MATERIAL SAFETY DATA SHEET

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMPANY ADDRESS:
MICRO FLO COMPANY
P.O. BOX 772099
MEMPHIS, TN 38117

EMERGENCY TELEPHONE NUMBERS:
(800) 424-9300 (CHEMTREC, transportation and spills)
(800) 900-4044 (Poison Control Center, human health)
(800) 345-4735 (ASPCA, animal health)

PRODUCT NAME : MALATHION 5EC
CHEMICAL NAME : O-dimethyl phosphorodithioate of diethyl mercaptosuccinate
CHEMICAL FAMILY : Organophosphate
PRODUCT CODE : EPA Reg. No. 51036-104

SECTION 2 - COMPOSITION, INFORMATION OF INGREDIENTS

COMPONENT	PERCENTAGE	CAS NUMBER	OSHA PEL	ACIGH TLV
Malathion	56.0	121-75-5	15 mg/m^3 (skin)	15 mg/m^3 (skin)
Aromatic hydrocarbon(s) Including:	35.0	64742-94-5	100 ppm	Unknown
napthalene	1-3%	91-20-3	10ppm	10ppm

SECTION 3 - HAZARDS IDENTIFICATION SUMMARY

(As defined by OSHA Hazard Communication Standard, 29 CFR 1910.1200)

EMERGENCY OVERVIEW: Amber liquid with aromatic odor.
- Cholinesterase inhibitor, harmful if swallowed, inhaled or absorbed through skin.
- Causes slight eye irritation.
- Avoid breathing vapor or spray mist.
- Avoid contact with eyes, skin or clothing.
- Keep out of reach of children.

Symptoms of over exposure are headaches, dizziness, nausea, vomiting, cramps, blurred vision, pinpoint pupils, tightness in chest, labored breathing, nervousness, sweating, watering of eyes, drooling, muscle spasms and coma.

POTENTIAL HEALTH HAZARDS:
EYE - Mildly irritating to the eyes. Degree of injury will depend on the amount of material that gets into eye and the speed and thoroughness of the first aid treatment.
SKIN - May be absorbed through the skin in harmful amounts.
INHALATION - Vapor or spray mists may be harmful if inhaled.
INGESTATION - May be harmful if swallowed.
POTENTIAL PHYSICAL HAZARDS: Can decompose at high temperatures forming toxic gases. Impact or high temperatures can cause decomposition.
ENVIRONMENTAL HAZARDS: Toxic to wildlife and domestic animals.

A component of this product contains napthalene. Ingestion of napthalene results in cramps, nausea, vomiting, and diarrhea, listlessness, bladder iriitation and brownish urine. Inhalation of napthalene may cause headache, confusion and excitement. Chronic overexposure to napthalene may result in liver/kidney disorders. Hemolysis, anemia, fever, hemogloburinia and jaundice may also occur. Those with prior blood diseases may be more severely affected.

SECTION 4 - FIRST AID MEASURES

IF SWALLOWED: Call physician or Poison Control Center immediately. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious or convulsing person.
IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present after the first five minutes, then continue rinsing eye.
IF INHALED: Remove victim to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Get medical attention.
IF ON SKIN: Remove contaminated clothing and wash affected areas of skin with soap and water. Get medical attention.
NOTE TO PHYSICIAN: This product causes cholinesterase inhibition. Atropine is antidotal. 2-PAM may be effective as an adjunct to atropine.

SECTION 5 - FIRE FIGHTING MEASURES

FLASHPOINT (method): 150 F (TCC)
FLAMMABLE LIMITS (LFL-UFL): Unknown
FIRE AND EXPLOSION HAZARD: Combustible Liquid. Can form explosive mixtures at temperatures at or above the flashpoint. Can burn in fire, releasing irritating and toxic gases due to thermal decomposition or combustion.
EXTINGUISHING MEDIA: Use foam, dry chemical, carbon dioxide, or water spray when fighting fires involving this material.
FIRE FIGHTING INSTRUCTIONS: Evacuate area and fight fire upwind from a safe distance to avoid hazardous vapors and decomposition products. Fire exposed containers can build up pressure and should be kept cool with water spray if possible. Explosive vapor could form from ruptured containers. Dike and collect water used to fight fire to prevent environmental damage due to run off. Foam or dry chemical fire extinguishing systems are preferred to prevent environmental damage from excessive water run off.
FIRE FIGHTING EQUIPMENT: Self-contained breathing apparatus with full facepiece. Full fire fighting turn-out gear (Bunker gear).
HAZARDOUS COMBUSTION PRODUCTS: Dimethyl sulfide, Oxides of hydrogen, carbon, sulfur, phosphorous.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Clean up spills immediately, observing precautions in Section 8 of this document. Isolate hazard area. Keep unnecessary personnel from entering.
SMALL SPILL: Absorb small spills on sand, vermiculite or other inert absorbent. Place contaminated material in appropriate container for disposal. Rinse area with dilute soda ash and place rinsate in chemical waste container.
LARGE SPILL: Dike large spills using absorbent or impervious material such as clay, sand or fuller’s earth. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify, and scrape up for disposal. After removal, scrub the area with detergent and water and neutralize with dilute alkaline solutions of soda ash, or lime. Pick up wash liquid with additional absorbent and place in a chemical waste container for proper disposal. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage systems and bodies of water.

