

MATERIAL SAFETY DATA SHEET



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

TORDON* 101M MIXTURE HERBICIDE

Effective Date: 19-Sept-05
Product Code: 87247
MSDS: 000381

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Tordon* 101M Mixture Herbicide

COMPANY IDENTIFICATION:

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

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Amber liquid with rubbing alcohol-like odor. May cause eye and skin irritation even a burn or allergic reaction. Toxic to aquatic organisms.

EMERGENCY PHONE NUMBER: 800-992-5994

3. COMPOSITION/INFORMATION ON INGREDIENTS:

Picloram TIPA	CAS# 006753-47-5	10.2%
2,4-Dichlorophenoxyacetic acid, TIPA	CAS# 018584-79-7	39.6%
Balance, Total, Including:		50.2%
Isopropanol	CAS# 000067-63-0	
Triisopropanolamine	CAS# 000122-20-3	

4. FIRST AID:

EYES: Hold eyes 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 eyes. Call a poison control center or doctor for treatment advice.

SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison Control center or doctor for treatment advice.

INGESTION: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.

INHALATION: Move to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: If burn is present, treat as any thermal burn after decontamination. 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: 114.8°F (46°C)

METHOD USED: Setaflash

FLAMMABLE LIMITS

LFL: Not determined

UFL: Not determined

EXTINGUISHING MEDIA: Water fog, alcohol foam, CO₂, dry chemical.

FIRE & EXPLOSION HAZARDS: Toxic, irritating vapors may be formed if product is involved in a fire. Contain water from fire fighting to prevent entry to surface and ground water.

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Absorb small spills with inert material such as clay, Zorbball, or kitty litter. Dike the area and report large spills to Dow AgroSciences at 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Harmful if swallowed, inhaled, or absorbed through skin. Causes eye irritation. May cause allergic skin reactions in some individuals. Avoid contact with eyes, skin, and clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Store in original container.

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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):

2,4-D triisopropanolamine salt: none established; ACGIH TLV and OSHA PEL are 10 mg/M³ for the acid.
Picloram triisopropanolamine salt: none established. For the acid, ACGIH TLV is 10 mg/M³ and OSHA PEL is 10 mg/M³ total, 5 mg/M³ respirable.

Triisopropanolamine: Dow AgroSciences Industrial Hygiene Guide is 10 mg/M³.

Isopropyl alcohol (isopropanol): ACGIH TLV is 200 ppm TWA, 400 ppm STEL, A4. OSHA PEL is 400 ppm.

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

Contains a proprietary ingredient for which the Dow AgroSciences Industrial Hygiene Guide is 2 mg/M³.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guideline.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guidelines.

SKIN PROTECTION: When prolonged or frequently repeated contact could occur, use chemically protective clothing resistant to this material. Selection of specific items such as faceshield, boots, gloves, apron, or full-body suit will depend on operation.

EYE/FACE PROTECTION: Use chemical goggles.

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: >180°F (82°C)

VAPOR PRESSURE: Approximately 32 mmHg @ 20°C

DENSITY: 1.1492 g/mL (0.01841 lb/ft³) @ 20°C

SOLUBILITY IN WATER: Miscible

SPECIFIC GRAVITY: 1.143 68/68°F, 20°C

APPEARANCE: Amber liquid

ODOR: Rubbing alcohol

VISCOSITY: 37.3 cP @ 25.3°C

pH: 6.44 (10% sol in deionized water) @ 24°C

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Combustible. Keep away from heat, open flames and sparks.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)

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

HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen chloride and nitrogen oxides may be formed if product is involved in fire.

HAZARDOUS POLYMERIZATION: Not known to 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 moderate eye irritation, which may be slow to heal. May cause slight corneal injury.

SKIN: Prolonged or repeated exposure may cause skin irritation, even a burn. Skin contact may cause allergic skin reaction. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rabbits is >2000 mg/kg.

INGESTION: Low toxicity if swallowed. The LD₅₀ for rats is 2598 mg/kg. 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.

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SYSTEMIC (OTHER TARGET ORGAN) 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 INFORMATION: Various animal cancer tests have shown no reliably 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.

