

1. Identification

Product identifier	Krovar DF Crop Herbicide	
Other means of identification		
SDS number	515	
Product registration number	5481-635	
Synonyms	Krovar I DF Herbicide	
Recommended use	Herbicide.	
Recommended restrictions	No other uses are advised.	
EPA Registration number	EPA: 5481-635	
Manufacturer/Importer/Supplier/Distributor information		
Company Name	AMVAC Chemical Corporation	
Address	4695 MacArthur Court Suite 1200 Newport Beach, CA 92660 United States	
Telephone		
AMVAC Chemical Corp	949-260-1200	
AMVAC Chemical Corp	949-260-6270(FAX)	
Product Use	888-462-6822	
Website	www.amvac.com	
E-mail	CustServ@amvac.com	
Emergency phone number		
Medical	888-681-4261	
CHEMTREC® (USA+Canada)	800-424-9300	
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	Suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure. May form combustible dust concentrations in air. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Precautionary statement	
Prevention	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. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid release to the environment.
Response	If exposed or concerned: Get medical advice/attention. Collect spillage.
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	This 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 in section 15. The pesticide label also includes other important information, including directions for use.

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
Diuron	3-(3,4-Dichlorophenyl)-1, 1-dimethylurea	330-54-1	40
Crystalline Silica		14808-60-7	< 0.5

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	Prolonged exposure may cause chronic effects.
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.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
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.

Methods and materials for containment and cleaning 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.

Environmental precautions

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

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. OSHA Table Z-1 Permissible Exposure Limits (PEL) for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Crystalline Silica (CAS 14808-60-7)	PEL	0.05 mg/m ³	Respirable dust.

US. OSHA Table Z-3 Permissible Exposure Limits (PEL) for Mineral Dusts (29 CFR 1910.1000)

Components	Type	Value	Form
Crystalline Silica (CAS 14808-60-7)	TWA	0.1 mg/m ³	Respirable.
		2.4 mppcf	Respirable.

US. ACGIH Threshold Limit Values (TLV)

Components	Type	Value	Form
Bromacil (CAS 314-40-9)	TWA	10 mg/m ³	
Crystalline Silica (CAS 14808-60-7)	TWA	0.025 mg/m ³	Respirable fraction.
Diuron (CAS 330-54-1)	TWA	10 mg/m ³	

NIOSH. Immediately Dangerous to Life or Health (IDLH) Values, as amended

Components	Type	Value
Crystalline Silica (CAS 14808-60-7)	IDLH	50 mg/m ³

US. NIOSH: Pocket Guide to Chemical Hazards Recommended Exposure Limits (REL)

Components	Type	Value	Form
Bromacil (CAS 314-40-9)	TWA	10 mg/m ³	

US. NIOSH: Pocket Guide to Chemical Hazards Recommended Exposure Limits (REL)

Components	Type	Value	Form
Crystalline Silica (CAS 14808-60-7)	TWA	0.05 mg/m ³	Respirable dust.
Diuron (CAS 330-54-1)	TWA	10 mg/m ³	

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

Appropriate engineering controls Ensure adequate ventilation, especially in confined areas.

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. 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 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

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

Partition coefficient (n-octanol/water) Not available.

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

Decomposition temperature Not available.

Viscosity Not available.

Other information The data presented in this section are typical values and should not be construed as a specification.

Bulk density 36 - 44 lb/ft³

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Stable at normal conditions and storage conditions.

Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Amines, especially primary amines. Strong acids.
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	May be harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity May be harmful if swallowed.

Product	Species	Test Results
Krovar DF Crop Herbicide		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
<i>Dust</i>		
LC50	Rat	> 5.2 mg/l, 4 Hours
Oral		
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 classified.

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 Suspected of causing cancer.

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.

IARC Monographs. Overall Evaluation of Carcinogenicity

Crystalline Silica (CAS 14808-60-7) 1 Carcinogenic to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Crystalline Silica (CAS 14808-60-7) Cancer

US. National Toxicology Program (NTP) Report on Carcinogens

Crystalline Silica (CAS 14808-60-7) Known To Be Human Carcinogen.

Reproductive toxicity

Bromacil: No evidence of reproductive toxicity has been observed.

Diuron: No evidence of reproductive toxicity has been observed.

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 classified.

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.

Aspiration hazard

Not classified.

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	0.017 mg/l, 72 hours
	NOEC	Algae	0.001 mg/l
Crustacea	EC50	Daphnia magna	119 mg/l, 48 hours
Fish	LC50	Bluegill (Lepomis macrochirus)	127 mg/l, 96 hours
		Rainbow Trout (oncorhynchus mykiss)	36 mg/l, 96 hours
Diuron (CAS 330-54-1)			
Aquatic			
<i>Acute</i>			
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	Lake trout, siscowet (Salvelinus namaycush)	1 - 1.3 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 instructions).

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 hazard -
Packing group III
Environmental hazards
Marine pollutant No
Special precautions for user Not assigned.

IATA

UN number UN3077
UN proper shipping name Environmentally hazardous substance, solid, n.o.s. (Bromacil, Diuron)
Transport hazard class(es)
Class 9
Subsidiary hazard -
Packing group III
Environmental hazards Yes
ERG Code 9L
Special precautions for user Not assigned.

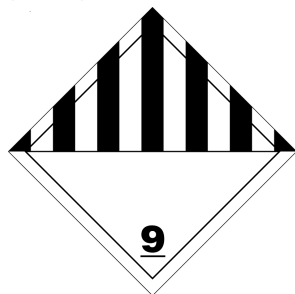
Other information

Passenger and cargo aircraft Allowed with restrictions.
Cargo aircraft only Allowed with restrictions.

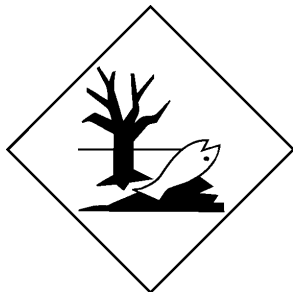
IMDG

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 hazard -
Packing group III
Environmental hazards
Marine pollutant Yes
EmS F-A, S-F
Special precautions for user Not assigned.

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.

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, or clothing.

ENVIRONMENTAL HAZARDS

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.

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)

Crystalline Silica (CAS 14808-60-7) Cancer
lung effects
immune system effects
kidney effects

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
Diuron	330-54-1	40

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

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Crystalline Silica (CAS 14808-60-7)

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

Crystalline Silica (CAS 14808-60-7)

Listed: October 1, 1988

Diuron (CAS 330-54-1)

Listed: May 31, 2002

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	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	Jan-26-2022
Revision date	Sep-18-2023
Version #	1.3
HMIS® ratings	Health: 1* Flammability: 1 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 1 Instability: 0

Disclaimer

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Revision information

This document has undergone significant changes and should be reviewed in its entirety.