



IVORYCHEM PTE LIMITED
15 Beach Road #02-09, Beach Centre
Singapore 189677
Tel: +65 – 6337 7765
Fax: +65 – 6337 7730
Email: contact@ivorychem.com
Web: www.ivorychem.com
Co. Registration No. 200405572W
GST Registration No. 200405572W

MATERIAL SAFETY DATA SHEET

RANGER HERBICIDE

Version: Global
Date Approved:
Revision No: 1

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: RANGER HERBICIDE

ACTIVE INGREDIENT: Picloram 6.4% + 2,4 D 24% and Picloram 1.16.75% + 2,4 D Amine Salt 34.64%.

CHEMICAL FAMILY: NA

MOLECULAR FORMULA: NA

MANUFACTURER

IVORYCHEM PTE LTD
15 Beach Road, #02-09
Beach Centre
Singapore 189677
Tel: +65 63377765
Fax: +65 63377730

Emergency Telephone Numbers:

Emergency Phone contact@ivorychem.com (Please refer local label for Emergency Numbers in your region).

COMPOSITION / INFORMATION ON INGREDIENTS

| Chemical Name | CAS # | Wt.% | PEL/TLV | EC No. | EC Class |
|--|-------------|--------|---------|--------|----------|
| Picloram TIPA | 006753-47-5 | 65.36% | None | None | None |
| 2,4 – Dichlorophenoxyacetic acid, TIPA | 018584-79-7 | 34.64% | None | None | None |

HAZARDS IDENTIFICATION

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.

FIRST AID MEASURES

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.



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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.

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.

ACCIDENTAL RELEASE MEASURES

ACTION TO TAKE FOR SPILLS/LEAKS: Absorb small spills with inert material such as clay, Zorball, or kitty litter. Dike the area.

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.

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 10mg/M³ for the acid.

Picloram triisopropanolamine salt: none established. For the acid, ACGIH TLV is 10mg/M³ and OSHA PEL is 10mg/M³ total, 5mg/M³ respirable.

ENGINEERING CONTROLS:

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

RECOMMENDATIONS FOR MANUFACTURING COMMERCIAL BLENDING AND PACKING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure



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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 fully-body suit will depend on operation.

EYE/FACE PROTECTION: Use chemical goggles.

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

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Amber liquid

ODOR: Rubbing alcohol

BOILING POINT: > 180 °F (82°C)

SPECIFIC GRAVITY: 1.143 68/68°F, 20°C

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

SOLUBILITY IN H2O: Miscible

VAPOR PRESSURE: Approximately 32 mmHg @ (20°C)

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

VISCOSITY: 37.3 cP @25.3°C

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.

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 > 2000mg/kg.

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

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.

Company Registration No: 200405572W

Incorporated in the Republic of Singapore Under the Companies Act (Cap 50)



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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 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 off-spring 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.

ECOLOGICAL INFORMATION

ENVIRONMENT 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.

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 100mg/L in most sensitive species.) Acute LC₅₀ for tidewater silverside (*Menidia berylina*) is 57.2mg/L. Acute EC₅₀ for shell deposition inhibition in eastern oyster (*Crassostrea virginica*) is 10-18mg/L. Acute LC₅₀ for pink shrimp (*Penaeus duorarum*) is 306mg/L. Material is practically non-toxic to birds on a dietary basis (LC₅₀ is > 5000ppm). Dietary LC₅₀ for bobwhite (*Colinus virginianus*) is > 10000ppm. Dietary LC₅₀ for mallard (*Anas platyrhynchos*) is > 10000ppm. Growth inhibition EC₅₀ in duckweed (*Lemna* sp) is 163mg/L. Growth inhibition EC₅₀ in blue-green alga (*Anabaena flosaquae*) is 740mg/L. Growth inhibition EC₅₀ in marine diatom (*Skeletonema costatum*) is 22mg/L. Growth inhibition EC₅₀ in diatom (*Navicula* sp) is 400mg/L.

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 applied 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 regulation. If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.



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TRANSPORT INFORMATION

FOR CONTAINERS LESS THAN 26 GALLONS:

Land: not regulated

Air: flammable liquid, N.O.S. Contains isopropanol/3/UN1993/PGIII

Marine: flammable liquid, N.O.S. Contains isopropanol/3/UN1993/PGIII pollutant (2,4-D salt)

For containers greater than or equal to 26 gallons:

Land: flammable liquid, N.O.S. Contains isopropanol/3/UN1993/PGIII/RQ (2,4-D salt)

Marine: flammable liquid, N.O.S. Contains isopropanol/3/UN1993/PGIII/ RQ (2,4-D salt)/marine pollutant

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.

OTHER INFORMATION

Section(s) Revised: New Format