



## Nufarm Calmix Pellets Weed Killer & Soil Sterilant Safety Data Sheet

Issue Date: 2017-12-20

Supersedes Date: 2017-05-17

{Reserved}

### 1. Identification

**Product Name:** Nufarm Calmix Pellets Weed Killer & Soil Sterilant

**PCP Registration No.:** 9342

Refer to the approved product label for handling and use instructions.

**Product Type:** Herbicide

**Supplier:** Nufarm Agriculture Inc.  
Suite 350, 2618 Hopewell Place NE  
Calgary, Alberta, T1Y 7J7, Canada  
1-800-868-5444

**Telephone Numbers:** 24 Hour Emergency Response Number, Chemtrec, 1-800-424-9300.  
For medical emergencies, ProPharma Group, 1-877-325-1840.  
For product and use information, Nufarm Agriculture Inc.,  
1-800-868-5444.

### 2. Hazard Identification

Classified according to UN GHS Version 5.

**Physical Hazards:**

None

**Health Hazards:**

Serious eye damage	Category 1
Skin sensitizer	Category 1B
Acute toxicity (Oral)	Category 4
Acute toxicity (Inhalation)	Category 4
Acute toxicity (Dermal)	Category 5

**Environmental Hazards:**

Hazardous to aquatic environment, acute Category 1

**Signal Word:**

DANGER

**Hazard Statements:**

Causes serious eye damage. May cause an allergic skin reaction. Harmful if swallowed.  
Harmful if inhaled. May be harmful in contact with skin. Very toxic to aquatic life.



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### Precautionary Statements:

Causes serious eye damage. May cause irritation of nose, throat and skin. May be harmful in contact with skin. Wear goggles or face shield when handling. Avoid contact with skin, eyes and clothing. After use, wash hands and other exposed skin.

Wear coveralls over a long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal. Remove and wash contaminated clothing before reuse.

Harmful if swallowed. Do not eat, drink or smoke when using this product.

Avoid breathing dust. Use only outdoors or in a well-ventilated area.

### 3. Composition / Information on Ingredients

Hazardous Components	CAS No.	Wt. %
Limestone	1317-65-3	87-91
Chemical Synonyms: Complex natural mixture of predominantly calcium carbonate (CaCO <sub>3</sub> , CAS No. 1317-65-3) and may include assorted impurities including crystalline silica.		
2,4-D	94-75-7	4.5-5.5
Chemical Synonyms: (2,4-dichlorophenoxy)acetic acid		
Bromacil	314-40-9	2.5-3.5
Chemical Synonyms: 5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1 <i>H</i> ,3 <i>H</i> )-pyrimidinedione		
Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic	64741-88-4	1.8-2.2
Crystalline silica, quartz	14808-60-7	<1
Chemical Synonyms: Silicone dioxide; SiO <sub>2</sub> ; CAS No. 7631-86-9		

Other ingredients are considered non-hazardous.

#### Content as Expressed on Product Label

2,4-D, present as acid ... 5% a.e.
Bromacil ... 3%

### 4. First Aid Measures

**If swallowed**, call a poison control centre or doctor immediately for treatment advice. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

**If on skin or clothing**, take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre 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 centre 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 by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.

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Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

This product may cause severe irritation to the eyes. Overexposure to 2,4-D may cause coughing, burning, dizziness or temporary loss of muscle coordination. Other possible effects of overexposure include fatigue, muscle weakness or nausea. Treat symptomatically. This product contains a petroleum distillate. Vomiting may cause aspiration pneumonia.

### 5. Fire-fighting Measures

**Extinguishing Media:** Product does not burn. Use extinguishing media appropriate to surrounding fire conditions.

**Special Firefighting Procedures:** Firefighters should wear self-contained breathing apparatus and full protective clothing when fighting chemical fires. Minimize and contain water runoff.

**Flash Point:**..... Non-flammable

**Conditions of Flammability:** ..... None

**Hazardous Decomposition Products:**... Under fire conditions, may produce gases such as hydrogen bromide or other bromine compounds, hydrogen chloride, nitrogen oxides and carbon oxides.

**National Fire Protection Association (NFPA) Hazard Rating:**

**Rating for this product: Health: 2      Flammability: 1      Reactivity: X**

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

### 6. Accidental Release Measures

Use safety equipment and procedures appropriate to the size of the spill. Keep unnecessary people away. Avoid runoff to natural waters, irrigation ditches, water supplies and sewers. Sweep or scoop up spill and contain all affected material in a closed, labeled container for proper disposal. Isolate from other waste materials. If spill area is on ground near trees or other valuable plants, it may be necessary to remove topsoil (e.g., 5 cm/2 inches) after initial cleanup. Spill residue may damage or kill many types of plants for an extended period. Hard surfaces can be washed with detergent and water only when collecting all cleaning solution for proper disposal. Do not flush spill areas in a manner that causes runoff to other areas.

### 7. Handling and Storage

**Handling:** Avoid contact with skin, eyes and clothing. After use, wash hands and other exposed skin. Wear coveralls over a long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal. Remove and wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Avoid breathing dust.

