

## Material Safety Data Sheet



## Grazon\* Herbicide Solution

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**In case of emergency Call CANUTEC at 613 996 6666**

**1. Product Identification:**

**Product name:** Grazon\* Herbicide Solution  
**Product use:** Broad-spectrum residual control of many broadleaf weed and brush species in pastures.

Effective date: May 30, 2009

**Supplier:**

Dow AgroSciences Canada Inc.  
 Suite 2100, 450 - 1st Street SW,  
 Calgary, Alberta,  
 Canada, T2P 5H1  
[www.dowagro.ca](http://www.dowagro.ca)

**This product is regulated under authority of the Pest Control Products Act**

**2. Composition:**

Component	CAS Number	% (w/w)
Picloram (as triisopropanolamine (TIPA)) salt	006753-47-5	21.65
2,4-D (as TIPA salt)	032341-80-3	6.01
Balance total		72.34
Including:		
Isopropanol	000067-63-0	5.0 <sup>1</sup>
Triisopropanolamine	000122-20-3	24.2 <sup>1</sup>

<sup>1</sup>as a percent of the total formulation

**3. Hazard Identification:****Emergency Overview:**

This product is an amber liquid with a rubbing alcohol-like odor. Contact may cause eye and skin irritation, even a burn or allergic reaction. This product is slightly toxic to aquatic organisms.

**Special Health Precautions:**

Overexposure to 2,4-D may cause eye irritation, coughing, burning, dizziness or temporary loss of muscle coordination. Other possible effects of over-exposure include fatigue, muscle weakness or nausea.

**Potential Health Effects:**

**Eyes:** This product may cause moderate eye irritation, which may be slow to heal. Exposure may cause slight corneal injury.

**Skin contact:** Prolonged or repeated exposure may cause skin irritation, even a burn.

**Skin absorption:** A prolonged skin contact is not likely to result in the material being absorbed in harmful amounts.

**Ingestion:** Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing amounts larger than that may cause injury.

**Inhalation:** Prolonged exposure is not likely to cause adverse effects.

**4. First-Aid Measures:**

**Consult a physician in every case of suspected chemical poisoning. Never give fluids or induce vomiting if a patient is unconscious or convulsing regardless of cause of injury. If breathing difficulties occur seek medical attention at once.**

**Eyes:** Hold eyes 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 eyes. Get medical attention at once.

**Skin:** Remove contaminated clothing at once. Rinse skin immediately with plenty of water for 15 to 20 minutes. Get medical attention.

**Ingestion:** Get medical attention at once for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by qualified medical personnel. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove individual to fresh air. If breathing difficulty occurs, get medical attention.

Have the Material Safety Data Sheet, and if available, the product container or label with you when calling for or going for medical assistance.

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**Note to physician:** If a burn is present, treat as any thermal burn. There is no specific antidote to this product. Employ supportive care. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

**5. Fire-Fighting Measures:****Flash point:** 46°C (Setaflash)**Flammable limits:** not determined**Auto-ignition temperature:** Not available**Extinguishing media:** Water fog, alcohol resistant foam, CO<sub>2</sub>, dry chemical**Sensitivity to mechanical impact/static discharge:** Not available**Unusual fire and explosion hazards:** Toxic, irritating vapors may be formed under fire conditions. Contain fire-fighting water for future disposal.**Fire-fighting equipment:** Wear positive-pressure self-contained breathing apparatus and full turnout gear.**6. Accidental Release Measures:**

Soak up small spills with absorbent material such as HAZORB, or ZORBALL, peat moss, commercial sweeping compound or similar absorbent material; if these are not available use adsorbing agents such as kitty litter, sand, clay or topsoil. Store collected absorbed/adsorbed material in secure containers until safe disposal can be arranged. Avoid the use of water for cleanup, since spent water must be collected and treated as hazardous waste. Use hot water and heavy duty detergent to clean up any residual stains on hard surfaces. Small spills on topsoil should be allowed to degrade under natural conditions (see Section 13. Ecological Information – Degradation and Metabolism – Soil). Do not allow spilled material to contaminate water supplies. For large spills, dike and barricade the affected area and contact CANUTEC at 613 996 6666 and local authorities.

**7. Handling and Storage:****Handling:** Keep out of reach of children. This product can cause eye irritation. It is harmful if swallowed, inhaled or absorbed through the

skin. Avoid contact with eyes, skin, and clothing. Avoid breathing vapors or spray mist.

