Material Safety Data Sheet

Dow AgroSciences™

Tordon* 22K 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: Tordon 22K Herbicide
Product use: For the control of deep-rooted perennial and biennial weeds on rangeland, permanent grass pastures and non-cropland and for spot treatment on cultivated cropland in Western Canada.
Product code number: 87116
GMID numbers: 5156, 161093
Effective date: September 11, 2008

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

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

2. Composition:

Component	CAS Number	% (w/w)
Picloram (Present as potassium salt)	2545-60-0	24.4
Ethylene oxide, propylene oxide and di-sec-butylphenol polymer	69029-39-6	1.7
Balance		73.9

3. Hazard Identification:

Emergency Overview:
This product is a brown liquid with a mild, sweet odor. May cause eye and skin irritation. Toxic to aquatic organisms.

Potential Health Effects:
Eyes: May cause severe eye irritation. Corneal injury is unlikely.
Skin contact: Brief contact may cause slight skin irritation with local redness. Has caused allergic skin reactions when tested in guinea pigs. Did not cause allergic skin reactions when tested in humans.
Skin absorption: Prolonged contact is unlikely to result in the product being absorbed in harmful amounts.
Ingestion: Very low toxicity if swallowed. Small amounts that may be ingested incidental to normal handling operations are not likely to cause injury. Swallowing larger amounts may cause injury.
Inhalation: No adverse effects are anticipated from single exposure to vapor.

4. First-Aid Measures

Eyes: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist. Get medical attention if irritation persists.
Skin: Remove contaminated clothing and wash before reuse. Consult a physician. Get medical attention if irritation persists. Immediately wash skin with soap and plenty of water.
Ingestion: Do not induce vomiting. Consult a physician.
Inhalation: Consult a physician. Remove to fresh air if effects occur.

Note to physician: The decision of whether to induce vomiting or not should be made by a physician. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire-fighting Measures:

Flash point: 88°C (SCC)
Explosive limits: Not determined
Auto-ignition temperature: Not determined
Extinguishing media: To extinguish combustible residues of this product, use water fog, CO_2, dry chemical or foam.
Fire fighting procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. To extinguish combustible residues of this product use water

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fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this MSDS.

Fire and explosion hazards: This material will not burn until the water has evaporated. Residue can burn. If exposed to fire from another source and water is evaporated, exposure to high temperatures can cause toxic fumes.

Fire-fighting equipment: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: nitrogen oxides, hydrogen chloride, carbon monoxide, and carbon dioxide.

6. Accidental Release Measures:

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Small spills: Absorb with materials such as: clay, dirt, sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: contact CANUTEC at 613 996 6666 and local authorities.

Personal Precautions: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage:

Handling:

General Handling: Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Storage: Store in a dry place. Store in original container. Keep container tightly closed. Do not store near food, foodstuffs, drugs or potable water supplies.

8. Exposure Controls, Personal Protection and Exposure limits:

Exposure Guidelines:

Picloram: ACGIH TLV is 10 mg/m^3; OSHA PEL is 5 mg/m^3, respirable. ACGIH rating is A4. OSHA PEL is 5 mg/m^3, respirable.

Ethylene oxide, propylene oxide and di-sec-butylphenol polymer: Dow AgroSciences Industrial Hygiene Guide is 2 mg/m^3.

Engineering controls: Use local exhaust ventilation or other engineering controls to maintain airborne levels below the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: organic vapor cartridge with a particulate pre-filter.

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly.

Hand Protection: Use gloves chemically resistant to this material. Examples of preferred

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glove barrier materials include: neoprene, nitrile/butadiene rubber (nitrile or NBR), polyvinyl chloride (PVC or vinyl). Avoid gloves made of: polyvinyl alcohol (PVA). Notice: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Eye Protection: Use chemical worker's goggles.

9. Physical and Chemical Properties:
Boiling point: 100°C
Vapor pressure: Approximately 22 mm Hg at 20°C
Volatility: Not available
pH: 9 – 11.2
Appearance: Brown liquid
Odor: mild, sweet
Coefficient of water/oil distribution: Not available
Specific gravity: 1.16 at 20°C
Evaporation rate: Not available
Solubility in water: water solution
Freezing point: Not available
Odor threshold: Not available
Melting point: Not applicable

10. Stability and Reactivity:
Stability: (Conditions to Avoid) Thermally stable at typical use temperatures. Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.
Incompatibility: (Specific Materials to Avoid) Avoid contact with oxidizers, strong acids.
Hazardous decomposition products: Decomposition products depend upon temperatures, air supply and the presence of other materials. Decomposition products can include and are not limited to: carbon monoxide, carbon dioxide, hydrogen chloride and nitrogen oxides. Toxic gases are released during decomposition.
Hazardous polymerization: Will not occur

11. Toxicological Information:
Skin absorption: Acute dermal LD50 (rabbit) is >5000 mg/kg.
Ingestion: Acute oral LD50 (rat) is >5000 mg/kg.
Inhalation: The maximum practically attainable concentration of this product in the tests (8.11 mg/L for four hours) produced no ill effects in test animals.
Sensitization: Has caused allergic skin reactions when tested in guinea pigs, but did not cause allergic skin reactions when tested in humans.
Repeated Dose Toxicity: For similar active ingredient, picloram acid, in animals, effects have been reported on the liver.
Chronic Toxicity and Carcinogenicity: For similar active ingredient, picloram acid, did not cause cancer in laboratory animals.
Developmental Toxicity: For similar active ingredient, picloram acid, did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.
Reproductive Toxicity: For similar active ingredient, picloram acid, did not interfere with reproduction in laboratory animal studies.
Genetic Toxicity: For similar active ingredient, the preponderance of data shows picloram to be non-mutagenic in *in vitro* (test tube) and animal test systems.

12. Ecological Information:
ENVIRONMENTAL FATE

Movement & Partioning:
Based largely or completely on information for picloram.
Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Potential for mobility in soil is very high (Koc between 0 and 50).

Based largely or completely on information for ethylene oxide, propylene oxide and di-sec-butylphenol polymer.
No bioconcentration potential is expected because of the relatively high water solubility.
May foam in water.

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Picloram is considered non-toxic to bees.
Picloram (acid) is slightly toxic to aquatic organisms on an acute basis, and is practically non-toxic to birds on a dietary basis. Bio-concentration potential for picloram (acid) is low.

Degradation & Persistence:
Based largely or completely on information for picloram.
Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions. Biodegradation may occur under aerobic conditions (in the presence of oxygen). Surface photo degradation is expected with exposure to sunlight.

Based largely or completely on information for ethylene oxide, propylene oxide and di-sec-butylphenol polymer.
Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD <2.5%).

ECOTOXICOLOGY:
Picloram is considered non-toxic to bees.
Material is moderately toxic to aquatic organisms on an acute basis (LC_{50}/EC_{50} between 1 and 10 mg/L in most sensitive species tested).
Material is practically non-toxic to birds on a dietary basis (LC_{50} >5000 ppm).

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:
TDG Small container
NOT REGULATED

TDG Large container
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

15. Regulatory Information:
Pest Control Products Act registration number: 9005
For information phone: 800 667 3852
MSDS status: Revised sections: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14 & 15
Replaces MSDS dated: September 29, 2005

16. Other Information:
National Fire Code classification: Not regulated
NFPA Classification: Health: 2; Flammability: 1; 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 that 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.