

# MATERIAL SAFETY DATA SHEET

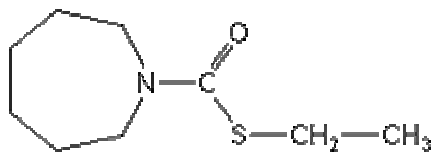
## Introductory Details

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Date of preparation : 26 April 2004  
Date revised : 17 October 2008

## SECTION 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### 1.1 Product Details

Product Name : Molinate 10% G  
Trade Name : ORDRAM 10-G  
Chemical Name : S-ethyl hexahydro-1H-azepine-1-carbothioate  
Chemical Formula :  $C_2H_5SCONC_6H_{12}$   
Molar Mass : 187  
Chemical Family : Thiocarbamate  
Manufacturer's Code : -  
Use : Herbicide  
Structural Formula :



*Molinate*

### 1.2 Company Identification

#### **Manufacturer**

Name and Address : Agricultural Chemicals (M) Sdn. Bhd.  
962, Lorong Perusahaan 8,  
Taman Perindustrian Perai,  
13600 Perai, Pulau Pinang, Malaysia.  
Telephone Number : 604-390 7988  
Emergency Telephone Number : 604-390 7988

### 1.3 Contact Point

Designation : Ms. Cheong Wai Ching, Product Support Manager /  
En. Ahmad Labib bin Yusof, Administrative Assistant  
Tel. No. : 604-390 7988

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## SECTION 2 : COMPOSITION/INFORMATION ON INGREDIENT

| Chemical Name                                      | CAS No.   | Proportion | Exposure Limit     | Toxicity Data       |
|----------------------------------------------------|-----------|------------|--------------------|---------------------|
| S-ethyl<br>hexahydro-1H-azepine-<br>1-carbothioate | 2212-67-1 | 10 %       | Refer to Section 9 | Refer to Section 11 |
| Carrier & Others                                   | -         | Balance    |                    |                     |

## SECTION 3 : PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Reddish granule  
Odour : Aromatic  
Solubility (technical) : 970 ppm in water  
Soluble in most organic solvents.  
Boiling Point (technical) : 136.5°C at 10 mmHg  
Melting Point : Not applicable  
Vapour Pressure (technical) :  $5.6 \times 10^{-3}$  mmHg at 25°C (slightly volatile)  
Percentage Volatiles : No data available  
Evaporation Rate : No data available  
Vapour Density : No data available  
Specific Gravity : No data available  
Flash Point : Not applicable  
Autoignition Temperature : No data available  
Flammable Limit (%) : No data available

## SECTION 4 : HAZARD IDENTIFICATION

Harmful by inhalation.  
May cause birth defects.

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## **SECTION 5 : FIRST AID MEASURES**

**KEEP STRICTLY AT REST AS CONTINUED MOVEMENT ENHANCES THE EFFECT OF CHOLINESTERASE INHIBITION**

- Ingestion : If swallowed, seek medical advice immediately and show the container, label or this data sheet, if possible. Do not induce vomiting.
- Eye contact : Immediately rinse with clean water, holding the eyelids apart, for at least 15 minutes. Get prompt medical attention.
- Skin contact : Take off immediately all contaminated clothing. Wash skin immediately with plenty of water and soap.
- Inhalation : Remove patient to fresh air, keep warm and at rest. Obtain medical attention as a precaution.
- Notes to physician : Molinate is a cholinesterase inhibitor. DO NOT use if under medical advice not to work with such compound.
- Medical treatment : Atropine is the specific antidote and is given by physician, at a level of 2 - 5 mg (intramuscularly), every 20 minutes until atropinisation occurs. Considerable amounts of atropine may be necessary. Atropine MUST NOT be given to cyanosed patients; administer oxygen first. DO NOT use opiates or barbiturates. If convulsions occur, administer diazepam (10 mg intravenously). Take 10 ml of venous blood for determination of blood cholinesterase activity. Following ingestion, absorbents such as charcoal may be of value. If gastric lavage or emesis is considered necessary for oil-based or corrosive formulations, inhalation of gastric contents must be prevented.

## **SECTION 6 : FIRE FIGHTING MEASURES**

- Extinguishing media : CO<sub>2</sub>, dry chemical powder, foam, sand or earth may be used for small fire only. For large fire, use foam or water fog; avoid use of water jet. Contain run off water with, for example, temporary earth barriers.
- Fire fighting instruction : Fire fighters should wear full-faced self-contained breathing apparatus and impervious clothing such as gloves, hoods, suits and rubber boots. If drum are NOT leaking, keep cool with a water spray. High pressure water hose may spread product from broken containers increasing contamination hazards. Use of contaminated buildings, areas and equipment must be prevented until they are properly decontaminated.
- Special hazards : Combustion or thermal decomposition will evolve toxic and irritant vapours.
- Explosion hazard : Non-explosive.

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Combustibility : Combustible. Keep fire exposed containers cool by spraying with water.

