

Material Safety Data Sheet



Garlon* 4 Herbicide

*Trademark of Dow AgroSciences LLC - Dow AgroSciences Canada Inc. is a licensed user

In case of emergency Call CANUTEC at 613 996 6666

1. Product Identification:

Product name: Garlon* 4 Herbicide

Product use: For the control of undesirable woody plants and annual and perennial broadleaved weeds on pastures and rangelands, and in non-crop areas such as rights-of-way, military bases and industrial sites.

Product code number: 38322

GMID numbers: 4510, 5652

MSDS number: DASCI-012

Effective date: November 16, 2006

Supplier:
Dow AgroSciences Canada Inc.
Suite 2100, 450 - 1st Street SW,
Calgary, Alberta,
Canada, T2P 5H1
www.dowagro.ca

Date printed: November 17, 2006

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

2. Composition:

Component	CAS Number	% (w/w)
Triclopyr (as butoxy ethyl ester)(BEE)	064700-56-7	61.6
Other ingredients		38.4
Including:		
Kerosene	008008-20-6	
Proprietary surfactants	not available	

3. Hazard Identification:

Emergency Overview:

This product is an amber liquid with a kerosene-like odor. This product is combustible. Contact may cause eye and skin irritation.

Special Health Precautions: This product contains a petroleum-based solvent. Health studies have shown that many petroleum-based solvents pose potential human health risks, which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes of solvents contained in this product should be minimized.

Potential Health Effects:

Eyes: This product may cause slight temporary eye irritation. Corneal injury is unlikely.

Skin contact: Prolonged or repeated exposure may cause skin irritation.

Skin absorption: Prolonged skin contact is not likely to result in this material being absorbed in harmful amounts. Repeated skin contact may result in this product being absorbed in harmful amounts.

Ingestion: Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting,

causing lung damage or even death due to chemical pneumonia.

Inhalation: Excessive exposure may cause irritation to upper respiratory tract. Kerosene may cause central nervous system 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: Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial one to two minutes and continue flushing for several minutes. Get specialist medical attention if effects occur

Skin: Wash skin with plenty of water.

Ingestion: Do not induce vomiting unless instructed to do so by qualified medical personnel. Get medical attention and transport to a medical facility at once.

Inhalation: Remove individual to fresh air. If individual is not breathing, give artificial respiration. If breathing is difficult, qualified personnel should administer oxygen. Get medical attention if effects occur.

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

Note to physician:

This product contains a petroleum-based solvent. In case of ingestion, the decision of whether to induce vomiting or not should be made by the attending physician. If lavage is performed, endotracheal and/or esophageal control is suggested. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. 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:

Auto-ignition temperature: Not available

Flash point: 64°C (TCC)

Flammability limits: Not determined

Extinguishing media: Water fog, foam, CO₂, dry chemical.

Sensitivity to mechanical impact/static discharge: Not available

Unusual fire and explosion hazards: This product is combustible. Toxic irritating vapors may be formed if this product is involved in a fire. Contain fire-fighting water for future disposal.

Fire-fighting equipment: Use positive-pressure self-contained breathing apparatus and full turnout gear.

6. Accidental Release Measures:

Eliminate all ignition sources. Ventilate the spill area. Avoid breathing the vapor.

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 may be 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 worked into the soil and allowed to degrade

under natural conditions (see 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 this product out of reach of children or animals. Do not use this product near heat or open flame. This product is harmful if swallowed, inhaled or absorbed through the skin. Avoid contact with eyes, skin and clothing. Remove and wash contaminated clothing before reuse. 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 heavy duty detergent only, prior to use for domestic laundry. Users should wash hands and face before eating, drinking, chewing gum, using tobacco or the toilet.

Storage: Store this product at temperatures greater than -2°C or agitate before use. Do not ship or store with food, feed, seed, or clothing.

8. Exposure Controls, Personal Protection and Exposure limits:**Exposure guidelines:**

Triclopyr BEE ester: Dow Industrial Hygiene

Guide is 2 mg/m³, as acid equivalent, skin.

Kerosene: Dow Industrial Hygiene Guide is 10 mg/m³.

