

1. PRODUCT AND COMPANY IDENTIFICATION

SUPPLIER: DOW AGROSCIENCES (PTY) LTD
 Private Bag X160,
 Bryanston.
 2021

EMERGENCY TELEPHONE NUMBERS
SPILLAGES:

Emergency telephone (+27) 32 5330716 or
 (+27) 82 887 8079
Fax (+27) 32 5336134

POISONINGS:

National Poison Centre 021-9386084 (office hours).
 021-9316129 (after hours).

UOFS Pharmacology/Toxicology information centre:
 0824910160

Trade name TURFWEEDER 457,5 SL
 HERBICIDE.

Use A selective herbicide for the control of some broadleaf weeds on lawns, turf, golf courses, bowling greens and sporting fields.

2. COMPOSITION / INFORMATION ON INGREDIENTS

Active ingredients: A mixture of
 2,4-D DMA salt/Dicamba DMA salt/MCPA DMA salt.

Chemical Names: 2,4-D-dimethylammonium salt/dicamba-dimethylammonium salt /MCPA-dimethylammonium salt.
 (IUPAC)

CAS No's. 2008-39-1/2300-66-5/94-74-6

Chemical Families: Aryloxyalkanoic acid/benzoic acid

Chemical Formula: C₁₀H₁₃C_l₂NO₃ (Mol. Wt: 266.1)
 C₁₀H₁₃C_l₂NO₃ (Mol. wt.: 266.1)
 C₁₁H₁₆C_lNO₃ (Mol. Wt.245.7)

NIOSH/RTECS no -

Hazardous components: 2,4-D 180 g/l acid equivalent as DMA salt / Dicamba 120 g/l acid equivalent as DMA salt /MCPA 157,5 g/l acid equivalent as DMA salt.

EEC classification Xn, Xi

UN no.: 3082

R phrases R 20/21/22; R 41, R52/53

3. HAZARD IDENTIFICATION

Toxicity class: 2,4-D: WHO (a.i.) II; EPA (formulation) II
 Other components: III

ADI (JMPR): **2,4-D:** 0.3 mg/kg b.w.
NOEL: 5 mg/kg b.w. for rats and mice (2 y)
Dicamba: 160 mg/kg b.w. daily
MCPA: 1.33 mg/Kg b.w. daily

Main hazard Extremely irritating and corrosive to eyes.

Biological hazards:

Eye contact:
 Extremely irritating to eyes.

Skin contact:
 Can be slightly irritating to skin.

Ingestion:
 Toxic if large amounts are swallowed.

Inhalation:
 Toxic by inhalation. Moderately irritating to respiratory tract.

4. FIRST AID MEASURES
Inhalation:

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

Skin contact:

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:

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. 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.

Advice to the physician

Treatment is symptomatic.

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 2-4 hours may be beneficial.

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

This is a non flammable liquid.

Extinguishing media:

Small fires: Carbon dioxide, dry chemical powders, regular foam and water spray.

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. It is not explosive. Should the chemical be involved in a general fire, ensure chemical protective clothing are used. It can produce toxic fumes of hydrogen chloride, which forms mists of hydrochloric acid with moisture and phosgene; and carbon monoxide.

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. Dike far ahead of liquid spills for later disposal.

Small spills:

Take up with sand or other noncombustible absorbent material and place into containers for later disposal.

Spill/Leak Procedures:

Notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Shut off all ignition sources.

7. HANDLING AND STORAGE

Handling:

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 heat. Store in a dry, cool, well-ventilated warehouse in well-labeled containers. Not to be stored next to foodstuffs and water supplies. Keep away from children and animals. Local regulations should be complied with.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Occupational exposure limits: Not established for Turfweeder

For 2,4-D:

| | |
|---------------------|-------------------------------|
| IARC | 15 |
| IDLH | +100 mg/m ³ TWA |
| OSHA | Not listed |
| NIOSH values | REL: 10 mg/m ³ TWA |

Engineering control measures:

It is essential to provide adequate ventilation. The measures appropriate for a particular worksite depend on 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 approving 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:

A light brown to amber solution.

