



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Dibro 2+2
EPA Reg. No.: 228-227
Product Type: Herbicide

Company Name: Nufarm Americas Inc.
 11901 S. Austin Avenue
 Alsip, IL 60803
 1-800-345-3330

Telephone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
 Call CHEMTREC Day or Night: 1-800-424-9300
 For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:

Not Hazardous

HEALTH HAZARDS:

Eye irritation	Category 2B
Carcinogen	Category 1A
Specific Target Organ Toxicity Repeated Exposure	Category 2

ENVIRONMENTAL HAZARDS:

Aquatic Acute Toxicity	Category 2
Aquatic Chronic Toxicity	Category 2

SIGNAL WORD:

DANGER

HAZARD STATEMENTS:

Causes eye irritation. May cause cancer. May cause damage to blood, spleen and bladder through prolonged or repeated exposure. Toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash hands thoroughly after handling. . Avoid unintended release to the environment. Wear protective gloves, protective clothing and eye protection.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

IF exposed or concerned: Get medical advice.

Collect spillage.

Store locked up.

Dispose of contents in accordance with local, state, and federal regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Diuron (N'-(3,4-dichlorophenyl)-N,N-dimethylurea)	330-54-1	1.9 – 2.1
Bromacil (5-bromo-6,3-(1-methylpropyl)-2,4(1H,3H)-pyrimidinedione)	314-40-9	1.9 – 2.1
Mineral Seal Oil	64742-80-9	0.9 – 1.1
Calcium Carbonate	1317-65-3	91 -- 95
Crystalline Silica (quartz)	14808-60-7	<1.0
Other Ingredients	Trade Secret	Trade Secret

Synonyms: Mixture of Diuron and Bromacil

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get medical attention if irritation develops and persists.

If Swallowed: 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. If symptoms develop, get medical advice.

If on Skin or Clothing: Take off contaminated clothing. Wash with soap and water. Get medical attention if irritation develops and persists.

If Inhaled: Move person to fresh air. If symptoms develop, get medical advice.

Most Important symptoms/effects, acute and delayed: Eye exposure may cause moderate irritation.

Indication of Immediate medical attention and special treatment if needed: None expected.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Use extinguishing media suitable for surrounding materials.

Special Fire Fighting Procedures: Firefighters should wear NIOSH approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as hydrogen chloride, hydrogen bromide and oxides of carbon and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

Methods for Cleanup and Disposal: Avoid creation of dusty conditions. Scrape up and place in appropriate closed container. Wash entire spill area with a detergent slurry, absorb and sweep into container for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

HANDLING:

Avoid contact with skin, eyes, or clothing. Do not breathe dust. 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/Personal Protective Equipment (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:

Always store pesticides in a secured warehouse or storage building. Do not store near open containers of fertilizer, seed or other pesticides. Do not contaminate water, food or feed by storage, disposal or cleaning of equipment.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Eye/Face Protection: To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.

Skin Protection: To avoid contact with skin, wear long pants, long-sleeved shirt, socks and shoes. Washing facilities should be readily accessible to the work area.

Respiratory Protection: Avoid breathing dust. If dusts exceed acceptable levels, wear NIOSH approved respirator with a dust/mist filter with approval number prefix TC-21C or any N2, R, P, or HE filter.

General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Diuron	NE	NE	10	NE	mg/m ³
Bromacil	NE	NE	10	NE	mg/m ³
Mineral Seal Oil	5	NE	5 (inhalable)	NE	mg/m ³
Calcium Carbonate	5 (respirable), 15 (total)	NE	NE	NE	mg/m ³
Crystalline Silica (quartz)	10 mg/m ³ /%SiO ₂ + 2 (respirable)	NE	0.025 (respirable)	NE	mg/m ³

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	red/gray solid granules
Odor:	faint paint-like
Odor threshold:	no data available
pH:	7.88 (1% w/w dispersion in DIW)
Melting point/freezing point:	no data available
Initial boiling point and boiling range	not applicable – product is solid
Flash point:	not applicable – product is a non-combustible solid
Evaporation rate:	not applicable – product is solid
Flammability	not applicable – product is a non-combustible solid
Upper/lower flammability or explosive limits:	not applicable – product is a non-combustible solid
Vapor pressure:	no data available

Vapor density:	no data available
Relative density:	1.368 g/ml (pour); 1.443 g/ml (tap)
Solubility(ies):	no data available
Partition coefficient: n-octanol/water:	no data available
Autoignition temperature:	not applicable – product is a non-combustible solid
Decomposition temperature:	no data available
Viscosity:	not applicable – product is solid

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical Stability: This material is stable under normal handling and storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Excessive heat. Do not store near heat or flame.

Incompatible Materials: May be incompatible with amine products.

Hazardous Decomposition Products: Under fire conditions may produce gases such as hydrogen chloride, hydrogen bromide and oxides of carbon and nitrogen.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, Eye contact, Skin contact

Eye Contact: Moderately irritating to the eye. Dusts may irritate or cause abrasive injury to the eye.

Skin Contact: Slightly toxic and slightly irritating based on toxicity studies.

Ingestion: Slightly toxic based on toxicity studies.

Inhalation: Low inhalation toxicity. Dusts may irritate the respiratory tract.

Delayed, immediate and chronic effects of exposure: Prolonged exposure may cause damage to the blood, spleen, liver and bladder.