Proprietary surfactants: not available

A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

Engineering controls: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

Breathing: Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use an approved air-purifying respirator.

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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. 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 clean body-covering clothing, impervious gloves and boots. In addition, persons making and/or transferring field dilutions of this product must wear an impervious apron.

Eyes: Use safety glasses

Other protection: None specified

9. Physical and Chemical Properties:

Boiling point: 150°C

Vapor pressure: 0.1 mm Hg at 37.8°C (as kerosene)

Vapor density: >1

pH: Not available

Appearance: Amber liquid

Odor: Kerosene-like

Coefficient of water/oil distribution: Not available

Specific gravity: 1.08

Evaporation rate: Not available

Solubility in water: Emulsifies

Freezing point: Not available

Odor threshold: Not available

10. Stability and Reactivity:

Stability: This product is combustible. Avoid sources of ignition if temperature is near or above flash point (64°C). This product is stable under normal storage conditions.

Incompatibility: Acid, base and oxidizing materials

Hazardous decomposition products:

Hydrogen chloride, nitrogen oxides and phosgene may result under fire conditions.

Hazardous polymerization: Will not occur

11. Toxicological Information:

Skin absorption: LD50 (rabbit) is >2000 mg/kg and >5000 mg/kg (rat).

Ingestion: LD50 (rat) is 1581 mg/kg (male) and 1338 mg/kg (female).

Inhalation: Not available

Sensitization: Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. No allergic skin reaction is expected with the field-diluted product.

Chronic effects: Repeated excessive exposure to triclopyr BEE may cause liver, kidney and blood effects.

Cancer: Triclopyr BEE did not cause cancer in long-term animal studies. In a lifetime animal dermal carcinogenicity study, an increased incidence of skin tumors was observed when kerosene was applied at doses that also produced skin irritation. The response was similar to that produced in skin by other types of chronic chemical/physical irritation. No increase in tumors was observed when non-irritating dilutions of kerosene were applied at equivalent doses, indicating that kerosene is unlikely to cause skin cancer in the absence of long-term continued skin irritation. In long-term animal studies with ethylene glycol butyl ether, small but statistically significant increases in tumors were observed in mouse but not rat. The effects are not believed to be relevant to humans. If the material is handled in accordance with proper industrial handling practices, exposures should not pose a carcinogenic risk to man.

Birth defects: For triclopyr BEE, birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Triclopyr did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

Reproductive effects: In laboratory animal studies with triclopyr BEE, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity: Results of *in-vitro* and animal mutagenicity studies with triclopyr BEE were negative.

12. Ecological Information:

Triclopyr (BEE) is considered not toxic to bees. Triclopyr (BEE) is highly toxic to fish and aquatic invertebrates on an acute basis. Triclopyr (acid) is slightly toxic to birds on an acute basis. Bio-concentration potential for triclopyr BEE is moderate. For more complete eco-toxicological

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information contact Dow AgroSciences at 800 667 3852.

Degradation and Metabolism:

In soil: Triclopyr BEE is rapidly hydrolyzed to the acid form under field conditions. As the acid, fairly rapid degradation of triclopyr then occurs by microbial activity, with an average half-life of 46 days, depending on soil and climatic conditions. The major product of degradation is 3,5,6-trichloro-2-pyridinol (which has a half-life in soil of 30 to 90 days) with smaller amounts of 3,5,6-trichloro-2-methoxy pyridine.

In plants: In plants, the half-life of triclopyr is 3 to 10 days. The main metabolite is 3,5,6-trichloro-2-methoxy pyridine.

In animals: In mammals, following oral administration, excretion is primarily via the urine as the unchanged compound. For details of minor urinary metabolites, see: C. Timchalk et al. Toxicology 1990, **62**, 71.

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: 21053

For information phone: 800 667 3852

Master reference: 004788

MSDS status: Revised Sections:

1. Product Identification
2. Composition
4. First - Aid Measures
6. Accidental Release Measures
11. Toxicological Information

Replaces MSDS dated: May 6, 2005

16. Other Information:

National Fire Code classification: Class IIIA

NFPA ratings: Health: 2; Flammability: 2; Reactivity: 1.

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.