



MATERIAL SAFETY DATA SHEET

PRODUCT : MALATHION 500EC
EFFECTIVE DATE : January 2021
REVISION NO : 2
PAGES : 5

SUPPLIER : NOVA AGRO (HK) LTD
(Reg. No. 1023146)
6th Floor Wyndham Place
44 Wyndham Street
CENTRAL HONG KONG

EMERGENCY NUMBERS

POISONINGS:

National Poison Centre : (27)-21-9386084 (office hours).
(South Africa) (27)-21-9316129 (after hours).

1. PRODUCT AND INFORMATION

Trade Name: MALATHION 500EC INSECTICIDE
UN No. 1993

2. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components: Malathion 500 g/L, Xylene
Active ingredient: Malathion (BSI, E-ISO, ESA, F-ISO, JMAF)
Chemical Name: diethyl (dimethoxythiophosphorylthio) succinate; *S*-1,2-bis(ethoxycarbonyl)ethyl *O,O*-dimethyl phosphorodithioate (IUPAC)
CAS No. 121-75-5
Chemical Family: Organophosphate
Chemical Formula: C₁₀H₁₉O₆PS₂ (Mol. wt.: 330.3)
EEC classification: F, Flammable
R Phase: R10, R 22

3. HAZARD IDENTIFICATION

Toxicity class: WHO III; EPA III
ADI 0.02 mg/kg
NOEL 100 mg/kg (rats) – 21 months
Main Hazard: This compound inhibits cholinesterase enzyme activity in the nervous tissue.
Fire and explosion hazard:
Product is flammable due to the solvent.
Chemical Hazard:
None known.
Biological Hazard:
Likely routes of exposure: Skin and eye contact, ingestion and inhalation.

Ingestion:
Harmful by ingestion. See point 4 symptoms.
Inhalation:
Harmful by inhalation. See point 4 for symptoms.
Skin contact:
May be irritating to skin.
Eye contact: May be irritating to eyes
Carcinogenicity: Not carcinogenic.
Mutagenicity: Not mutagenic.
Neurotoxicity: Not a neurotoxin.
Reproductive /Teragenicity: Not teratogenic.

4. FIRST AID MEASURES

Effects of mercaptothion poisoning are similar to those observed with other organophosphates, except that larger doses are required to produce them.

Symptoms of exposure to the product include: nausea, headache, tiredness, giddiness, blurred vision and papillary constriction. Depending on severity of poisoning these symptoms become worse with the onset of vomiting, abdominal pain, diarrhea, sweating and salivation. Confusion, ataxia, slurred speech, loss of reflexes are some of the central nervous system effects that may lead to misdiagnosis of acute alcoholism.

OVEREXPOSURE EFFECTS:

After **inhalation of vapours** effects appear within minutes: ocular and respiratory effects generally appear first. These include marked meiosis, ocular pain, conjunctival congestion, diminished vision, ciliary spasm and brow ache. With **acute systemic absorption**, meiosis may not be evident due to systemic absorption, meiosis may not be evident due to sympathetic discharge in response to the hypertension. In addition to rhinorrhea and hyperemia of the upper respiratory tract, respiratory effects consist of "tightness" in the chest and wheezing respiration caused by the combination of bronchoconstriction and increased bronchial secretion. Gastrointestinal symptoms occur earliest after ingestion and include anorexia, nausea and vomiting, abdominal cramps, and diarrhea.

With **percutaneous absorption** of liquid, localized sweating and muscular fasciculation in the immediate vicinity are generally the earliest manifestations.

Inhalation:
Remove source of contamination or move victim to fresh air.



MATERIAL SAFETY DATA SHEET

PRODUCT : MALATHION 500EC
EFFECTIVE DATE : January 2021
REVISION NO : 0
PAGES : 4
PAGE : 2 of 4

Keep affected person warm and at rest. Supply oxygen if necessary. Treat symptomatically and supportively.

Seek medical advice immediately.

Skin contact:

Remove contaminated clothing, shoes and leather goods. Gently wipe off excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. Seek medical advice if necessary. Persons who become sensitised may require specialised medical management with anti-inflammatory agents.

Eye contact:

Immediately flush eyes with gently flowing cold water or saline solution for 20 minutes, holding the eyelid(s) open.

Seek medical attention immediately.