## **SECTION 7 : ACCIDENTAL RELEASE MEASURE**

Leak and/or Spill :

Wear protective clothing as indicated in Section 8. Evacuate non essential personnel. Collect the spill into waste container for disposal. Wash the contaminated area with a little water and detergent. Adsorb with inert material such as clay or earth. Collect into the same container for disposal. Prevent the spillage from entering local drainage system.

## **SECTION 8 : HANDLING AND STORAGE**

Handling : Read the label before use. Ensure suitable personal protection eg. face mask that give protection against organic vapour, eye protection, chemically resistant gloves, boots and overall. If required, use OSHA / NIOSH approved respirator for pesticides.

Storage : Keep in original container, tightly closed, in a cool dry and well-ventilated place, out of reach of children. Keep away from foodstuffs and animal feeds. Avoid contact with skin and eyes. Do not breathe vapour.

## **SECTION 9 : EXPOSURE CONTROL AND PERSONAL PROTECTION**

- a. Exposure limit : Molinate Syngenta Standard (8hr TWA) : 0.4 mg/m<sup>3</sup>
- b. Engineering measures : Local exhaust ventilation
- c. Personal protection : Ensure suitable personal protection eg. face mask that give protection against organic vapour, eye protection, chemically resistant gloves, boot and overall. If required, use OSHA / NIOSH approved respirator for pesticides.

## **SECTION 10 : STABILITY AND REACTIVITY**

- Conditions to avoid : Direct sunlight, heat and extreme temperature
- Incompatible : The product is relatively non-reactive and is not significantly corrosive to materials commonly used in the construction of process equipment, storage and shipping container. It is substantially biodegradable.

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Decomposition products : Combustion or thermal decomposition will evolve toxic and irritant vapours.  
Hazardous polymerization : No data available  
Stability : Stable under normal conditions.

## **SECTION 11 : TOXICOLOGICAL INFORMATION (TECHNICAL)**

### Toxicity data :

Acute Oral LD<sub>50</sub> : (Rat) 575 - 730 mg/kg  
Acute Dermal LD<sub>50</sub> : (Rat) > 4000 mg/kg  
Inhalation LC<sub>50</sub> (4 hrs) : (Rat) male 2.91 mg/l  
(Rat) female 1.39 mg/l  
Eye irritation : Moderate irritant to rabbit  
Skin irritation : Slight / mild irritant to rabbit  
Skin sensitisation : It is not a skin sensitiser.  
Carcinogenicity : No data available  
Reproductive effect : No data available  
Effects of overexposure : No data available  
Chronic effects : There is no evidence of mutagenic or clastogenic potential. Studies in animals have shown that repeated doses do not produce teratogenic effects. Studies in animals have shown that repeated doses produce embryo/foetotoxic effects in the presence of maternal toxicity. The no-effect level was 35 mg/kg/day for developmental and maternal toxicity of rat. The no-effect level was 20 mg/kg/day for development and maternal toxicity of rabbit.  
Target organs : No data available  
Medical conditions generally aggravated by exposure : No data available

## **SECTION 12 : ECOLOGICAL INFORMATION (TECHNICAL)**

Mobility & Bioaccumulation : The substance is predicted to have moderate mobility in soil. The substance has low potential for bioaccumulation.  
Biodegradability : 1.7 % water degradability in 28 days.  
Not readily biodegradable.  
There is evidence of degradation in soil.  
The substance is substantially biodegradable in soil.

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Aquatic Toxicity : Very toxic to aquatic organisms.  
LC<sub>50</sub> (96 hrs) : Rainbow trout 16 mg/l  
EC<sub>50</sub> (48 hrs) : Daphnia magna 15 mg/l  
EbC<sub>50</sub> (96 hrs) : Green algae 0.22 mg/l  
ErC<sub>50</sub> (96 hrs) : Green algae 0.5 mg/l

## **SECTION 13 : DISPOSAL INFORMATION**

Dispose of according to local regulation.

## **SECTION 14 : TRANSPORT INFORMATION**

Follow the precaution indicated in the storage and handling section. Follow all regulations in your country.

## **SECTION 15 : REGULATORY INFORMATION**

Pesticides Act : Class IV

CPL Regulations : Class - Harmful

Risk Phrases : R20 Harmful by inhalation  
R47 May cause birth defect

Safety Phrases : S2 Keep out of reach of children  
S9 Keep container in a well ventilated place  
S13 Keep away from food, drink and animal feeding stuff  
S38 In case of insufficient ventilation, wear suitable respiratory equipment  
S53 Avoid exposure - obtain special instruction before use  
S56 Do not discharge into drains or the environment, dispose of to an authorised waste collection point

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## **SECTION 16 : OTHER INFORMATION**

Reference : (a) Material Safety Data Sheet - Ordram 10-G  
Date : 3-7-2001

(b) Material Safety Data Sheet - Ordram Technical  
Date of preparation : 3<sup>rd</sup> March 2003

(d) Guidelines for The Classification of Hazardous Chemicals, DOSH 1997

(e) Guidelines for The Formulation of A Chemical Safety Data Sheet, DOSH 1997

(f) Guidelines for Labelling of Hazardous Chemicals, DOSH 1997

To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.