

# MATERIAL SAFETY DATA SHEET

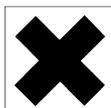
## Malathion 57%

Martin's

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### 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING



Harmful

Product Name:

**Malathion 57%** (Organophosphate)

Manufactured for: Control Solutions, Inc  
5903 Genoa-Red Bluff  
Pasadena, TX 77507

Emergency Telephone No. See 16, Other information (last page)

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

2.1. <b>ACTIVE INGREDIENT:</b>	<b>Malathion</b>
Chemical Name .....	O,O-Dimethyl-S-(1,2-di(ethoxycarbonyl)-ethyl) phosphorodithioate
CAS Name .....	Butanedioic acid, ((dimethoxyphosphinothioyl)thio)-, diethyl ester.
ISO Name .....	Malathion
CAS No. ....	121-75-5
Molecular Weight .....	330.4
Empirical Formula .....	C <sub>10</sub> H <sub>19</sub> O <sub>6</sub> PS <sub>2</sub>
Structural Formula .....	
2.2. <b>TYPICAL CONTENT:</b>	
Active ingredient:	Fyfanon™ (Malathion) Technical 55.9 % by weight
Inert ingredients:	Solvesso 150 (CAS No. 64742-94-5) 38.8 % by weight (Solvent Naphtha, heavy aromatic)
	Surfactants 5.3 % by weight (blend of anionic and nonionic surfactants)

.2.3.	<b>MATERIAL USE</b> .....	Insecticide
2.4	EU Classification .....	Xn;R22
2.5.	WHO Classification .....	Class III: Slightly Hazardous

<b>3. HAZARDS IDENTIFICATION</b>
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3.1.	Health Hazards (Acute and Chronic)	<p>The active ingredient Malathion is a cholinesterase inhibitor of low mammalian toxicity. (Inexpedient storage may, however, induce formation of the more toxic and synergistic contaminant isomalathion (LD<sub>50</sub>, oral, rat 89 mg/kg).) It rapidly enters the body on contact with all skin surfaces and eyes. Clothing contaminated with material must be removed immediately and all skin washed thoroughly.</p> <p>Repeated exposures to cholinesterase inhibitors such as isomalathion may, without warning, cause increased susceptibility to doses of any cholinesterase inhibitor.</p>
3.2.	Signs and Symptoms of Exposure	Headaches, nausea, vomiting, cramps, weakness, blurred vision, pin-point pupils, tightness in chest, labored breathing, nervousness, sweating, watering of eyes, drooling or frothing of mouth and nose, muscle spasms and coma.
3.3.	Environmental Hazards .....	See 12

<b>4. FIRST AID MEASURES</b>
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4.1.	Emergency and First Aid Procedures	<p>Call a doctor (physician), clinic or hospital immediately. Explain that the victim has been exposed to <b>Malathion</b> - an organophosphorus insecticide - and describe his/her condition. Move the exposed immediately from the area where the product is present.</p> <p>If breathing has stopped, start artificial respiration immediately and maintain until physician takes charge of the exposed.</p> <p>If swallowed and the exposed is conscious make him/her vomit quickly. Have the exposed drink 1 or 2 glasses of water and induce vomiting by touching the back of throat with finger (be aware that the product contains petroleum distillates). Repeat until vomit is clear. Never give anything by mouth to an unconscious person.</p> <p>Make the exposed lie down and keep him/her steady. Get medical attention immediately.</p> <p>In case of contact immediately flush eyes or skin with plenty of water while removing contaminated clothing and shoes. See physician immediately.</p>
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4.2. Note to Physician ..... **Malathion** is a cholinesterase inhibitor affecting the central and peripheral nervous systems and producing cardiac and respiratory depression.

(Be aware that the product contains petroleum distillates which may pose an aspiration pneumonia hazard.)

Cholinesterase inhibition - treatment **Antidote:** Administer atropine sulphate in large doses. TWO to FOUR mg intravenously or intramuscularly as soon as cyanosis is overcome. Repeat at 5 to 10 minute intervals until signs of atropinization appear.

2-PAM chloride is a pharmacological antidote and may be administered as an adjunct to, but not a substitute for atropine, which is a symptomatic and often lifesaving antidote. **DO NOT GIVE MORPHINE OR TRANQUILLIZERS.**

At first sign of pulmonary edema, the patient should be given supplemental oxygen and treated symptomatically.

Continued absorption of Malathion may occur and relapse may occur after initial improvement; **VERY CLOSE SUPERVISION OF THE PATIENT IS INDICATED FOR AT LEAST 48 HOURS.**

## **5. FIRE-FIGHTING MEASURES**

5.1. Extinguishing Media and Procedure Dry chemical or carbon dioxide for small fires, water spray or foam for large fires.

Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Fight fire from protected location or maximum possible distance. Avoid heavy hose streams. Dike area to prevent water runoff. Firemen should wear self-containing breathing apparatus and protective clothing.

