

UNIVERSAL 2,4-D AMINE SOLUBLE MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE

Trade name: 2,4-D AMINE SOLUBLE
 Herbicide
UN no.: 2588
Supplier: Universal Crop Protection (Pty) Ltd.
Co. Reg. No.: 1983/008184/07
 PO Box 801,
 Kempton Park, 1620, South Africa
Telephone: (011) 396 2233
Fax: (011) 396 4666
Website: www.villacrop.co.za

Emergency telephone numbers:
24 Hr Transport / Spill emergency no:

Bateleur: +27 86 199 9071
 (Client: Villa Crop Protection)

Poisoning:
 Griffon Poison Information Centre +27 82 446 8946
 Western Cape Poisons +27 861 555 777
 Tygerberg Hospital +27 21 931 6129

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name: Dimethylamine salt of 2,4-dichlorophenoxyacetic (2,4-dichlorophenoxy) acetic acid (IUPAC)

Common Name: DMA Salt of 2,4-D

CAS no.: 2008-39-1

Chemical Family: Phenoxy

Chemical Formula: C₁₀H₁₃Cl₂NO₃ (Mol. wt.: 266.1)

NIOSH/RTECS no.: AG 6825000

Use: Selective hormone type herbicide for post emergence control.

Formulation: 2,4-D (as dimethyl amine salt):
 800 g acid equivalent/kg
 Water Dispersible Granule

Active Ingredient: DMA Salt of 2,4-D: 97%

EEC number: 202-361-1

EEC classification: Xi

Risk phrases: R 22; R 41

3. HAZARDS IDENTIFICATION

Toxicity class:
 WHO (a.i.) II; EPA (formulation) II

Main Hazard:
 Irritant.

Flammability:
 Not flammable

Biological hazards:

Eye contact:

Direct and prolonged eye exposure to the concentrated product may cause corneal opacity, irreversible eye damage.

Skin contact:

Considered a minimal skin irritant. Not considered as a dermal sensitizer. Harmful if absorbed through skin.

Ingestion:

Toxic if large amounts are swallowed.

Inhalation:

Moderately irritating to respiratory tract.

Carcinogenicity: See section 11.

Mutagenicity: See section 11.

Neurotoxicity: See section 11.

Reproductive/Teratogenicity: See section 11.

4. FIRST AID MEASURES AND PRECAUTIONS

The chlorophenoxy compounds are absorbed across the gut wall, lung and skin. They are not significantly fat storable. The average residence half-life of 2,4-D in the human is about 18 hours. The mean adult lethal dose of 2,4-D is estimated to be 28 grams (HSDB, 1992).

Inhalation:

Vapour inhalation is unlikely; inhalation of dust or droplets may cause irritation of the respiratory tract. In case of inhalation, remove source of contamination, or leave contaminated area and move to fresh air as rapidly as possible. Keep victim from contact for at least 2 to 3 days.

Skin contact:

Harmful if absorbed through skin. May cause muscle weakness, nausea, vomiting, abdominal pain, fall in blood pressure or myotonia (prolonged muscular spasm) under extreme exposure conditions. If irritation occurs, remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Gently wipe off excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. Dermal absorption may lead to systemic poisoning. **Seek medical advice immediately if irritation persists.**

Eye contact:

Direct and prolonged eye exposure to the concentrated product may cause corneal opacity, irreversible eye damage. Immediately flush eyes with gently flowing lukewarm water or saline solution for 15 minutes, holding the eyelids open. Seek medical attention.

Ingestion:

Unlikely to occur under occupational conditions. May cause muscle weakness, nausea, vomiting, abdominal pain, fall in blood pressure or myotonia (prolonged muscular spasm) under extreme exposure conditions. In case of deliberate ingestion, have victim rinse mouth thoroughly with water. Do not induce vomiting. Give plenty of water to drink. Seek medical advice immediately. If breathing has stopped, apply artificial respiration.

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Advice to the physician

If substantial amounts have been ingested, spontaneous emesis may occur. If vigorous emesis has not occurred, measures should be taken to empty the stomach and limit gastrointestinal absorption by gastric intubation, aspiration and lavage, following placement of a cuffed endotracheal tube. Repeated administration of charcoal at half or more the original dosage every 2 to 4 hours may be beneficial. If gastric aspiration and lavage is not performed due to delay in treatment, and if the patient is fully alert, **administer charcoal and laxative orally.**

Administer **intravenous fluids** to accelerate excretion of the chlorophenoxy compound, and to limit concentration of the toxicant in the kidney. A urine flow of 4 to 6 ml/minute is desirable. Intravenous saline/dextrose has sufficed to rescue comatose patients who drank **2,4-D** and mecoprop several hours before hospital admission.

