

# SAFETY DATA SHEET



## KROVAR® I DF HERBICIDE

Version 3.0 / USA  
102000030320

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Revision Date: 03/14/2016  
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### SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### Product identifier

**Trade name** KROVAR® I DF HERBICIDE

**Product code (UVP)** 84104078

**SDS Number** 102000030320

**EPA Registration No.** 432-1551

#### Relevant identified uses of the substance or mixture and uses advised against

**Use** Herbicide

**Restrictions on use** See product label for restrictions.

#### Information on supplier

**Supplier** Bayer Environmental Science  
2 T.W. Alexander Drive  
Research Triangle PK, NC 27709  
United States

**Responsible Department** Email: SDSINFO.BCS-NA@bayer.com

#### Emergency telephone no.

**Emergency Telephone Number (24hr/ 7 days)** 1-800-334-7577

**Product Information Telephone Number** 1-800-331-2867

### SECTION 2: HAZARDS IDENTIFICATION

#### Classification in accordance with regulation HCS 29CFR §1910.1200

Carcinogenicity, Specific target organ toxicity - repeated exposure: Category 2



**Signal word:** Warning

#### Hazard statements

Suspected of causing cancer.

May cause damage to organs through prolonged or repeated exposure.

#### Precautionary statements

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Wear protective gloves/ protective clothing/ eye protection/ face protection.

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Do not breathe dust or mist.  
IF exposed or concerned: Get medical advice/ attention.  
Store locked up.  
Dispose of contents/container in accordance with local regulation.

### Hazards Not Otherwise Classified (HNOC)

No other hazards known.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Bromacil	314-40-9	40.0
Diuron	330-54-1	40.0

## SECTION 4: FIRST AID MEASURES

### Description of first aid measures

<b>General advice</b>	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
<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>Skin contact</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>Eye contact</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>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.

### Most important symptoms and effects, both acute and delayed

**Symptoms** To date no symptoms are known.

### Indication of any immediate medical attention and special treatment needed

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

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### SECTION 5: FIREFIGHTING MEASURES

#### Extinguishing media

**Suitable** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Unsuitable** High volume water jet

**Special hazards arising from the substance or mixture** Dangerous gases are evolved in the event of a fire.

#### Advice for firefighters

**Special protective equipment for firefighters** Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

**Further information** Whenever possible, contain fire-fighting water by diking area with sand or earth. Do not allow run-off from fire fighting to enter drains or water courses. Keep out of smoke. Fight fire from upwind position.

**Flash point** Not applicable

**Auto-ignition temperature** 420 °C / 788 °F

**Lower explosion limit** 0.135 g/l

**Upper explosion limit** No data available

**Explosivity** No data available

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### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### Personal precautions, protective equipment and emergency procedures

**Precautions** Keep people away from and upwind of spill/leak. Use personal protective equipment. Avoid dust formation.

#### Methods and materials for containment and cleaning up

**Methods for cleaning up** Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation. Clean contaminated floors and objects thoroughly, observing environmental regulations.

**Additional advice** Do not allow to enter soil, waterways or waste water canal.

**Reference to other sections** Information regarding safe handling, see section 7.  
Information regarding personal protective equipment, see section 8.  
Information regarding waste disposal, see section 13.

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### SECTION 7: HANDLING AND STORAGE

#### Precautions for safe handling

- Advice on safe handling** Handle and open container in a manner as to prevent spillage. Avoid dust formation. Ensure adequate ventilation.
- Advice on protection against fire and explosion** Keep away from heat and sources of ignition. Take measures to prevent the build up of electrostatic charge. Dust may form explosive mixture in air.
- Hygiene measures** Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.  
Remove Personal Protective Equipment (PPE) immediately after handling this product. Remove and wash contaminated gloves, including the inside, before re-use. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

#### Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers** Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Bromacil	314-40-9	10 mg/m <sup>3</sup> (TWA)	02 2012	ACGIH
Bromacil	314-40-9	10 mg/m <sup>3</sup> /1 ppm (REL)	2010	NIOSH
Bromacil	314-40-9	10 mg/m <sup>3</sup> /1 ppm (TWA)	1989	OSHA Z1A
Bromacil	314-40-9	10 mg/m <sup>3</sup> /1 ppm (TWA)	06 2008	TN OEL
Bromacil	314-40-9	10ug/m <sup>3</sup> (AN ESL)	07 2011	TX ESL
Bromacil	314-40-9	100ug/m <sup>3</sup> (ST ESL)	07 2011	TX ESL
Bromacil	314-40-9	10ppb (ST ESL)	07 2011	TX ESL
Bromacil	314-40-9	1ppb (AN ESL)	07 2011	TX ESL
Bromacil	314-40-9	10 mg/m <sup>3</sup> /1 ppm (TWA PEL)	08 2010	US CA OEL
Diuron	330-54-1	10 mg/m <sup>3</sup>	02 2012	ACGIH