Odour:

Mild amine odour.

Flammability:

Not flammable.

Explosive properties:

Not explosive.

Flash point:

Not applicable; water based formulation.

Oxidising properties:

No oxidising properties.

pH:

10 - 11

Relative density:

1.084 g/mℓ(±0.01) at 20 °C.

Stability:

Stable in aqueous solutions.

10. STABILITY AND REACTIVITY

Storage stability:

Turfweeder is stable at elevated temperatures and at low temperatures. Do not store near crop protection chemicals, feed, fertilizers or seed.

Incompatibility:

Oxidizing agents.

Hazardous decomposition products:

Hydrogen chloride, carbon monoxide, carbon dioxide.

11. TOXICOLOGICAL INFORMATION

Acute oral LD₅₀ :

2,4-D amine 480 : 600.5 mg/kg in rats.

Dicamba tech: 1707 mg/Kg
MCPA 400 SL : > 2 000 mg/kg in rats.
Acute dermal LD₅₀:
2,4-D amine 480: > 4 347.73 mg/kg in male rats.
Dicamba Tech: >2000mg/Kg(Rabbits).
MCPA 400SL: 2 081 mg/kg (Rabbits).
Acute inhalation LC₅₀(4h) :
2,4-Dtech: > 1.79mg/l in Rats
Dicamba tech: > 9.6mg/l in Rats
MCPA 400SL: > 1.19 g/m³ nominal in rats.

Acute skin irritation:

May irritate the skin

Acute eye irritation:

Severe eye and surrounding tissue damage.

Dermal sensitisation:

Probability of sensitization is very low.

Carcinogenicity:

No information available..Exposure to 2,4-D indicates that mutagenic effects are unlikely.

Teratogenicity:

Dicamba was not oncogenic in either the rat or mouse in long term feeding studies.

Mutagenicity:

Non-mutagenic.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGY :

2,4-D 480 SL:

Daphnia: Practically non-toxic.

The 48 hour LC₅₀ is > 130,3 mg/L (*Daphnia magna*)

Fish: Practically non-toxic.

96-hour LC₅₀ >114 mg/L (Rainbow trout).

DicambaTech:

LC₅₀(96h): Rainbow trout and Blue gill sunfish : 135mg/l

Daphnia LC₅₀(48h): 110mg/L

MCPA 400SL:

Fish:

LC₅₀ : > 100 mg/l (96 h) (*Brachydanio rerio*)

Daphnia magna:

48-h EC₅₀ = 80.6 mg/l

Birds: Practically non-toxic.

2,4-D amine 600: LD₅₀ : 625 to 2 000 mg/kg (bobwhite quail.)

Dicamba: LD₅₀ Mallard Duck : 2000mg/Kg

MCPA 400 SL: LD₅₀ > 2000 mg/kg b.w. (Japanese quail)

Freshwater algae:

2,4-D 480SL: EC₅₀ > 100 mg/L (72 and 120 hour exposures based on growth rate and biomass.)

Bees:

2,4-D 480 SL: Oral: 72-hour LD₅₀ >100 µg formulation/bee

NOEC: 25 µg formulation/bee.

Contact : 72-hour LD₅₀ >200 µg formulation/bee

NOEC: 200 µg formulation/bee.

Dicamba: Non toxic.LD50: > 100µ/Bee

Soil microorganisms:

Low risk to soil microorganisms.

Other (2,4-d Amine480 SL):

Parasitic Wasp: *Aphidius rhopalosiphi* : Harmless.

Spider *Pardosa sp.* : Harmless.

Earthworms:

2,4-D amine 480 SL: 14 day LC₅₀ : 682.5 mg/kg soil dry weight.

NOEC : 250 mg /kg soil dry weight.