Ingestion:

Have victim rinse mouth thoroughly with water. Do not induce vomiting, due to the aromatic solvent. **Seek medical advice immediately.**

Advice to physician:

Atropine must be administered as early as possible and could save lives, if given in time and in an adequate dosage. Patients with organophosphate poisoning require amounts of atropine far in excess of doses usually employed in medical practice.

5. FIRE- FIGHTING MEASURES

Extinguishing agents:

Extinguish small fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Contain water used for fire fighting for later disposal. Avoid the accumulation of polluted run-off from the site.

Firefighting:

Remove spectators from surrounding area. Remove container from fire area if possible. Fight fire from maximum distance. For massive fire, use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Water can be used to cool unaffected containers but must be contained for later disposal. Avoid inhaling hazardous vapours. Keep upwind.

Special Hazards:

Fire may produce irritating or poisonous mists (sulfur oxides, carbon oxides and phosphorus oxides) and other products of

combustion.

Personal protective equipment:

Fire fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Do not inhale fumes. Ventilate area of spill or leak, especially confined areas. Avoid contact with skin, eyes or clothes. For personal protection see Section 8.

Environmental precautions:

Do not allow entering drains or watercourses. When the product contaminates public waters, inform appropriate authorities immediately in accordance with local regulations.

Occupational spill:

For **small spills**, soak up sand or suitable non-combustible absorbent material, place into containers for subsequent disposal. Thoroughly wash body areas, which come into contact with the product. Avoid runoff to sewer as it may cause fire/explosion. Do not allow the product to come in contact with water systems. For **large spills** contact the manufacturer. Contain liquid far ahead of spill. Contain spillage and contaminated water for subsequent disposal. Do not flush spilled material into drains. Keep spectators away and upwind.

7. HANDLING AND STORAGE

Handling:

Remove sources of naked flame or sparks. Harmful by inhalation or if swallowed. Avoid contact with eyes and skin and inhalation of fumes. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking or using the toilet. Operators should change and wash clothing daily.

Remove clothing immediately if the insecticide 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 container in isolated, dry, cool (avoid temperatures above 40°C) and well-ventilated area. Avoid cross contamination with other pesticides and fertilizers.



MATERIAL SAFETY DATA SHEET

PRODUCT : MALATHION 500EC
EFFECTIVE DATE : January 2021
REVISION NO : 0
PAGES : 4
PAGE : 3 of 4

Product hydrolyzed rapidly in aqueous alkaline solutions. Keep under lock and key out of reach of unauthorized persons, children and animals. Store away from incompatible substances. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering control measures:

It is essential to provide adequate ventilation. Ensure that control systems are properly designed and maintained. Only spark –resistant equipment should be used. Comply with occupational safety, environmental, fire and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT:

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal equipment including approved respiratory protection.

Respirator:

An approved full-face respirator suitable for protection from mists of pesticides is required. 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 skin contact with the substance.

Gloves:

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

Eye protection:

Employee must wear splash-proof safety goggles and faceshield to prevent contact with this substance.

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: Clear to slightly yellow liquid with Mercaptan odour.

Flammability: Flammable

Explosive properties: No information currently available.

Flash point: 39°C

Oxidising properties: No information currently available.

pH: No information currently available.

Relative density: 1,030 g/ml at 20°C

Storage stability: Stable for up to 2 years under normal warehouse and field conditions. Product is decomposed by acids and alkalis.

Solubility in water: This product emulsifies in water.

Solubility in organic solvents:

(All solubility figures for technical material at 25°C)

Miscible with most organic solvents (e.g. alcohols, ketones, ethers aromatic hydrocarbons). Slightly soluble in petroleum ether, and some types of mineral oil.

Partition-coefficient in n-octanol / water: Kow (logPow) = 2.75(*data for active substance*).

10. STABILITY AND REACTIVITY

Stability:

The product is stable at room temperature. Product is decomposed by acids and alkalis.

Incompatibility:

The product is compatible with most other common pesticides but incompatible with alkaline materials such as Bordeaux mixture or Lime Sulphur.

Do not physically mix concentrate directly with other herbicides or pesticide concentrates; always dilute first.

Hazardous decomposition:

Product undergoes decomposition at high temperatures. Avoid heating above ambient temperature. Toxic fumes (hydrogen sulfide, carbon oxides and sulfur oxides) may be released when the product decomposes on heating.

11. TOXICOLOGICAL INFORMATION

BASED ON TECHNICAL MTL.

Acute oral LD₅₀: 1375 - 2800 mg/kg body weight in rats.