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		(TWA)		
Diuron	330-54-1	10 mg/m3 (REL)	2010	NIOSH
Diuron	330-54-1	10 mg/m3 (TWA)	1989	OSHA Z1A
Diuron	330-54-1	10 mg/m3 (TWA)	06 2008	TN OEL
Diuron	330-54-1	5ug/m3 (AN ESL)	07 2011	TX ESL
Diuron	330-54-1	50ug/m3 (ST ESL)	07 2011	TX ESL
Diuron	330-54-1	10 mg/m3 (TWA PEL)	08 2010	US CA OEL
Diuron	330-54-1	0.6 mg/m3 (TWA)		OES BCS*

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

### Exposure controls

#### Personal protective equipment

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

#### 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.

#### Hand protection

Chemical resistant nitrile rubber gloves

#### Eye protection

Safety glasses with side-shields

#### Skin and body protection

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

#### General protective measures

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.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	brown
Physical State	granular
Odor	none
Odour Threshold	No data available
pH	5.6
Vapor Pressure	No data available
Vapor Density (Air = 1)	No data available
Bulk density	36 - 44 lb/ft <sup>3</sup>

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<b>Evaporation rate</b>	Not applicable
<b>Boiling Point</b>	Not applicable
<b>Melting / Freezing Point</b>	Not applicable
<b>Water solubility</b>	dispersible
<b>Minimum Ignition Energy</b>	Not applicable
<b>Decomposition temperature</b>	No data available
<b>Partition coefficient: n-octanol/water</b>	Not applicable
<b>Viscosity</b>	Not applicable
<b>Flash point</b>	Not applicable
<b>Auto-ignition temperature</b>	420 °C / 788 °F
<b>Lower explosion limit</b>	0.135 g/l
<b>Upper explosion limit</b>	No data available
<b>Explosivity</b>	No data available

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### SECTION 10: STABILITY AND REACTIVITY

#### Reactivity

<b>Thermal decomposition</b>	No data available
<b>Chemical stability</b>	Stable under normal conditions.
<b>Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>Conditions to avoid</b>	No data available
<b>Incompatible materials</b>	No data available
<b>Hazardous decomposition products</b>	No decomposition products expected under normal conditions of use.

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### SECTION 11: TOXICOLOGICAL INFORMATION

<b>Exposure routes</b>	Eye contact, Skin contact, Inhalation
<b>Immediate Effects</b>	
<b>Eye</b>	Moderate eye irritation.

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**Skin** Harmful if absorbed through skin.

**Ingestion** May be harmful if swallowed.

### Information on toxicological effects

**Acute oral toxicity** LD50 (male/female combined Rat) 2,300 mg/kg

**Acute inhalation toxicity** LC50 (male/female combined Rat) > 5.2 mg/l  
Exposure time: 4 h

**Acute dermal toxicity** LD50 (male/female combined Rabbit) > 2,000 mg/kg

**Skin irritation** slight irritation (Rabbit)

**Eye irritation** slight irritation (Rabbit)

**Sensitisation** Non-sensitizing. (Guinea pig)

### Assessment repeated dose toxicity

Diuron caused haemolytic anaemia in animal studies.

### Assessment mutagenicity

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

### Assessment carcinogenicity

Diuron caused at high dose levels an increased incidence of tumours in the following organ(s): urinary bladder, Mammary gland. The mechanism that triggers tumours in rodents is not relevant for the low exposures encountered under normal use conditions.

### ACGIH

Bromacil	314-40-9	Group A3
Diuron	330-54-1	Group A4

### NTP

None.

### IARC

None.

### OSHA

None.

### Assessment toxicity to reproduction

Diuron did not cause reproductive toxicity in a two-generation study in rats.

### Assessment developmental toxicity

Diuron did not cause developmental toxicity in rats and rabbits.

### Further information

Only acute toxicity studies have been performed on the formulated product.  
The non-acute information pertains to the active ingredient(s).