Contaminated clothing should be washed separately from domestic laundry and line-dried. Once used for contaminated clothing, the washing machine should be operated through a complete cycle with hot water and detergent only, prior to use for domestic laundry. Users should wash hands before eating, drinking, chewing gum, using tobacco or the toilet.

**Storage:** Store in original container only.**8. Exposure Controls, Personal Protection and Exposure Limits:****Exposure limits:**

2,4-D TIPA salt: Not established; ACGIH TLV and OSHA PEL for 2,4-D (acid) are 10 mg/m<sup>3</sup>. Pictoram TIPA salt: Not established; ACGIH TLV is 15 mg/m<sup>3</sup>. ACGIH classification is A4. OSHA PEL is 15 mg/m<sup>3</sup> total dust, 5 mg/m<sup>3</sup> respirable for pictoram acid.

Triisopropanolamine: Dow AgroSciences Industrial hygiene guide is 10 mg/m<sup>3</sup>.

Isopropanol: ACGIH TLV and OSHA PEL are 400 ppm TWA, 500 PPM STEL

This product contains a proprietary ingredient for which the ACGIH TLV and OSHA PEL are 400 ppm TWA, 500 ppm STEL.

This product contains a proprietary ingredient for which the Dow AgroSciences Industrial Hygiene Guide is 2 mg/m<sup>3</sup>.

**Engineering controls:** Provide general and/or local exhaust ventilation to control airborne levels below the exposure guideline.**Breathing:** Atmospheric levels should be maintained below the exposure guideline.**Protective clothing:** For brief contact during manufacture, warehousing and transport, wear clean body-covering clothing. During operations where exposure to the concentrated product may occur, use protective clothing impervious to this product. Use of items made of heavy-duty neoprene or nitrile rubber is suggested.

Selection of specific items such as face shield, respirator, boots, gloves, apron or full body suit will depend on the operation being carried out. Applicators and other field handlers, including persons repairing or cleaning application equipment, must wear coveralls over clean body-covering clothing, impervious gloves and

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boots. In addition, persons making and/or transferring field dilutions of this product must wear an impervious apron.

**Eyes:** Use chemical workers' goggles.

**Other protection:** None specified

**9. Physical and Chemical Properties:**

**Boiling point:** 82°C

**Vapor pressure:** Approx. 32 mm Hg at 20°C

**Volatility:** Not available

**pH:** 6.44 (10% solution in de-ionized water at 24°C)

**Appearance:** Amber liquid

**Odor:** Rubbing alcohol

**Coefficient of water/oil distribution:** Not available

**Specific gravity:** 1.143 at 20°C

**Evaporation rate:** Not available

**Solubility in water:** Miscible

**Freezing point:** Not applicable

**Viscosity:** 37.3 cP at 25.3°C

**Melting point:** Not applicable

**10. Stability and Reactivity:**

**Stability:** This product is combustible. Keep away from heat, open flames and sparks.

**Incompatibility:** None under normal use conditions. Under abnormal conditions, avoid oxidizing materials and strong acids.

**Hazardous decomposition products:**

Hydrogen chloride and nitrogen oxides may be produced if this product is involved in a fire.

**Hazardous polymerization:** Does not occur.

**11. Toxicological Information:**

**Skin absorption:** Acute dermal LD50 (rabbit) is >2000 mg/kg.

**Ingestion:** Acute oral LD50 (rat) is 2598 mg/kg.

**Inhalation:** Prolonged exposure is not likely to cause adverse effects.

**Sensitization:** Skin contact may cause allergic skin reaction in susceptible individuals.

**Chronic effects:** In animals, effects have been reported on the following organs: central nervous system, gastrointestinal tract, kidney, liver and muscular effects. Observations in animals include gastrointestinal effects and vomiting.

**Cancer:** Various animal cancer tests have shown no reliable positive association between 2,4-D exposure and cancer. Epidemiology

studies on herbicide use have been both positive and negative with the majority being negative. Picloram acid did not cause cancer in laboratory animals.

**Birth defects:** 2,4-D (TIPA salt) has caused birth defects in laboratory animals only at doses toxic to the mother (severe maternal toxicity). Picloram TIPA salt did not cause birth defects or any other fetal effects in laboratory test animals, even at exposure levels having an adverse effect on the mother. Isopropanol has been toxic to the fetus in laboratory animals at doses toxic to the mother.