**Storage:** Store the container tightly closed away from seeds, fertilizer, plants and foodstuffs. May be stored at any temperature.

### 8. Exposure Controls / Personal Protection

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**Engineering Controls:** Use only outdoors or in a well-ventilated area.

**Personal Protective Equipment:** Goggles or face shield, coveralls, long-sleeved shirt, long pants, socks, shoes and chemical-resistant gloves. Rinse gloves before removal.

**Exposure Guidelines:**

Component	TWA*	STEL**	Reference/Note
Limestone	10 mg/m <sup>3</sup> (total dust) 3 mg/m <sup>3</sup> (respirable fraction)	20 mg/m <sup>3</sup>	WorkSafeBC, 2015
2,4-D	10 mg/m <sup>3</sup>	20 mg/m <sup>3</sup>	Adopted limits for 2,4-D
Bromacil	10 mg/m <sup>3</sup>	NE	ACGIH
Mineral oil, petroleum distillates, solvent-refined (mild) heavy paraffinic	5 mg/m <sup>3</sup> (as mist)	10 mg/m <sup>3</sup> (as mist)	ACGIH
Crystalline silica, quartz	0.025 mg/m <sup>3</sup>	NE	WorkSafeBC, 2015

\*Time-weighted Average, 8-hour unless otherwise noted.

\*\*Short Term Exposure Limit

NE = Not Established

Refer to approved product label for additional exposure control guidance.

<b>9. Physical and Chemical Properties</b>
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**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. If no value is determined for the formulation, the value listed is the most relevant value of the predominant ingredient(s).

**Appearance (physical state, colour, etc.)** ..... granular grey pellet

**Odour** ..... hydrocarbon-like, phenolic

**Odour threshold** ..... not available

**pH** ..... 8-9 (limestone)

**Melting point / Freezing point** ..... not applicable

**Initial boiling point and boiling range** ..... not applicable

**Flash point** ..... not applicable, non-flammable

**Evaporation rate** ..... not applicable

**Flammability (solids, gases)** ..... not applicable

**Upper / Lower flammability or explosive limits** ... not applicable

**Vapour pressure** ..... 1.9 x 10<sup>-2</sup> mPa at 25C (2,4-D)  
4.1 x 10<sup>-2</sup> mPa at 25C (bromacil)

**Vapour density** ..... not available

**Relative density** ..... 2.7-2.8 (limestone)

**Solubility(ies)** ..... Pellets insoluble in water.

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2,4-D and bromacil are moderately soluble  
in water

<b>Partition coefficient: n-octanol/water</b> .....	not applicable
<b>Autoignition temperature</b> .....	not applicable
<b>Decomposition temperature</b> .....	c. 120C (2,4-D)
<b>Viscosity</b> .....	not applicable
<b>Particle size</b> .....	1-3 mm diameter (typical)

### 10. Stability and Reactivity

**Reactivity:** Not reactive.

**Chemical Stability:** 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:** Avoid contact with strong acidic or oxidizing agents.

**Hazardous Decomposition Products:** Under fire conditions, may produce gases such as hydrogen bromide or other bromine compounds, hydrogen chloride, nitrogen oxides and carbon oxides.

### 11. Toxicological Information

**Likely routes of exposure:** Inhalation, ingestion, skin and eye contact.

**Eye contact:** Causes severe eye irritation / corrosion. Causes redness and tearing.

**Skin contact:** May be harmful if absorbed through skin. May cause an allergic skin reaction. Overexposure by skin absorption may cause symptoms similar to those caused by 2,4-D ingestion.

**Ingestion:** May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation, weakness and central nervous system depression.

**Inhalation:** Contains materials that may be moderately toxic. Vapours could cause headache, nausea, dizziness and respiratory irritation if inhaled.

**Medical Conditions Aggravated by Exposure:** Skin exposure may aggravate preexisting skin conditions. Inhalation of dust may aggravate preexisting respiratory conditions.

#### Toxicological Data:

Values are estimates derived from laboratory studies conducted on formulation ingredients.

**Acute oral LD<sub>50</sub> (mg/kg)** ..... 500 to 2000 (Rat)

**Acute dermal LD<sub>50</sub> (mg/kg)** ..... >2000 (Rat)

**Acute inhalation LC<sub>50</sub> (mg/l)** ..... >2 (Rat, 4-hour exposure)

**Skin corrosion/irritation** ..... Considered as non-irritating to skin

**Serious eye damage/irritation** ..... Considered as severely irritating / corrosive to the eye

**Respiratory or skin sensitization** ... Considered as a contact dermal sensitizer (Guinea pig)

**Germ cell mutagenicity** ..... *In vitro* and *in vivo* test results indicate 2,4-D is not mutagenic or genotoxic. Published results of bromacil genotoxicity testing are equivocal. Products similar to the hydrocarbon component are not considered to be mutagenic.