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### SECTION 12: ECOLOGICAL INFORMATION

<b>Toxicity to fish</b>	LC50 (Oncorhynchus mykiss (rainbow trout)) 36 mg/l Exposure time: 96 h The value mentioned relates to the active ingredient bromacil.  LC50 (Oncorhynchus mykiss (rainbow trout)) 14.7 mg/l Exposure time: 96 h The value mentioned relates to the active ingredient diuron.
<b>Toxicity to aquatic invertebrates</b>	EC50 (Daphnia magna (Water flea)) 119 mg/l Exposure time: 48 h The value mentioned relates to the active ingredient bromacil.  EC50 (Daphnia magna (Water flea)) 1.4 mg/l Exposure time: 48 h The value mentioned relates to the active ingredient diuron.
<b>Toxicity to aquatic plants</b>	ErC50 (Raphidocelis subcapitata (freshwater green alga)) 0.017 mg/l Exposure time: 72 h The value mentioned relates to the active ingredient bromacil.
<b>Biodegradability</b>	Diuron: Not rapidly biodegradable
<b>Koc</b>	Diuron: Koc: 468 - 1666
<b>Bioaccumulation</b>	Diuron: Bioconcentration factor (BCF) 15 - 340 Does not bioaccumulate.
<b>Mobility in soil</b>	Diuron: Slightly mobile in soils
<b>Environmental precautions</b>	Do not allow to get into surface water, drains and ground water. 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.

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### SECTION 13: DISPOSAL CONSIDERATIONS

<b>Waste treatment methods</b>	
<b>Product</b>	Dispose in accordance with all local, state/provincial and federal regulations. Do not contaminate water, food, or feed by disposal. Never place unused product down any indoor or outdoor drain.
<b>Contaminated packaging</b>	Triple rinse containers. Do not re-use empty packagings.



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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.

### RCRA Information

Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

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## SECTION 14: TRANSPORT INFORMATION

### 49CFR

UN number	<b>3077</b>
Class	9
Packaging group	III
Marine pollutant	Environmentally Hazardous
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (DIURON)
RQ	Reportable Quantity is reached with 250 lb of product.

### IMDG

UN number	<b>3077</b>
Class	9
Packaging group	III
Marine pollutant	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DIURON, BROMACIL MIXTURE)

### IATA

UN number	<b>3077</b>
Class	9
Packaging group	III
Environm. Hazardous Mark	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DIURON, BROMACIL MIXTURE )

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

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## SECTION 15: REGULATORY INFORMATION

EPA Registration No. 432-1551

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### US Federal Regulations

#### TSCA list

Diuron 330-54-1

#### 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

Bromacil 314-40-9 1.0%

Diuron 330-54-1

### US States Regulatory Reporting

#### CA Prop65

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

Diuron 330-54-1

### US State Right-To-Know Ingredients

Bromacil	314-40-9	CA, MN, NJ, RI
Diuron	330-54-1	CA, CT, IL, MN, NJ, RI

### Canadian Regulations

#### Canadian Domestic Substance List

None.

### Environmental

#### CERCLA

Diuron 330-54-1

#### Clean Water Section 307 Priority Pollutants

None.

#### Safe Drinking Water Act Maximum Contaminant Levels

Diuron 330-54-1

### EPA/FIFRA Information:

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

**Signal word:** Caution!

**Hazard statements:** Harmful if swallowed or absorbed through skin.  
Moderate eye irritation.  
Avoid contact with skin, eyes and clothing.  
Keep out of the reach of children.

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## SECTION 16: OTHER INFORMATION

### Abbreviations and acronyms

49CFR Code of Federal Regulations, Title 49

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ACGIH	US. ACGIH Threshold Limit Values
CAS-Nr.	Chemical Abstracts Service number
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
IARC	US. IARC Monographs on Occupational Exposures to Chemical Agents
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
N.O.S.	Not otherwise specified
NTP	US. National Toxicology Program (NTP) Report on Carcinogens
OECD	Organization for Economic Co-operation and Development
TDG	Transportation of Dangerous Goods
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

### **NFPA 704 (National Fire Protection Association):**

Health - 1      Flammability - 1      Instability - 0      Others - none

### **HMIS (Hazardous Materials Identification System, based on the Third Edition Ratings Guide)**

Health - 1      Flammability - 1      Physical Hazard - 0      PPE -

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

**Reason for Revision:** Reviewed and updated for general editorial purposes. The following sections have been revised: Section 2: Hazards Identification. Section 5: Fire Fighting Measures. Section 8: Exposure Controls / Personal Protection. Section 9: Physical and Chemical Properties. Section 12. Ecological information.

**Revision Date:** 03/14/2016

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