MCPA 400 SL:

Earthworms:

LC₅₀ > maximum tested concentration 1000 mg/kg.

FATE AND BEHAVIOUR IN SOIL :

Rate of degradation:

2,4-D residues peak approximately 14 days after application, and then degrade rapidly 14 to 42 days after application. At an application rate of 5.6 kg/ha., less than 5% remains after 70 days. Small amounts remain after 385 days when applied at rates 11.2 and 22.4 kg/ha. Microbes degrade Dicamba in soil. DT₅₀ <14d Koc = 2 under conditions amenable to rapid degradation. MCPA DT₅₀ <7d after initial lag phase. Duration of residual activity of MCPA is c. 3-4 months after application of 3Kg /ha.

Adsorption/desorption :

As the amount of 2,4-D added to the soil increases, so the percentage of the total 2,4-D adsorbed to the soil decreases. Higher amounts of substance have lower probabilities of being sorbed.

Dicamba is not absorbed by most soils. It is highly mobile in most soils.

FATE AND BEHAVIOUR IN WATER :

Rate and route of degradation :

2,4-D:

DT₅₀ varies between 10 and 15 days for 0.5 µg/ml and 20 and 25 days for 7.0 µg/ml.

FATE AND BEHAVIOUR IN AIR :

Rate and route of degradation :

2,4-D is subject to photo-oxidation by reaction with hydroxyl radicals, and has an estimated half-life of 1 day. Volatilisation is negligible. May degrade following prolonged exposure to sunlight.

German wgk:

Not listed.

Controlled incineration:

The product is stable under normal temperatures and pressures. Contact with strong oxidisers may cause fire or explosion. The dimethyl salts 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 this product 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 Turfweeder discharge in surface water and sewers should be avoided.

Package product wastes:

Non-combustible containers must be triple rinsed using the normal diluent at a volume equal to approximately 10% of the drum's capacity. Add the rinsing mixture to the spray mixture or use the recommended disposal methods. Containers must be punctured and disposed of in specified landfill areas.

14. TRANSPORT INFORMATION

UN NUMBER 3082
ADR/RID
 Shipping name: Environmentally hazardous substance, liquid, no.s. (2,4-D amine, Dicamba, MCPA)
 Class: 9
 Classification code: M6
 Packaging group: III
 Label: 9
 Hazard ID NR: 90

IMDG/IMO
 Shipping name: Environmentally hazardous substance, liquid, no.s. (2,4-D amine, Dicamba, MCPA)
 Class: 9
 Packaging group: III
 Label: 9 Marine pollutant

AIR/IATA
 Shipping name: Environmentally hazardous substance, liquid, no.s. (2,4-D amine, Dicamba, MCPA)
 Class: 9
 Packaging group: III
 Label: 9
 Tremcard No: 90GM6-III

13. DISPOSAL CONSIDERATIONS

15. REGULATORY INFORMATION

Symbol: Xn-Harmful; Xi- irritant
Risk phrases:
R 22 Harmful if swallowed.
R 41 Risk of serious damage to eyes.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases:

S2 Keep 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.
S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

National legislation: In accordance with the South African National Road Traffic Act, 1996 (Act 93 of 1996), the Fire Brigade Act, 1987 (Act 99 of 1987) and the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

16. OTHER INFORMATION

Prepared by: Danie Fourie

REFERENCES

- Applicable to own physical and chemical, toxicity and ecotoxicity research studies.
- *The Pesticide Manual*; Thirteenth Edition; Editor Clive Tomlin; Crop Protection Publications, 2003.
- *Pestline*; Material Safety Data Sheets for Pesticides and
- *Dangerous Goods Regulations*, 47th edition, 1 January 2005.
- *IMDG code, Volume 2, 2005 Edition*
- SABS 0265:1999
- ECB-ESIS (European chemical Substances Identification System).

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 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 recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.

END OF MSDS.