



SAFETY DATA SHEET

1. Identification

Product identifier	Krovar DF Crop Herbicide
Other means of identification	
SDS number	515
Product registration number	5481-635
Synonyms	Krovar DF Herbicide
Recommended use	Herbicide.
Recommended restrictions	No other uses are advised.
EPA Registration number	EPA: 5481-635

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name	AMVAC Chemical Corporation	
Address	4695 MacArthur Court Suite 1200 Newport Beach, CA 92660	
Telephone	AMVAC Chemical Corp	949-260-1200
	AMVAC Chemical Corp	949-260-6270(FAX)
Website	www.Amvac-Chemical.com	
E-mail	CustServ@Amvac-Chemical.com	
Emergency phone number	Medical	888-681-4261
	CHEMTREC® (USA+Canada)	800-424-9300
	Product Use	888-462-6822
	CHEMTREC® (Outside USA)	+1-703-527-3887

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Carcinogenicity	Category 2
	Specific target organ toxicity, repeated exposure	Category 2
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Combustible dust	

Label elements



Signal word	Warning
Hazard statement	(Blood, Bladder, Respiratory system, Kidney)

Precautionary statement

Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid release to the environment.
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Response	IF exposed or concerned: Get medical advice/attention.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Bromacil	5-Bromo-3-sec-butyl-6-methyluracil	314-40-9	40.0%
Diuron	3-(3,4-Dichlorophenyl)-1, 1-dimethylurea	330-54-1	40.0%

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

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 CENTER or doctor/physician for further treatment advice.
Skin contact	Take off immediately all contaminated clothing. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center for treatment advice.
Eye contact	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately. If there will be a delay in getting medical attention, rinse the eyes an additional 15 minutes.
Ingestion	Call a physician or poison control center immediately. Have person sip a glass of water if able to swallow Do not induce vomiting without advice from poison control center. Never give anything by mouth to a victim who is unconscious or is having convulsions.
Most important symptoms/effects, acute and delayed	No significant reaction of the human body to the product is known.
Indication of immediate medical attention and special treatment needed	Treat symptomatically. There is no specific antidote.
General information	Have the product label with you when calling a poison control center or doctor or going for treatment. For medical emergencies involving this product, call toll free 1-888-681-4261. See Label for Additional Precautions and Directions for Use.

5. Fire-fighting measures

Suitable extinguishing media	Water spray. Foam. Dry chemical, carbon dioxide.
Unsuitable extinguishing media	Do not use water jet. (contamination risk)
Specific hazards arising from the chemical	Not applicable.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Firefighters should wear full protective clothing including self contained breathing apparatus. 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 all applicable regulations.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep people away from and upwind of spill/leak. Wear appropriate personal protective equipment. Avoid dust formation.
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Methods and materials for containment and cleaning up

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

Wear appropriate protective equipment and clothing during clean-up.

Shovel or sweep up. Scoop into bags or boxes with plastic or aluminum shovel. Never return spills to original containers for re-use. If spill area is on ground near valuable plants or trees, remove top 2 inches of soil after initial cleanup.

Follow all applicable Federal, State/Provincial and Local laws/regulations.

Avoid discharge into drains, sewers, water courses or low areas.

Environmental precautions

7. Handling and storage

Precautions for safe handling

Handle and open container with care. Avoid dust formation. Provide adequate ventilation.

Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove clothing/PPE immediately if material gets inside. Wash thoroughly and put on clean clothing. 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.

Conditions for safe storage, including any incompatibilities

Do not contaminate water, other pesticides, fertilizer, food or feed products. Store in original tightly closed container. Store in cool, dry place. Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. ACGIH Threshold Limit Values

Components	Type	Value
Bromacil (CAS 314-40-9)	TWA	10 mg/m3
Diuron (CAS 330-54-1)	TWA	10 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Bromacil (CAS 314-40-9)	TWA	10 mg/m3 1 ppm
Diuron (CAS 330-54-1)	TWA	10 mg/m3

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate 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 [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.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Chemical resistant gloves. Nitrile gloves are recommended.

Other

Long-sleeved shirt and long pants or coveralls, socks and closed toe shoes are required. Chemical resistant gloves. Use of an impervious apron is recommended. (when mixing, loading, or cleaning equipment or spills).

Respiratory protection

No personal respiratory protective equipment normally required. Use a NIOSH/MSHA approved dust/mist filtering respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards

Not available.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Solid. Granular.
Color	Brown

Odor Not available.

Odor threshold Not available.

pH 5.6

Melting point/freezing point Not available.

Initial boiling point and boiling range Not available.

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Explosive limit - lower (%) 0.135 g/l

Explosive limit - upper (%) Not available.

Vapor pressure Not available.

Vapor density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Dispersible

Auto-ignition temperature 788 °F (420 °C)

Decomposition temperature Not available.

Viscosity Not available.

Other information

Bulk density 36 - 44 lb/ft³

10. Stability and reactivity

Reactivity Not available.

Chemical stability Stable at normal conditions and storage conditions.

Possibility of hazardous reactions Hazardous polymerization does not occur.

Conditions to avoid No applicable data available.

Incompatible materials None known.

Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation Inhalation of dusts may cause respiratory irritation.

Skin contact Slight skin irritant.

Eye contact Slight irritant.

Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Not available.

Information on toxicological effects

Acute toxicity Causes slight eye irritation. Causes slight skin irritation. May cause respiratory irritation.