- **CAUTION:** Monitor urine protein and cells, BUN, serum creatinine, serum electrolytes, and fluid intake/output carefully to insure that renal function remains unimpaired and that fluid overload does not occur.
- Forced **alkaline diuresis** has been used successfully in management of suicidal ingestions of chlorophenoxy compounds where myoglobinuria is present. Alkalinizing the urine by including sodium bicarbonate (44-88 mEq per liter) in the intravenous solution apparently accelerates excretion of **2,4-D** dramatically and mecoprop excretion substantially. Urine pH should be maintained in the 7.6 to 8.8 range. Include potassium chloride as needed to offset increased potassium losses: add 20 to 40 mEq of potassium chloride to each litre of intravenous solution. Monitor serum electrolytes carefully. There may possibly be some hazard to the kidneys when urine concentrations of toxicant are very high, so the integrity of renal function and fluid balance should be monitored carefully as the chlorophenoxy compound is excreted.

SUPPORTIVE CARE:

Be prepared to combat respiratory depression, hypotension, and metabolic acidosis. Maintain adequate urine flow with intravenous fluids if victim is dehydrated. Monitor patient closely for cardiac arrhythmias, hyperthermia, and seizures.

5. FIRE FIGHTING MEASURES

Extinguishing media:

Small fires: Dry chemical, CO₂, water spray or regular foam.

Large fires: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk. Dike fire control water for later disposal; do not scatter the material. Do not use straight streams.

Special hazards:

The material does not burn or burns with difficulty. It is not explosive. Should the chemical be involved in a general fire, ensure chemical protective clothing is used. It can produce toxic fumes of carbon monoxide, phosgene and hydrogen chloride. See point 6.

Protective clothing:

Wear suitable personal protective equipment including approved respiratory protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Chemical protective clothing usage is advised, i.e. wear neoprene gloves, cotton overalls and safety goggles.

Environmental precautions:

Do not allow spill to contaminate water supplies. Dike far ahead of liquid spills for later disposal.

Large spills:

Keep spectators away. Isolate hazard area and deny entry. Stay upwind, out of low-lying areas, and ventilate closed spaces before entering. Cover spill with absorbent material. Sweep into disposal container. Wash area with detergent and water and follow with clean water rinse. Do not allow spill to contaminate water supplies. Prevent entry into waterways, sewers, basements or confined areas. **DO NOT GET WATER INSIDE CONTAINERS.** Dike far ahead of liquid spills for later disposal.

Small spills:

Take up with sand or other non-combustible absorbent material and place into containers for later disposal. Notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Shut off all ignition sources.

7. HANDLING AND STORAGE REQUIREMENTS

Handling:

Relatively safe to handle. Handle all crop protection chemicals with care and caution. Do not eat, drink, smoke or go to the toilet with pesticide-contaminated hands. Always wash hands thoroughly after handling pesticides or waste.

Storage:

Do not store near sources of sparks, flame or heat. Store in a dry, cool, well-ventilated warehouse in well-labelled containers. Not to be stored next to foodstuffs, seeds, fertilizers, insecticides, fungicides and water supplies. Keep away from children and animals. Local regulations should be complied with.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering control measures:

It is essential to provide adequate ventilation. The measures appropriate for a particular work site depend on

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how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations. If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

Respirator:

An approved respirator suitable for protection from dusts and mists of pesticides is adequate. Limitations of respirator use specified by the approved agency and the manufacturer must be observed.

Clothing:

Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

Gloves:

Employee must wear appropriate synthetic protective gloves to prevent contact with this substance.

Eye protection:

The use of safety goggles is recommended.

Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance; the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Dark brown granules.

Odour: Phenolic

Flammability: Not flammable.

Explosive properties: Not explosive under use conditions

Flash point: Not applicable

Oxidising properties: No oxidising properties under use conditions.

pH: 4.5 to 5.5

Specific Gravity: 0.54458 kg/l

Stability: Stable for at least 2 years under normal warehouse conditions

Octanol/water Partition Coefficient: $P_{ow} < 10$ @ pH 5.0, 7.0 and 9.0

Solubility in water (25°C): 100%

10. STABILITY AND REACTIVITY

Stability:

2,4-D is stable at elevated temperatures and at low temperatures. Do not store near other agricultural remedies, food, feed, fertilisers or seed. 2,4-D is stable in aqueous solutions.