5.2. Hazardous Decomposition or Byproducts in a Fire ..... The essential breakdown products are dimethyl sulfide, sulfur dioxide, carbon monoxide, carbon dioxide and phosphorus pentoxide.

5.3. Unusual Fire and Explosion Hazards See 10.1

## **6. ACCIDENTAL RELEASE MEASURES**

6.1. Personal Protection ..... Observe all protection and safety precautions when cleaning up spills - see 8.

- 6.2. Steps to be taken in Case of Spill .
- Small liquid spills** on the floor or other impervious surface should be swept up by means of an inert absorptive material such as hydrated lime, sawdust, Fuller's earth or other absorbent clays. Scoop into proper containers and dispose of in accordance with the instructions provided under Disposal (see 13). Rinse area with soda lye.
- Large liquid spills** on the floor or other impervious surface should be contained or diked and then absorbed with an inert absorptive material such as hydrated lime, sawdust, Fuller's earth or other absorbent clays. Collect the contaminated absorbent, place in a metal drum and dispose of in accordance with the instructions provided under Disposal (see 13). Rinse area with soda lye.
- Large spills that soak into the ground should be dug up, placed in metal drums and disposed of in accordance with instructions provided under Disposal (see 13).
- Malathion** can be hydrolyzed in water by heating and adjusting the pH (alkaline). The product may also be disposed of through proper incineration.

## 7. HANDLING AND STORAGE

- 7.1. Precautions to be taken in Handling See Personal Protection - Section 8.
- 7.2. Precautions to be taken in Storing .
- The product is stable when stored at temperatures not exceeding 25°C.
- The product should never be heated above 55°C and also local heating above this temperature should be avoided.
- Do not contaminate water, foodstuffs, feed or seed by storage or disposal.
- 7.3. Fire and Explosion Precautions .... -

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1. Respiratory Protection ..... -
- Protective Gloves ..... Wear chemical resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber or viton.
- Eye Protection ..... Wear safety glasses.
- Other Protection ..... Wear coveralls or long sleeved shirt and long pants. Wear shoes plus socks.
- 8.2. Work/Hygienic Practices ..... If handled indoors, provide mechanical exhaust ventilation.

Persons working with this product for a longer period should have frequent blood tests of their cholinesterase levels. If the cholinesterase level falls below a critical point, no further exposure should be allowed until it has been determined by means of blood tests that the cholinesterase level has returned to normal.

Keep all unprotected persons and children away from working area.

Before removing gloves wash them with soap and water. Always wash hands, face and arms with soap and water before smoking, eating or drinking.

After work, take off all work clothes and shoes. Shower, using soap and water. Wear only clean clothes when leaving job. Do not wear contaminated clothing. Wash protective clothing and protective equipment with soap and water after each use. Respirator should be cleaned and filter replaced according to instructions included with respirator.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1.	Physical State .....	Liquid
9.2.	Colour .....	Colourless to pale yellow
9.3.	Odour .....	Slightly aromatic
9.4.	Melting Point .....	Below 0°C
	Boiling Point .....	156-157°C at 0.7 mm Hg ( <b>Malathion</b> ) (see, however, 10.1 Thermal Decomposition)
9.5.		178-209°C ( <b>Solvesso 150</b> )
9.6.	Specific Gravity .....	1.063 g/ml at 20°C
9.7.	Vapour Pressure .....	3.4 x 10 <sup>-6</sup> mm Hg at 25°C ( <b>Malathion</b> ) 1.4 x 10 <sup>-4</sup> mm Hg at 45°C ( <b>Malathion</b> ) 3 mm Hg at 38°C ( <b>Solvesso 150</b> )
9.8.	Viscosity .....	-
9.9.	Solubility in Water .....	148.2 mg/l at 25°C ( <b>Malathion</b> ) Below 0,1% by weight ( <b>Solvesso 150</b> ) The product is emulsifiable in water.
9.10	Partition Coefficient n-Octanol/Water	K <sub>OW</sub> = 560 ( <b>Malathion</b> )
9.11.	pH .....	-
9.12.	Flash Point .....	63°C (Pensky Martens closed tester) (see, however, 10.1 Thermal Decomposition)
9.13.	Autoignition Temperature .....	Above 450°C ( <b>Solvesso 150</b> )
9.14.	Flammable Limits .....	0.6 - 7.0 vol% ( <b>Solvesso 150</b> )

## 10. STABILITY AND REACTIVITY

10.1.	Thermal Decomposition .....	The product ( <b>Malathion</b> ) will decompose rapidly when heated to temperatures above 100°C significantly increasing the risk of inducing explosion.
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The decomposition is to a considerable extent dependent on time as well as temperature due to exothermic and autocatalytic reactions. The reactions involve rearrangements and polymerization releasing volatile malodorous and inflammable compounds such as dimethyl sulfide.

- 10.2. Hazardous Decomposition or Byproducts ..... See 5.2
- 10.3. Materials to Avoid ..... Strong alkalies and strong oxidizing compounds. It can corrode iron, steel, tin plate, lead and copper. Malathion is rapidly hydrolyzed at pH > 7.0.