TERATOLOGY (BIRTH DEFECTS): 2,4-Dichlorophenoxyacetic acid, triisopropanolamine salt has caused birth defects in laboratory animals only at doses toxic to the mother (severe maternal toxicity). Picloram, triisopropanolamine salt did not cause birth defects or any other fetal effects in laboratory 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-Dichlorophenoxyacetic acid have caused decreased weight and survival in offspring in a rat reproduction study.

MUTAGENICITY: For 2,4-D acid, in-vitro and animal genetic toxicity 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:

ENVIRONMENTAL DATA:

MOVEMENT & PARTITIONING:

Based 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 on information for triisopropanolamine.

No bioconcentration is expected because of the relatively high water solubility.

DEGRADATION & PERSISTENCE:

Based on information for picloram.

The atmospheric half-life is 12.21 days.

The photolysis half-life in water is 2.3-9.58 days.

Under aerobic soil conditions the half-life is 167-513 days.

Based on information for triisopropanolamine.

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD is > 40%).

Under aerobic aquatic conditions the half-life is 14.3 days.

Under aerobic soil conditions the half-life is 2 days.

ECOTOXICOLOGY:

Material is slightly toxic to aquatic organisms on an acute basis (LC₅₀ between 10 and 100 mg/L in most sensitive species).

Acute LC₅₀ for tidewater silverside (*Menidia beryllina*) is 57.2 mg/L.

Acute EC₅₀ for shell deposition inhibition in eastern oyster (*Crassostrea virginica*) is 10-18 mg/L.

Acute LC₅₀ for pink shrimp (*Penaeus duorarum*) is 306 mg/L.

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

Dietary LC₅₀ for bobwhite (*Colinus virginianus*) is >10000 ppm.

Dietary LC₅₀ for mallard (*Anas platyrhynchos*) is >10000 ppm.

Growth inhibition EC₅₀ in duckweed (*Lemna sp*) is 163 mg/L.

Growth inhibition EC₅₀ for blue-green alga (*Anabaena flos-aquae*) is 740 mg/L.

Growth inhibition EC₅₀ for marine diatom (*Skeletonema costatum*) is 22 mg/L.

Growth inhibition EC₅₀ for diatom (*Navicula sp*) is 400 mg/L.

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.

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14. TRANSPORT INFORMATION:

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

For containers less than 26 gallons:

LAND: NOT REGULATED

AIR: FLAMMABLE LIQUIDS, N.O.S. (CONTAINS ISOPROPANOL)/3/UN1993/PGIII

MARINE: FLAMMABLE LIQUIDS, N.O.S. CONTAINS ISOPROPANOL)/3/UN1993/PGIII/MARINE POLLUTANT (2,4-D SALT)

For containers greater than or equal to 26 gallons:

LAND: FLAMMABLE LIQUIDS, N.O.S. (CONTAINS ISOPROPANOL)/3/UN1993/ PGIII/RQ (2,4-D SALT)

MARINE: FLAMMABLE LIQUIDS, N.O.S. (CONTAINS ISOPROPANOL)/3/UN1993/PGIII/RQ (2,4-D SALT)/MARINE POLLUTANT

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: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION</u>
Isopropyl Alcohol	000067-63-0	5%

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
A fire 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: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>LIST</u>
Isopropyl Alcohol	000067-63-0	NJ2, NJ3, PA1,PA3
2-Propanol, 1,1',1"-Nitrilotris	000122-20-3	PA1

NJ1=New Jersey Special Health Hazard Substance (present at > or = to 0.1%).
NJ2=New Jersey Environmental Hazardous Substance (present at > or = to 1.0%).
NJ3=New Jersey Workplace Hazardous Substance (present at > or = to 1.0%).
PA1=Pennsylvania Hazardous Substance (present at > or = to 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at > or = to 1.0%).

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

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

<u>Category</u>	<u>Rating</u>
Health	2
Flammability	2
Reactivity	0

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**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, 3, & 14
Reference: DR-0100-2400
Replaces MSDS dated: 4/15/04
Document Code: D03-110-008
Replaces Document Code: D03-110-007

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