Product	Species	Test Results
Krovar DF Crop Herbicide		
Acute		
Dermal		
<i>Solid</i>		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
<i>Solid</i>		
LC50	Rat	> 5.2 mg/l, 4 h
Oral		
<i>Solid</i>		
LD50	Rat	2300 mg/kg
Skin corrosion/irritation	Causes slight skin irritation.	
Serious eye damage/eye irritation	Slight irritant.	
Respiratory or skin sensitization		
Respiratory sensitization	Not available.	
Skin sensitization	Animal test did not cause sensitization by skin contact (Guinea pig).	
Germ cell mutagenicity		
Bromacil: Weight of evidence does not support classification as a germ cell mutagen.		
Diuron: Weight of evidence does not support classification as a germ cell mutagen.		
Carcinogenicity		
Bromacil: Not classifiable as a human carcinogen. The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions. An increased incidence of tumors was observed in laboratory animals.		
Diuron: Suspected human carcinogens. An increased incidence of tumors was observed in laboratory animals. Target(s) - Bladder, Kidney.		
The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. the classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).		
IARC Monographs. Overall Evaluation of Carcinogenicity		
Not listed.		
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)		
Not listed.		
US. National Toxicology Program (NTP) Report on Carcinogens		
Not listed.		
Reproductive toxicity		
Bromacil: No evidence of reproductive toxicity has been observed.		
Diuron: No evidence of reproductive toxicity has been observed.		
Sodium alkylnaphthalene sulfonate: No evidence of reproductive toxicity has been observed.		
Animal testing showed effects on reproduction at levels equal to or above those causing parental toxicity.		
Teratogenicity:		
Bromacil: Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.		
Diuron: Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.		
Specific target organ toxicity - single exposure	Not available.	

Specific target organ toxicity - repeated exposure Bromacil: 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

Diuron: 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 (anemia), 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 (anemia), Spleen effects, bone marrow changes, Reduced body weight gain Inhalation (Rat) - Red blood cell destruction causing abnormal decrease in number of red blood cells (anemia), Spleen effects

Sodium alkylnaphthalene sulfonate Inhalation (rat) - Target Organs: Respiratory Tract - respiratory tract damage, pathologic changes Oral (rat) - Target Organs: Kidney - Kidney effects, reduced body weight gain

Aspiration hazard Not available.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Components		Species	Test Results
Bromacil (CAS 314-40-9)			
Aquatic			
<i>Acute</i>			
Algae	EC50	Pseudokirchnerella subcapitata	0.17 mg/l, 72 h
	NOEC	Algae	0.001 mg/l
Crustacea	EC50	Daphnia magna	119 mg/l, 48 h
Fish	LC50	Bluegill (Lepomis macrochirus)	127 mg/l, 96 h
		Rainbow Trout (oncorhynchus mykiss)	36 mg/l, 96 h
Diuron (CAS 330-54-1)			
Aquatic			
Algae	EC50	Algae	0.018 mg/l, 72 hours
	NOEC	Algae	0.01 mg/l, 72 hours
Crustacea	EC50	Water flea (Daphnia pulex)	1.4 mg/l, 48 hours
Fish	LC50	Cutthroat trout (Oncorhynchus clarki)	1.1 - 1.9 mg/l, 96 hours
		Rainbow Trout (oncorhynchus mykiss)	17.4 mg/l, 96 hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

Bromacil	2.11
Diuron	2.68

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

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

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal methods/information).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal according to all applicable regulations.

14. Transport information

DOT

UN number UN3077

UN proper shipping name Environmentally Hazardous Substances, Solid, n.o.s. (Diuron RQ = 250 lbs product)
Transport hazard class(es)
Class 9
Subsidiary risk -
Packing group III
Environmental hazards
Marine pollutant No
Special precautions for user Not available.

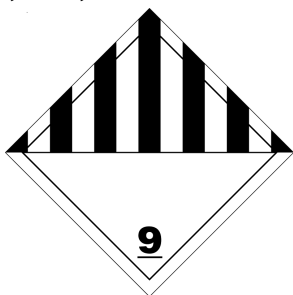
IATA

UN number UN3077
UN proper shipping name Environmentally hazardous substance, solid, n.o.s. (Bromacil, Diuron)
Transport hazard class(es)
Class 9
Subsidiary risk -
Packing group III
Environmental hazards Yes, when shipped over large bodies of water
ERG Code 9L
Special precautions for user Not available.
Other information
Passenger and cargo aircraft Allowed with restrictions.
Cargo aircraft only Allowed with restrictions.

IMDG

UN number UN3077
UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Bromacil, Diuron), MARINE POLLUTANT
Transport hazard class(es)
Class 9
Subsidiary risk -
Packing group III
Environmental hazards
Marine pollutant Yes
EmS F-A, S-F
Special precautions for user Not available.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

DOT; IATA; IMDG



Marine pollutant



General information

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

IMDG Regulated Marine Pollutant.

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA special provision A197, and ADR/RID special provision 375.

15. Regulatory information**US federal regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

This product is registered under EPA/FIFRA Regulations. It is a violation of Federal Law to use this product in any manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

This chemical is a pesticide product registered by the United States 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 (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION!

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

ENVIRONMENTAL HAZARDS

Do not allow product 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 water by cleaning of equipment or disposal of wastes, including equipment wash water.

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

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Diuron (CAS 330-54-1) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**SARA 302 Extremely hazardous substance**

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Combustible dust
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Bromacil	314-40-9	40.0%
Diuron	330-54-1	40.0%

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Contains component(s) regulated under the Safe Drinking Water Act.

US state regulations

California Proposition 65



WARNING: This product can expose you to Diuron, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

Diuron (CAS 330-54-1)

Listed: May 31, 2002

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	Jun-10-2019
Revision date	Jun-10-2019
Version #	1.0
HMIS® ratings	Health: 1 Flammability: 1 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 1 Instability: 0

Disclaimer

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AMVAC Chemical Corporation cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use.

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