

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
082 887 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 MOLOPO 500 SC
HERBICIDE
Use Broad Spectrum Herbicide. Total control of herbaceous and woody plants on non-crop areas. Control of woody plants in grassland and pastures. Control of grass and broad-leaved weeds in sugar cane.

2. COMPOSITION / INFORMATION ON INGREDIENTS

Active ingredient Tebuthiuron 500 g/l with red dye.
Common name Tebuthiuron
Chemical Name 1-(5-(t-butyl)-1,3,4-thiadiazol-2-yl)-1, 3-dimethylurea
CAS No. 34014-18-1 (Mol weight: 228,35)
Chemical Family urea
Chemical Formula C₉H₁₆N₄OS
NIOSH/RTECS no YS4250000
EINECS no 251-793-7
UN no. 3082
Risk Phrases: R22, R36/38, R51/53

3. HAZARD IDENTIFICATION

Toxicity class: WHO (a.i.) III; EPA III

ADI (JMPR): 0.20 mg/kg/day based on a two-year rat feeding study (NOEL) of 20 mg/kg/day) and using 100-fold safety factor.
NOEL: 50 mg/kg in 90-day rat feeding study;
40 mg/kg in -year rat feeding study.
Main hazard: Harmful if large amounts ingested.
Biological hazards:
May be absorbed from the gastro-intestinal tract, through the intact skin, and through inhalation of fine mist.
Eye contact:
Irritating to eyes.
Skin contact:
Irritating to skin.
Ingestion:
Harmful if ingested in large amounts
Inhalation:
Not expected to be harmful by inhalation.

4. FIRST AID MEASURES

Inhalation:
Move patient from the toxic environment to fresh air. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis.
Skin contact:
Wash exposed area extremely thoroughly with soap and water. A physician may need to examine the area if irritation or pain persists after washing.
Eye contact:
Exposed eyes should be irrigated with copious amounts of room temperature water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist after 15 minutes of irrigation, an ophthalmologic examination should be performed.
Ingestion:
Emesis may be indicated in substantial recent ingestions. Contraindications to emesis induction include: **signs of oral, pharyngeal, or esophageal irritation; a depressed gag reflex; or central nervous system excitation or depression. If these are present or likely, EMESIS SHOULD NOT BE INDUCED.** Emesis is most effective if initiated within 30 minutes of ingestion.
Advice to the physician
There is no antidote. Carefully observe patients with inhalation exposure for the development of any systemic signs or symptoms and administer symptomatic treatment as necessary.

5. FIRE FIGHTING MEASURES

Special hazards: There is no fire or explosion hazard.

Extinguishing media: Extinguish small fires with carbon dioxide, dry powder, halon or alcohol-resistant foam. Water spray or fog can be used for larger fires or cooling of unaffected stock, but avoid the accumulation of polluted run-off from the site. Remove container from fire area if possible. Contain fire control water for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Avoid inhaling hazardous fumes. Keep material away from water sources and sewers. Do not touch material and avoid breathing fumes. Keep upwind.

Protective clothing: Fire may produce irritating or poisonous vapours (toxic oxides of carbon, nitrogen, and sulphur), mists or other products of combustion. Fire-fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Avoid contact with skin and eyes. Do not inhale fumes. For personal protection see Section 8.

Environmental precautions:

Do not allow to enter drains or water courses. When the product contaminates public waters, inform appropriate authorities in accordance with local regulations.

Occupational spill:

For small liquid spills, soak up with sand or other suitable non-combustible absorbent material, such as sawdust, and place into containers for subsequent disposal. For large spills, contain liquid far ahead of spill. Contain spillage and contaminated water for subsequent disposal. Do not flush spilled material into drains. In situations where product comes in contact with water, contain contaminated water for later disposal. Keep spectators away.

7. HANDLING AND STORAGE

Handling:

Harmful if swallowed. Avoid contact with eyes, prolonged contact with skin, and inhalation of fumes. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Remove clothing immediately if the herbicide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination.

Storage:

Store in its original labelled container in shaded, well-ventilated area, away from heat, sparks and other sources of ignition. Not to be stored next to foodstuffs and water supplies. Keep out of reach of children and animals. Local regulations should be complied with.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Occupational exposure limits:

Not available.

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.

PERSONAL PROTECTIVE EQUIPMENT:

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 red free-flowing liquid suspension concentrate.

Odour:

Slight pungent odour.

Flammability:

Non-flammable.

MATERIAL SAFETY DATA SHEET

SUBJECT: MOLOPO 500 SC
DOCUMENT NO: PS 057
EFFECTIVE DATE: MAY 1998
REVISION DATE: March 2010
REVISION NO: 3
PAGE : 3 of 5
PRODUCT CODE:

Explosive properties:

Non explosive.

Flash point:

None.

Oxidising properties:

Not oxidative.

pH:

6-8 (neat) at 20 °C

Viscosity:

2000 – 3000 cps. (Brookfield DV1mod. 2 sp. 12)

Relative density:

1,12 g/cm³ nom.

Stability:

Stable in neutral, weakly acidic and weakly alkaline media.

Stable to light. Storage conditions: stable.