Toxicological Data:

Data from laboratory studies on this product are summarized below:

Oral: Rat LD₅₀: >5,000 mg/kg (female)

Dermal: Rat LD₅₀: >5,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: >2.05 mg/l (no mortalities at highest dose tested)

Eye Irritation: Rabbit: Moderately irritating

Skin Irritation: Rabbit: Slightly irritating (PDII= 1.0)

Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to diuron may cause reduced body weight gain, enlarged spleen, increased liver and kidney weights, and effects to blood, bladder and kidney. Repeated overexposure to bromacil may cause liver changes, increased liver, adrenal, and heart weights, and decreased kidney and spleen weights, changes in thyroid and blood chemistry.

Carcinogenicity / Chronic Health Effects: Chronic effects from diuron in blood, bladder and kidney. Chronic effects from bromacil may cause reduced weight gain, thyroid and liver effects. In animal studies with diuron, an increase in urinary bladder tumors in rats and an increase of mammary tumors in mice were observed. The U.S. EPA has classified bromacil as a Group C carcinogen (possible human carcinogen) based on increased incidences of liver tumors in male mice and positive trends in thyroid tumors in male rats. The carrier for this product is not listed as a carcinogen. However, it may contain crystalline silica (e.g. quartz), a naturally occurring component. Inhalation of crystalline silica may cause pulmonary fibrosis (silicosis). Crystalline silica has been classified by IARC as carcinogenic to humans (Group 1), by the U.S. National Toxicology Program as a known human carcinogen and by ACGIH as a suspected human carcinogen (A2).

Reproductive Toxicity: Neither diuron nor bromacil demonstrated reproductive effects in animal studies.

Developmental Toxicity: Diuron did not cause developmental effects in rabbits. In rat studies, effects were observed only at maternally toxic dose levels. Bromacil studies in laboratory animals show developmental effects only at exposure levels producing other toxic effects in the parental animal.

Genotoxicity: Studies indicate that neither diuron nor bromacil produce genetic damage in mammalian or bacterial cell cultures or in animal studies.

Assessment Carcinogenicity:

This product contains substances that are considered to be probable or suspected human carcinogens as follows:

Component	Regulatory Agency Listing As Carcinogen			
	ACGIH	IARC	NTP	OSHA
Diuron	A4	No	No	No
Bromacil	A3	No	No	No
Mineral Seal Oil	No	No	No	No
Calcium Carbonate	No	No	No	No
Crystalline Silica (quartz)	A2	1	Yes	No
Other Ingredients	No	No	No	No

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Diuron:

96-hour LC ₅₀ Bluegill:	2.8 mg/l	Bobwhite Quail 8-day Dietary LC ₅₀ :	1,730 ppm
96-hour LC ₅₀ Rainbow Trout:	1.95 mg/l	Mallard Duck Oral LD ₅₀ :	>2,000 mg/kg
96-hour LC ₅₀ Fathead Minnow:	14.2 mg/l	Mallard Duck 8-day Dietary LC ₅₀ :	>5,000 ppm
48-hour EC ₅₀ Daphnia:	1.4 ppm		
96-hour ErC ₅₀ Freshwater algae:	0.022 mg/l		

Data on Bromacil:

96-hour LC ₅₀ Bluegill:	127 ppm	Bobwhite Quail 8-day Dietary LC ₅₀ :	>10,000 ppm
96-hour LC ₅₀ Rainbow Trout:	36 ppm	Bobwhite Quail Oral LD ₅₀ :	2,250 mg/kg
48-hour EC ₅₀ Daphnia:	121 ppm		
Freshwater Algae	0.607mg/L		

Environmental Fate:

Diuron is mobile and very persistent in soils. Sorption of diuron to soil is highly correlated with soil organic matter. The average half-life in soils ranges from months to a year. The major route of dissipation for diuron in the environment is microbial degradation. Diuron also degrades through photolysis in both water and soil, but at a slower rate. Bromacil is highly mobile and persistent in soils. Bromacil binds only slightly to soil particles. Bromacil is stable to hydrolysis under normal environmental conditions. The primary routes of dissipation appear to be photolysis in water under alkaline conditions and microbial degradation in anaerobic soil. Soil half-lives range from 2 – 8 months.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Open dumping is prohibited. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility. Place in a closed, labeled container for proper disposal.

Container Handling and Disposal:

For rigid, nonrefillable containers for non-dilutable product:

Nonrefillable container. Do not reuse or refill this container. Completely empty container by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

For nonrefillable bags of granular or dry formulation

Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment, then offer for recycling if available, or 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.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this SDS.

DOT

Non-Regulated in packages <4760 lbs

IMDG

UN3077, Environmentally Hazardous Substance, Solid, n.o.s. (Bromacil, Diuron), 9, III Marine Pollutant

IATA

UN3077, Environmentally Hazardous Substance, Solid, n.o.s. (Bromacil, Diuron), 9, III

15. REGULATORY INFORMATION**EPA FIFRA INFORMATION**

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. Harmful if absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling.

U.S. FEDERAL REGULATIONS

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:**Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):**

Immediate and Delayed

Section 313 Toxic Chemical(s):

Diuron (CAS No. 330-54-1) 1.9 - 2.1% by wt. in product.

Bromacil (CAS No. 314-40-9) 1.9 - 2.1% by wt. in product.

Reportable Quantity (RQ) under U.S. CERCLA:

Diuron (CAS No. 330-54-1) 100 pounds


Bromacil (CAS No. 314-40-9) none specified

RCRA Waste Code:

Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65:  **ATTENTION.** This product can expose you to chemicals including diuron and silica, crystalline which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

16. OTHER INFORMATION**National Fire Protection Association (NFPA) Hazard Rating:**

Rating for this product: Health: 1 Flammability: 0 Reactivity: 0

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees,

SAFETY DATA SHEET

Dibro 2+2

emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

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