label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.

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## TRANSPORTATION INFORMATION

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Shipping Information

IMO/IMDG
Proper Shipping Name: NOT REGULATED

DOT
Shipping Information: NOT REGULATED *

* Regulated for transport into, out-of, or within the United States when a single package contains 100 or more pounds of Diuron. Describe as follows:

| | |
|---|---|
| Proper Shipping Name | : Environmentally hazardous substance, solid, N.O.S. (Diuron) |
| Hazard Class | : 9 |
| UN Number | : 3077 |
| Packing Group | : III |
| Marine Pollutant | : No |
| Reportable Quantity | : Yes (100 lbs.) |

NOTE: When Krovar I DF is mixed in liquid formulation (250 or more pounds formulated Krovar I DF in solution contains 100 pounds Diuron) in a single package. Describe as follows:

| | |
|---|---|
| Proper Shipping Name | : Environmentally hazardous substance, liquid, N.O.S. (Diuron) |
| Hazard Class | : 9 |
| UN Number | : 3082 |
| Packing Group | : III |
| Marine Pollutant | : No |
| Reportable Quantity | : Yes (100 lbs.) |

(TRANSPORTATION INFORMATION - Continued)

Shipping Information -- Canada

This material is Not Regulated.

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REGULATORY INFORMATION

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U.S. Federal Regulations

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : Yes
Fire : No
Reactivity : No
Pressure : No

In the United States this product is regulated by the US Environmental Protection Agency under the Federal Insecticide, Fungicide and Rodenticide Act. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

EPA Reg. No. 352-505

ADDITIONAL REGULATORY INFORMATION
SARA/CERCLA Reportable Quantity:
Diuron (100 lb)

State Regulations (U.S.)

******ATTENTION******

CALIFORNIA PROPOSITION 65

THIS PRODUCT CONTAINS DIURON, A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER IN LABORATORY ANIMALS.

Canadian Regulations

Regulated under the Pest Control Products Act--WHMIS Exempt

Registration No. 22964 Pest Control Products Act

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OTHER INFORMATION

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NFPA, NPCA-HMIS

NFPA Rating
Health : 1
Flammability : 1
Reactivity : 0

(Continued)

NPCA-HMIS Rating
Health : 1
Flammability : 1
Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

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The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS
---------- Crop Protection E.I. du Pont Canada Company
Box 2200, Streetsville
Mississauga, Ontario L5M 2H3
(905) 821-3300.

End of MSDS