

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

TORDON* 22K HERBICIDE

Effective Date: 11-Sep-08
Product Code: 87116
MSDS: 000380

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Tordon* 22K Herbicide

COMPANY IDENTIFICATION:

Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Brown liquid with a mild, sweet odor. May cause eye and skin irritation. Toxic to aquatic organisms.

EMERGENCY PHONE NUMBER: 800-992-5994

3. COMPOSITION/INFORMATION ON INGREDIENTS:

COMPONENT	CAS NUMBER	W/W%
Picloram Potassium Salt	002545-60-0	24.4
Ethylene oxide, propylene oxide and di-sec-butyl-phenol polymer	069029-39-6	1.7
Balance		73.9

4. FIRST AID:

EYES: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 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: 190°F (88C)

METHOD USED: Setaflash Closed Cup

FLAMMABLE LIMITS

LFL: Not determined

UFL: Not determined

EXTINGUISHING MEDIA: To extinguish combustible residues of this product, use water fog, CO₂, 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 reignition has passed. To extinguish combustible residues of this product use water 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 & 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.

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

TORDON* 22K HERBICIDE

Effective Date: 11-Sep-08
Product Code: 87116
MSDS: 000380

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 Dow AgroSciences at 800-992-5994 for clean-up assistance.

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:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):

Picloram: ACGIH TLV is 10 mg/M³, A4. OSHA PEL is 5 mg/M³ respirable.

Ethylene oxide, propylene oxide and di-sec-butylphenol polymer: Dow AgroSciences Industrial Hygiene Guide is 2 mg/M³.

ENGINEERING CONTROLS: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below 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.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

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 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 goggles.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

*Trademark of Dow AgroSciences LLC

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

TORDON* 22K HERBICIDE

Effective Date: 11-Sep-08
Product Code: 87116
MSDS: 000380

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: 212°F (100°C)
VAPOR PRESSURE: Approximately 22 mmHg @ 20°C
VAPOR DENSITY: 1.14
SOLUBILITY IN WATER: Water solution
pH: 9 – 11.2
SPECIFIC GRAVITY: 1.16 (20°C)
APPEARANCE: Brown liquid
ODOR: Mild, sweet

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:

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause severe eye irritation. Corneal injury is unlikely.

SKIN: Brief contact may cause slight skin irritation with local redness. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rabbits is >5000 mg/kg. Has caused allergic skin reactions when tested in guinea pigs. Did not cause allergic skin reactions when tested in humans.

INGESTION: Very low toxicity if swallowed. The oral LD₅₀ for male and female rats is >5000 mg/kg. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

INHALATION: No adverse effects are anticipated from single exposure to vapor. The LC₅₀ for rats for 4 hours is >8.11 mg/L.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: For similar active ingredient, picloram acid, in animals, effects have been reported on the following organ: liver.

CANCER INFORMATION: For similar active ingredient, picloram acid, did not cause cancer in laboratory animals.

TERATOLOGY (BIRTH DEFECTS): 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 EFFECTS: For similar active ingredient, picloram acid, did not interfere with reproduction in laboratory animal studies.

MUTAGENICITY: For similar active ingredient, the preponderance of data shows picloram to be non-mutagenic in 'in vitro' (test tube) tests and in animal test systems.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE

MOVEMENT & PARTITIONING:

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.

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 photodegradation is expected with exposure to sunlight.

*Trademark of Dow AgroSciences LLC

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

TORDON* 22K HERBICIDE

Effective Date: 11-Sep-08
Product Code: 87116
MSDS: 000380

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:

Material is moderately toxic to aquatic organisms on an acute basis (LC₅₀/EC₅₀ between 1 and 10 mg/L in most sensitive species tested).

Material is practically non-toxic to birds on a dietary basis (LC₅₀ >5000 ppm)

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

TORDON* 22K HERBICIDE

Effective Date: 11-Sep-08
Product Code: 87116
MSDS: 000380

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Category	Rating
Health	2
Flammability	1
Reactivity	1

**COMPREHENSIVE ENVIRONMENTAL RESPONSE
COMPENSATION AND LIABILITY ACT (CERCLA, or
SUPERFUND):** To the best of our knowledge, this product
contains no chemical subject to reporting under CERCLA.

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 2, 4, 5, 6, 7, 8, 9, 10,
11, 12, 14 & 15
Reference: DR-0119-8636
Replaces MSDS Dated: 29-Apr-08
Document Code: D03-111-007
Replaces Document Code: D03-111-006

The Information Herein Is Given In Good Faith, But No
Warranty, Express or Implied, Is Made. Consult Dow
AgroSciences for Further Information.

*Trademark of Dow AgroSciences LLC