Acute dermal LD₅₀: 4100 mg/kg in rabbits.

Acute inhalation LC₅₀ (4 h): 10mg/litre air (Cat)

Acute skin irritation: This product is classified as harmful and a mild irritant.

Acute eye irritation: This product is classified as harmful and mild irritant for the eyes.

Dermal sensitisation: No information currently available.



MATERIAL SAFETY DATA SHEET

PRODUCT : MALATHION 500EC
EFFECTIVE DATE : January 2021
REVISION NO : 0
PAGES : 4
PAGE : 4 of 4

Carcinogenicity: Studies did not detect carcinogenic activity. No human information available.

Teratogenicity / Reproductive hazard: Studies did not detect any tetragenic effects. No human information available.

Mutagenicity: Studies did not indicate that any mutagenic activity.

12. ECOLOGICAL INFORMATION

Degradability: (*Technical material*)

This product can be classified as non-persistent.

Biodegradation in soil is rapid with 80-95% biodegradation detected in 10 days. The rate of degradation increased with organic matter content, and half-lives in the 1-6 day range.

Biodegradation of 90% in 2 weeks was reported in raw river water.

Mobility: If released to soil, mercaptothion is expected to have very high mobility based upon an estimated Koc of 30.

Accumulation: Will not accumulate in soil.

ECOTOXICOLOGY:

Birds:

Non-toxic to birds. The reported acute oral LD₅₀ values are: in mallards, 1485 mg/kg; in pheasants, 167 mg/kg; in blackbirds and starlings, over 100 mg/kg; and in chickens, 525 mg/kg .

Fish:

Highly toxic to fish. Mercaptothion is highly toxic to aquatic invertebrates and to the aquatic stages of amphibians.

LC₅₀: blue gill sunfish; 0,1mg/l

Daphnia:

Toxic to *Daphnia magna*

Bees:

Toxic to bees.

13. DISPOSAL CONSIDERATIONS

Pesticide disposal:

Contaminated absorbents, surplus product, etc., should be burned in a high-temperature incinerator (>1000°C) with effluent gas scrubbing. 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 labeled safeguards until container is destroyed.

Combustible containers should be disposed of in pesticide incinerators. Non-combustible containers must be triple rinsed with water and then be punctured and transported to a scrap metal facility for recycling or disposal in approved landfill site.

Comply with any local legislation applying to disposal.

14. TRANSPORT INFORMATION

UN NUMBER : 1993

ADR/IRD: Substance name: Flammable liquid, n.o.s. (Mercaptothion 500 g/l).

Substance ID NR : 1993

Hazard ID no. 33

Label : 3

Item no : 5o (c)

AIR/IATA:

Shipping name: Flammable liquid, n.o.s. (Mercaptothion 500 g/l).

Class : 3

Subsidiary Risk : none

Hazard Label : Flammable

Packaging group : III

Passenger aircraft: Y309 (max 10 L)

Cargo aircraft : 309 (max 60 L) 310 (220 L)

IMG/IMO:

Shipping name: Flammable liquid, n.o.s. (Mercaptothion 500 g/l).

Packaging group : III

Label of class : 3 **Marine pollutant**

Tremcard no : 30GF1-III

15. REGULATORY INFORMATION

Symbol: F

Indication of danger: Flammable

Risk phrases:

R10 Flammable

R22 Harmful if swallowed.

Safety phrases:

S2 Keep out of reach of children

S16 Keep away from sources of ignition

S24 Avoid contact with skin.



MATERIAL SAFETY DATA SHEET

PRODUCT : MALATHION 500EC
EFFECTIVE DATE : January 2021
REVISION NO : 0
PAGES : 4
PAGE : 5 of 4

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

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.

REFERENCES

- *The Pesticide Manual*; Thirteenth Edition; Editor Clive Tomlin; Crop Protection Publications, 2003.
 - American Cyanamid co., Malathion 4% Dust Material safety data sheet (Italy) ,March 27, 1997
 - Material safety data sheet (Spain) Malathion®1000E insecticide, March 27, 1997
 - Dangerous Goods Regulations; IATA 2004; International Air Transport Association, 41st Edition, Effective 1 January 2004.
 - EINECS PLUS
 - International Chemical Safety Cards.
 - EXTOXNET, PIP. Primary files maintained and archived at Oregon State University.
 - HSDB (Toxicology Data Network).
 - SABS 0265:1999
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