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**Carcinogenicity** ..... The International Agency for Research on Cancer (IARC) lists exposure to 2,4-D as possibly carcinogenic to humans (Group 2B), based on inadequate evidence in humans and limited evidence in animals. 2,4-D was not carcinogenic to rats or mice in lifetime feeding studies. US-EPA has classified bromacil as a Group C possible human carcinogen based on increases in incidence of liver tumors in male mice, and positive trends in thyroid tumors in male rats. Products similar to the hydrocarbon component are not considered to be mutagenic and are unlikely to cause tumors. This product contains limestone, which may include a small amount of crystalline silica (quartz) as a naturally-occurring contaminant. Inhalation of crystalline silica may cause pulmonary fibrosis (silicosis). IARC has concluded there is limited evidence of the carcinogenicity of crystalline silica to humans (Group 1).

**Reproductive toxicity** ..... 2,4-D and bromacil are not considered reproductive toxins.

### 12. Ecological Information

#### Ecotoxicity:

Data are from laboratory studies conducted on 2,4-D acid.

**Aquatic Invertebrate:** 48-Hour LC<sub>50</sub> (mg a.e./L) ... 8.72 (*Cyclops vernalis*)

**Fish:** 96-Hour LC<sub>50</sub> (mg a.e./L) .. 240 (Rainbow Trt), 40 (Bluegill), 118 (Atlantic Silverside)

**Algae:** EC<sub>50</sub> (mg a.e./L) ..... 51.2 (*Selenastrum*), 4.67 (*Navicula*)

**Birds:** Oral LD<sub>50</sub> (mg/kg) ..... 472 to >1000 (various); 5-d Dietary LC<sub>50</sub> >5620 ppm (Mallard)

**Bees:** Oral LD<sub>50</sub> ..... 104.5 µg/bee

Data are for bromacil, from published sources.

**Aquatic Invertebrate:** 48-Hour EC<sub>50</sub> (mg/L) ..... 121 (*Daphnia*)

**Fish:** 96-Hour LC<sub>50</sub> (mg/L) ..... 36 (Rainbow Trt), 127 (Bluegill), 95.6 (Sheepshead Minnow)

**Algae:** EC<sub>50</sub> (mg/L) ..... 0.068 (*Selenastrum*)

**Birds:** Oral LD<sub>50</sub> (mg/kg) ..... 2250 (Bobwhite Quail), 8-Day Dietary LC<sub>50</sub> >10,000 (Mallard Duck and Bobwhite Quail)

**Bees:** Contact LD<sub>50</sub> ..... >193 µg/bee

**Persistence and Degradability:** In soil, 2,4-D is microbially degraded with typical half-life of approximately 5 to 10 days. Persistent in anaerobic environments. Bromacil is persistent, with typical half-life of 124 to 155 days.

**Mobility in Soil:** 2,4-D has moderate to high mobility potential, but is rapidly degraded.

Bromacil is highly mobile.

**Bioaccumulation Potential:** Negligible.

### 13. Disposal Considerations

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Disposal should be made in accordance with federal, provincial and local regulations. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean up of spills.

Do not reuse container for any purpose. Make the empty container unsuitable for further use.

Dispose of the container in accordance with provincial requirements.

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<b>14. Transport Information</b>
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**Canadian TDG Description (Road & Rail):**

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (Bromacil mixture), Class 9, PG III

Marine pollutant.

Section 1.45.1 of the TDG Regulations provides an exemption from documentation and safety marks only for this product and only when transported by a road or railway vehicle.

**United States:**

**DOT Description:**

**< 2000 Pounds per complete package**

Non Regulated – See 49 CFR 173.132(b)(3) & 172.101 Appendix A

**> 2000 Pounds per complete package**

UN 3077, Environmentally hazardous substance, solid, n.o.s.  
(2,4-D Acid), 9, III, RQ, Marine Pollutant

**IMDG**

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (Bromacil mixture), Class 9, PG III, Marine Pollutant

**IATA**

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (Bromacil mixture), Class 9, PG III, Marine Pollutant

<b>15. Regulatory Information</b>
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*Pest Control Products Act* Registration Number: ..... 9342

OPAC Schedule: .... 4

Read the approved label, authorized under the Pest Control Products Act, prior to using or handling the pest control product.

This chemical is a pest control product registered by Health Canada Pest Management Regulatory Agency and is subject to certain labelling requirements under the Pest Control Products Act. These requirements differ from the classification criteria and hazard information required for GHS-consistent safety data sheets. Following is the hazard information required on the pest control product label:

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CAUTION

POISON

WHMIS exempt.

**16. Other Information**

This Safety Data Sheet (SDS) is designed to comply with the Globally Harmonized System (GHS) of classification, and the *Hazardous Products Regulations*.

This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use. The product labeling provides that information specifically for product use as intended.

Company and published information is used in the development of this SDS. The information herein is presented in good faith and believed accurate at the date of publication. However, no warranty, expressed or implied, is given.

Revisions to the last issue: Addition of PMRA guidance info to Section 15.

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