**Reproductive effects:** Picloram acid did not interfere with reproduction in animal studies. Excessive dietary levels of 2,4-D acid have caused decreased weight and reduced survival of offspring in a rat reproduction study.

**Mutagenicity:** For 2,4-D acid, *in-vitro* and mutagenicity studies were predominantly negative. The preponderance of data shows picloram to be non-mutagenic in *in-vitro* (test tube) tests and in animal test systems.

**12. Ecological Information:**

Tordon 101 is not toxic to bees, slightly toxic to aquatic organisms on an acute basis, and practically non-toxic to birds on a dietary basis. Bio-concentration potential for picloram is moderate. No bio-concentration for TIPA Salt is expected because of its high solubility in water. For more complete eco-toxicological information contact Dow AgroSciences at 800 667 3852.

**Degradation and Metabolism:**

**For 2,4-D:**

**Environmental Health Criteria 29** (WHO, 1984), 84 (WHO, 1989). EHC 84 concludes that, when used as recommended, 2,4-D does not appear to produce direct toxic effects on any animal species.

**Animals** In rat, following oral administration, elimination is rapid, and mainly as the unchanged substance. Following single doses of up to 10 mg/kg, excretion is almost complete after 24 hours, although, with higher doses, complete elimination takes longer. The maximum concentration in organs is reached after about 12 hours.

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**Plants** In plants, metabolism involves hydroxylation, decarboxylation, cleavage of the acid side-chain, and ring opening.

**Soil/Environment** In soil, microbial degradation involves hydroxylation, decarboxylation, cleavage of the acid side-chain, and ring opening. Half-life in soil <7 days.. For a review of environmental aspects of 2,4-D, see *Environmental Health Criteria 84* (WHO, 1989). Rapid degradation in the soil prevents significant downward movement under normal conditions.

**For picloram:****Degradation and Metabolism:**

Once in the plant or in the environment, all salt and ester forms are readily converted to picloram acid. For reviews of picloram in the environment, see M. Mayes & G. R. Oliver, "An Aquatic Hazard Assessment: Picloram", Aquatic Toxicology and Hazard Assessment: Eight Symposium, ASTM STP 891 in R. C. Bahner & D. J. Hasen, Eds., American Society of Testing and Materials, Philadelphia, pp. 253-269 (1985) and "Picloram: the Effects of Its Use as a Herbicide on Environmental Quality", National Research Council of Canada, Ottawa, Canada, K1A OR6, Publication No. NRCC 13684 of the Environmental Secretariat, 28 pages (1974).

**In soil:** Picloram is degraded relatively rapidly on the soil surface by sunlight. It is degraded more slowly by soil microorganisms, with a half-life of 30 to 90 days, depending on soil temperature, type and moisture content.

**In water:** Photo-degradation occurs, with a half-life of three days.

**In plants:** On plant surfaces, photo-decomposition occurs, possibly with cleavage of the pyridine ring.

**In animals:** In mammals, following oral administration, picloram is rapidly excreted in an unchanged form.

**13. Disposal Considerations:**

**Unused unwanted product:** Contact Dow AgroSciences or your provincial regulatory agency for disposal information.

**Container disposal:** Refer to the product label for instructions regarding cleaning and disposal of empty pesticide containers. If these instructions are missing or not understood, contact Dow AgroSciences at 800 667 3852 or your provincial regulatory agency for direction.

**14. Transport Information:**

This product is classified as "Not Regulated" under regulations of the Transportation of Dangerous Goods Act.

**15. Regulatory Information:**

**Pest Control Products Act registration number:** 26649

**For information phone:** 800 667 3852

**MSDS status:** 1. Product Identification

**Date of last revision:** July 24, 2007

**16. Other Information:**

**National Fire Code classification:** Class II

**NFPA ratings:** Health: 2; Flammability: 2; Reactivity: 0.

**Notice:** The information contained in this Material Safety Data Sheet ("MSDS") is current as of the effective date shown in Section 1 of this MSDS and may be subject to amendment by Dow AgroSciences Canada Inc. ("DASCI") at any time. DASCI accepts no liability whatsoever which results in any way from the use of MSDS, which are not published by DASCI, or have been amended without DASCI express written authorization. Users of this MSDS must satisfy themselves that they have the most recent and authorized version of this MSDS and shall bear all responsibility and liability with respect thereto. Any conflict or inconsistencies as to the contents of this MSDS shall be resolved in favor of DASCI by the most recent version of the MSDS published by DASCI.