SECTION 7 - HANDLING AND STORAGE

KEEP OUT OF REACH OF CHILDREN!
HANDLING: Use only in a well-ventilated area. Loosen closure cautiously before opening as contents may develop pressure upon prolonged storage. Do not reuse this container.
STORAGE: Keep container closed when not in use. Keep away from food, feed and drinking water. Store in a well ventilated, dry place away from heat and other sources of ignition.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS (8 HOUR TWA): (Refer to Section 3)
ENGINEERING CONTROLS: Proper ventilation is required when handling or using this product to keep exposure to airborne contaminants below the exposure limit. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
PERSONAL PROTECTIVE EQUIPMENT:
EYE PROTECTION - Safety glasses.
CLOTHING - Long-sleeved shirt and long pants. Shoes plus socks. Chemical-resistant headgear for overhead exposure.
GLOVES - Chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, or viton.
RESPIRATOR - When handling in enclosed areas where exposure limits may be exceeded, use a respirator with either an organic vapor removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS:
1. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
2. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
3. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION: Pale amber liquid.
ODOR: Aromatic with slight sulfurous mercaptan odor.
MOLECULAR WEIGHT (technical): 330.4
MOLECULAR FORMULA (technical): $C_{10}H_{19}O_6PS_2$
BOILING POINT: 300 F (technical).
MELTING POINT: 35 F (technical).
SPECIFIC GRAVITY: 1.07
pH: 6.0 - 6.5 (5% w/w in water).
VAPOR PRESSURE: 3.4×10^{-6} mm Hg @ 25C (technical).
% VOLATILE: 40%
WATER SOLUBILITY: Emulsifiable.

SECTION 10 - STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable, however may decompose if heated.
CONDITIONS TO AVOID: Avoid temperatures above 105°F(40°C) and below 25°F(-7°C).
INCOMPATIBILITY WITH OTHER MATERIALS: Alkaline and acidic conditions and materials. Oxidizing materials. Mildly corrosive to steel, iron and copper.
HAZARDOUS DECOMPOSITION PRODUCTS: Dimethyl sulfide and oxides of hydrogen, sulfur, carbon and phosphorous due to thermal decomposition.
HAZARDOUS POLYMERIZATION: Product will not undergo polymerization.

SECTION 11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Oral LD_{50} (rat)	-	> 5,000 mg/Kg
Dermal LD_{50} (rat)	-	> 2,000 mg/Kg
Inhalation LC_{50} (rat)	-	> 4.3 mg/L
Eye Irritation (rabbit)	-	Moderate
Skin Irritation (rabbit)	-	Mild
Sensitization (guinea pig)	-	Non-sensitizer

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing cholinesterase depression and respiratory conditions.
CARCINOGEN STATUS:
OSHA - Not listed.
NTP - Not listed.
IARC - Not listed.
MUTAGENIC DATA: Slight evidence at high doses during *in vitro* studies.

ADDITIONAL DATA: Not known to exhibit reproductive or teratogenic (birth defect) effects. Repeated or prolonged low level exposures to organophosphates may cause sensitization to subsequent exposures that mimic acute exposures.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL SUMMARY: This product is toxic to fish, aquatic invertebrates, and aquatic life stages to amphibians. Do not apply directly to water, or to areas where surface water is present. Do not contaminate water when disposing of equipment washwaters. This product is highly toxic to bees exposed to direct treatment.
FISH TOXICITY: (Technical)
96 hour LC_{50}, Rainbow trout - 200 ug/L
96 hour LC_{50}, Bluegill - 100 ug/L
AVIAN TOXICITY: (Technical)
Oral LD_{50}, Bobwhite quail - 400 mg/Kg
Oral LD_{50}, Mallard duck - 1,400 mg/Kg
BEE TOXICITY: Highly toxic, contact LD_{50} - 0.3 ug/bee

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE: Pesticide wastes are toxic. Dispose of in accordance with applicable Federal, state and local laws and regulations.
CONTAINER: Refer to product label.

SECTION 14 - TRANSPORT INFORMATION

DOT SHIPPING DESCRIPTION (less than 15 gallons): Not regulated
DOT HAZARD CLASS: N/A
UN NUMBER: N/A
DOT PACKING GROUP: N/A
DOT PRIMARY/SECONDARY LABEL: N/A
DOT PRIMARY/SECONDARY PLACARD: N/A
DOT EMERGENCY RESPONSE GUIDE #: N/A

DOT SHIPPING DESCRIPTION (greater than 15 gallons): Environmentally Hazardous Substances (Malathion), 9, UN 3082, PG III< ERG # 171
DOT HAZARD CLASS: 9
UN NUMBER: UN 3082
DOT PACKING GROUP: III
DOT PRIMARY/SECONDARY LABEL: Class 9
DOT PRIMARY/SECONDARY PLACARD: Class 9
DOT EMERGENCY RESPONSE GUIDE #: 171

SECTION 15 - REGULATORY INFORMATION

FIFRA: All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act. The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide.
OSHA HAZARD COMMUNICATION STANDARD STATUS: Regulated
CERCLA REPORTABLE QUANTITY: 100 #'s
SARA TITLE III STATUS:

302 Extremely Hazardous Substance	-	No
311/312 Hazard Categories	-	Immediate, Fire
313 Toxic Chemicals	-	Malathion

CALIFORNIA PROP 65 STATUS: Not Listed

SECTION 16 - OTHER INFORMATION

DISCLAIMER: The information presented herein is based on available data from reliable sources and is correct to the best of Micro Flo's knowledge. Micro Flo makes no warranty, express or implied, regarding the accuracy of the data or the results obtained from the use of this product. Nothing herein may be construed as recommending any practice or any product in violation of any law or regulations. The user is solely responsible for determining the suitability of any material or product for a specific purpose and for adopting any appropriate safety precautions. We disclaim all liability for injury or damage stemming from any improper use of the material or product described herein.
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