## 11. TOXICOLOGICAL INFORMATION

- 11.1. Health Hazards ..... See 3
- 11.2. Route(s) of Entry
- Ingestion LD<sub>50</sub>, oral, rat : > 4000 mg/kg\*
  - Skin LD<sub>50</sub>, dermal, rat: > 2000 mg/kg\*
  - Inhalation LC<sub>50</sub>, inhalation, rat: > 5 mg/l/4-h\*
- \* Measured on a similar product.
- 11.3. Irritancy of Material ..... The product is not irritating.
- 11.4. Sensitization of Material ..... There is no indication that **Malathion** causes hypersensitivity.
- 11.5. Carcinogenicity ..... **Malathion** is not classified as carcinogenic.
- 11.6. Reproductive Effects ..... No embryotoxic effects of **Malathion** have been observed in rats and rabbits at maternal non-toxic doses.
- 11.7. Teratogenicity ..... No indications of teratogenic effects of **Malathion** have been observed.
- 11.8. Mutagenicity ..... **Malathion** is not mutagenic.

## 12. ECOLOGICAL INFORMATION

The active ingredient **Malathion** is readily biodegradable. It undergoes rapid degradation in the environment and in waste water treatment plants. No adverse effects are observed at concentrations up to 100 mg/l in waste water treatment plants. Degradation occurs both aerobically and anaerobically, biologically as well as abiotically.

Soil organisms may be influenced temporarily by application of the product. Both enhanced and depressed respiration and nitrification have been observed, depending on soil type and concentration. When the product is applied at the prescribed dosage, the effect on soil organisms will be slight or negligible and pass away soon.

**Solvesso 150** may have a scorching effect on plants when applied at dosages higher than prescribed.

The product is toxic to birds, fish, aquatic invertebrates, aquatic life stages of amphibians and highly toxic to bees. The acute toxicity of the active ingredient **Malathion** is:

- Fish	96-h LC <sub>50</sub> , Rainbow trout ( <i>Salmo gairdneri</i> ):	0.200 mg/l
- Invertebrates	48-h, LC <sub>50</sub> , Daphnids ( <i>Daphnia magna</i> ) .....	1.0 µl/l
- Birds	LD <sub>50</sub> , Japanese quail (bobwhite quail).....	400 mg/kg
- Bees	24-h LD <sub>50</sub> , worker honey-bees, topical .....	0.27 µg/bee
	24-h LD <sub>50</sub> , worker honey-bees, oral .....	0.38 µg/bee

**13. DISPOSAL CONSIDERATIONS**

- 13.1. Waste Disposal Method ..... Spill and waste disposal procedures approved by state and local authorities must be observed.
- Do not contaminate water, food or feed by storage and disposal.
- 13.2. Container Disposal ..... Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill. Procedures approved by state and local authorities must, however, be observed.

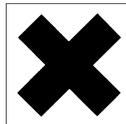
**14. TRANSPORT INFORMATION****UN CLASSIFICATION**

- 14.1. Name ..... Environmentally Hazardous Substance, Liquid, N.O.S. (Contains Malathion)
- 14.2. No. .... 3082
- 14.2. Packaging Group ..... III
- 14.3. Class ..... 9
- 14.4. Prim. Haz ..... Miscellaneous
- 14.5. Sub Risk ..... -
- 14.6. Marine Pollutant (P/PP) ..... Marine Pollutant  
(IMDG Code)

**15. REGULATORY INFORMATION****15.1. IN THE EU:**

- Index No. .... 015-041-00-X (**Malathion**)
- EINECS/ELINCS No. .... 204-497-7 (**Malathion**)
- Classification and Labelling  
(according to 88/379/EEC with amendments):
- Symbol of Danger .....

Xn



Harmful

- Indication of Danger .....
- Contains .....
- R-Phrases .....
- S-Phrases .....

**Malathion and Solvent naphtha, heavy aromatic**

R22: Harmful if swallowed.

S23-24: Do not breathe vapour. Avoid contact with skin.

- 15.2 Threshold Limit Value ..... OSHA PEL      ACGIH      MAK      HGV  
(USA):      (USA)      (Germany):      (Denmark):  
TLV-TWA:

**Malathion** ..... 10 mg/m<sup>3</sup>    10 mg/m<sup>3</sup>    15 mg/m<sup>3</sup>    5 mg/m<sup>3</sup>

**Solvesso 150** ..... 100 ppm is recommended. (Solvesso 150 contains trimethyl benzene. The ACGIH recommends a TWA of 25 ppm (123 g/m<sup>3</sup>) for trimethyl benzene).

Threshold limit values approved by the authorities must, however, be observed.

**16. OTHER INFORMATION**

This material should only be used by persons who are made aware of its hazardous properties and have been instructed in the required safety precautions.

**Emergency Telephone Number** (866) 897-8050 (SateyCall® Int'l)

Spills: CHEMTREC (800) 424-9300

Telephone Number for Information (281) 892-2500 (M-F 8a- 5p)