Partition-coefficient in n-octanol / water:

(data for technical material at pH 7 and 25°C)

K_{ow} log P= 1,79

10. STABILITY AND REACTIVITY

Storage stability:

Stable under normal storage conditions

Incompatibility:

Stable in aqueous media between pH 5 and 9. Hydrolyzed at higher temperatures by strong alkalis and strong acids. It is compatible with other herbicides.

Hazardous decomposition products:

Thermal decomposition may release toxic oxides of carbon, nitrogen and sulfur.

11. TOXICOLOGICAL INFORMATION

Data available on this formulation, data as for Tebuthiuron 500 SC

Acute oral LD₅₀ :

1710,0 mg/kg (male rats)

Acute dermal LD₅₀:

> 2000,0 mg/kg (male and female rats)

Acute inhalation LC₅₀ :

Not available for this formulation.

> 3.696 mg/l for the technical product

Acute skin irritation:

Mild skin irritant.

Acute eye irritation:

Mild eye irritant.

Dermal sensitisation:

No dermal or systemic evidence of contact hypersensitivity.

Carcinogenicity:

Animal studies did not detect any carcinogenic activity. No human information available.

Teratogenicity:

No evidence of teratogenicity

Mutagenicity:

Tebuthiuron Technical did not exhibit genetic activity on *Salmonella typhimurium* strains used, or mutagenic activity in a micronucleus study in mice.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGY :

Birds: (active ingredient)

Oral LD₅₀: > 2 000 mg/kg (mallard ducks)

Fish: (technical)

144,0 mg/l (96 hour LC50 - *Rainbow trout*)

442.53 mg/l (96 hour LC50 - *Brachydanio rerio*)

Bees LD₅₀ (Active ingredient):

Not Toxic to Bees.

> 100 microgram per Bee.

Daphnia:

70.05 mg/l (48 hour EC₅₀ - *Daphnia similis*) for 500 SC.

Earthworms:

>2000,0 mg/kg silicon .

Algae (*Selenastrum capricornutum*) EC₅₀-96h:

0,092 mg/l (500 SC).

FATE AND BEHAVIOUR IN SOIL :

Rate of degradation : It has low evolution of carbon dioxide throughout a 28 day incubation period, 10.05 % evolved by the end of the assay period. Some microbial breakdown occurs in soil, but this is not the predominant mode of

degradation. Half-life in soil is considerably greater in soils with low moisture contents, and in high organic soils. In plants, the principle metabolic pathways involve N-demethylation and hydroxylation of the tert-butyl side chain

Adsorption/desorption : Tebuthiuron has high mobility in LE and RE soils, and is Totally Mobile in AQ soils. It has low adsorption on LE and AQ soils. It is classified as being High Persistent in AQ and LE soils.

FATE AND BEHAVIOUR IN WATER :

Rate and route of degradation : No degradation was observed in a 33-day study of photolysis in water. It has all the characteristics of a material with a high potential for ground water contamination.

FATE AND BEHAVIOUR IN AIR :

Rate and route of degradation : Tebuthiuron is highly persistent in soil. Reported field half-lives are from 12 to 15 months in areas with over 1000mm annual rainfall, with longer

half-lives expected in drier areas. Loss due to photo decomposition and volatilization is negligible.

German wgk: Not listed.

13. DISPOSAL CONSIDERATIONS

Pesticide disposal:

Contaminated absorbents, used containers, surplus product, etc., should be burnt at > 1000°C in an incinerator, preferably designed for pesticide disposal. Where no incinerator is available, hydrolysis under alkaline conditions is a suitable method to dispose of small quantities of the product. Before disposal of the resultant waste, the material must be analysed to ensure that the active ingredient has been degraded to a safe level. Treated waste must be buried in approved landfill. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Comply with local legislation applying to waste disposal.

Package product wastes:

Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is cleaned, reconditioned, or destroyed. Combustible containers should be disposed of in pesticide incinerators. Non-combustible containers must first be triple-rinsed with water. Pour rinse water into spray tanks. Containers should be punctured and transported to a scrap metal facility for recycling or disposal.

14. TRANSPORT INFORMATION

UN NUMBER 3082

ADR/RID:

Shipping name: Environmentally hazardous substance, liquid, n.o.s. (Tebuthiuron 500 g/l)
 Class: 9
 Classification code: M6
 Packaging group: III
 Hazard ID no.: 90
 Label: 9

IMDG/IMO:

Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (Tebuthiuron 500 g/l)
 Class: 9
 Packaging group: III

Label: 9 Marine pollutant

ICAO/IATA:

Proper shipping name: Environmentally hazardous substance, liquid, n.o.s. (Tebuthiuron 500 g/l)

Class: 9
 Packaging group: III
 Label: 9

Tremcard number 90GM6-III

15. REGULATORY INFORMATION

Symbol : Xn- Harmful; N- Dangerous for the environment

Risk phrases:

R 22 Harmful if swallowed.
R36/38 Irritating to eyes and skin.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases:

S 2 Keep out of reach of children.
S 20/21 When using do not eat, drink or smoke.
S 13 Keep away from food, drink and animal feedingstuffs.
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.
- *SABS 0265:1999*.
- *Dangerous Goods Regulations; IATA 2006*; International Air Transport Association, 47th Edition, Effective 1 January 2006.
- *IMDG CODE, Vol. 2, 2005 Edition*.
- *ADR, Vol.1, 2005*



MATERIAL SAFETY DATA SHEET
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PAGE : 5 of 5
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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