Hazardous decomposition products:

Hydrogen chloride, carbon monoxide, carbon dioxide.

Incompatibility:

Strong oxidizers or acids.

11. TOXICOLOGICAL INFORMATION

Acute oral LD₅₀: 614 mg/kg (male rats); 404 mg/kg (female rats)

Acute dermal LD₅₀: >2 000 mg/kg (male rabbits); 1414 mg/kg (female rabbits).

Acute inhalation LC₅₀: Not applicable

Acute skin irritation: Mild irritation (rabbits)

Acute eye irritation: Causes severe irreversible eye irritation and corrosion

Dermal sensitisation: Not considered being a sensitizer (guinea pigs)

Carcinogenicity: Not proved.

Teratogenicity: Not proved.

Mutagenicity: No mutagenic changes have been observed under experimental conditions.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGY:

Daphnia magna: The 48-hour EC₅₀ is >100 mg/l

This product is toxic to aquatic invertebrates and not toxic to bees.

ENVIRONMENTAL FATE:

2,4-D has a relatively short half-life (6 to 9 days in soil, 6 to 7 days in grass and is readily degraded into non-toxicological substances by microbes and aquatic micro-organisms. 2,4-D is soluble in water and, therefore, does not bio-accumulate in mammals or in other organisms.

13. DISPOSAL CONSIDERATION

Controlled incineration:

2,4-D is stable under normal temperatures and pressures. Contact with strong oxidizers may cause fire or explosion. The free acid is stable at its melting point; the **Dimethylamine salt** decomposes at its melting point. Incineration at high temperatures (1000 °C) with sufficient residence time leads to complete detoxification and destruction and is the most environmentally acceptable method for disposal. Incineration at low temperatures could lead to the formation of chlorinated dibenzo-p-dioxins. The non-persistence and detoxification of 2,4-D in soil indicates that burial in non-crop areas, away from water supplies, would be an acceptable method for the disposal of small quantities of 2,4-D. Discharge in surface water and sewers should be avoided.

Package product wastes:

Combustible containers should be disposed of in pesticide incinerators or in specified landfill sites. Containers are not

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to be reused and should be punctured and transported to a facility for recycling or disposal in approved landfill site. Comply with any local legislation applying to disposal.

believed to be correct. This information applies to the PRODUCT AS SUCH. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear.

It is the responsibility of persons in receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produces formulations(s) containing this product, it is the recipient's sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.

14. TRANSPORT INFORMATION

UN NUMBER: 2588
Road Transport ADR/IRD:
 Class: 9
 Packing group: III
 Shipping name: Environmentally hazardous substance, liquid, N.O.S. (herbicide - **2,4-D**)

Air Transport ICAO/IATA:
 Class: 9
 Packing group: III
 Shipping name: Environmentally hazardous substance, liquid, N.O.S. (herbicide - **2,4-D**)

Maritime Transport IMDG/IMO:
 Class: 9
 Packing group: III
 Shipping name: Environmentally hazardous substance, liquid, N.O.S. (herbicide - **2,4-D**)

18. REFERENCES

- *The Pesticide Manual*; Tenth Edition; Editor Clive Tomlin; Crop Protection Publications, 1994.
- *Pestline*; Material Safety Data Sheets for Pesticides and Related Chemicals; Volume II; Occupational Health Services Inc., 1991.
- Industry Task Force II on **2,4-D** Research Data Web site.
- Florida Agricultural Information Retrieval System: University of Florida.

15. REGULATORY INFORMATION

Symbol: X_i
Risk phrases:
 R22 Harmful if swallowed.
 R 41 Risk of serious damage to eyes.
Safety phrases:
 S1/2 Keep locked up and out of reach of children.
 S36/37 Wear suitable protective clothing and gloves.
 S45 In case of accident or if you feel unwell, seek medical advice immediately.

Indication of danger: Irritant.
National legislation: In accordance with 91/155/EEC Directive and with French standard T 01-102 and the South African Occupational Health and Safety Act, 1993 (act. No. 85 of 1993).

END OF DOCUMENT

Compiled: November 1998
Reviewed: August 2018
Revision no: (2)
Next revision: August 2021

For detailed information on revisions, contact the Registration holder.

16. PACKING AND LABELLING

Packed in 1 kg water soluble sachets and packed in 5, 8, 10, 15 and 20 kg 3 ply paper boxes and labelled according to South African regulations and guidelines.

17. OTHER INFORMATION

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and