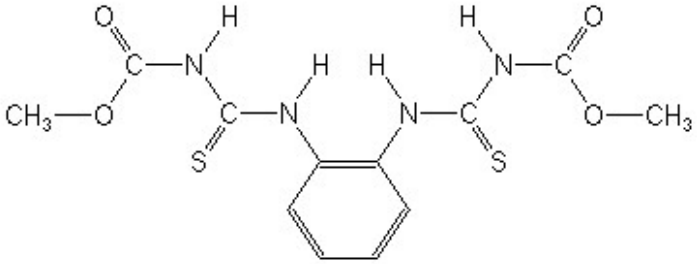
MATERIAL SAFETY DATA SHEET

Product : Thiophanate-methyl Technical	**Document no. : IIL/MSDS/TC-074**
Issue No. : 02	**Rev. No. : 01**
Date : 01.11.2017	**Date : 29.12.2017**

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Shipping Name	Thiophanate-methyl Technical
Intended Use	Fungicide
Chemical Name	Dimethyl 4,4'-(o-phenylene)bis(3-thioallophanate)
Chemical Family	Benzimidazoles
Chemical formula	$C_{12}H_{14}N_4O_4S_2$
Structural Formula	
Molecular Mass	342.4 g/mol
Company Name	Insecticides (India) Limited, E-443-444, RIICO Ind. Area, Chopanki, Bhiwadi (Rajasthan) India – 301707
Telephone Number	01493-298189
Fax Number	01493-298190
Website	www.insecticidesindia.com/

SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

Component	CAS No.	Purpose	Proportion (%)
Thiophanate-methyl Technical	23564-05-8	Active ingredient	97.0 %
Other Ingredients	-	Impurities	3.0 %
Total			To make 100%

SECTION 3 - HAZARDS IDENTIFICATION

Eyes contact	Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn). Slight

	abrasive damage may also result.
Skin contact	Skin contact is not thought to produce harmful health effects (as classified using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions.
Inhalation	Inhalation of dusts, generated by the material, during the course of normal handling, may be harmful. Inhalation of dusts, or fume, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
Ingestion	If swallowed give plenty of water. Give oxygen if respiration is depressed.
Environment effects	Slight to moderately toxic to fish.

SECTION 4 - FIRST AID MEASURES

Inhalation	Remove victim to fresh air, if breathing stopped give artificial respiration.
Ingestion	If swallowed give plenty of water. Give oxygen if respiration is depressed.
Eyes contact	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove Contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
Skin contact	Remove contaminated clothing wash affected area with soap and large amount of water until no evidence of chemical remains.
Advice to doctor	No specific antidote. Symptomatic treatment.

SECTION 5 - FIRE FIGHTING MEASURES

Protective equipment for fire-fighting	Safety glasses or goggles, rubber gloves, shoes plus socks, Long-sleeved shirt, and long pants.
Extinguishing media	Dry chemical powder, carbon dioxide, and chemical foam on big fire. Dry chemical powder, carbon dioxide, and chemical foam on big fire.
Specific hazards	Mild skin and eye irritant.
Fire fighting guidance	Alert Emergency Responders and tell them location and nature of hazard. " Wear breathing apparatus plus protective gloves. When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 100 metres in all directions.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions	Safety glasses or goggles, rubber gloves, shoes plus socks, Long-sleeved shirt, and long pants.
Environmental precautions	Prevent the contamination of the floor and of beds of water. Isolate contaminated water.
Method for cleaning up	Clean up spill immediately. Then place in a chemical waste container. Wash area with soap and water. Pick up wash Liquid with additional absorbent and place in a chemical waste container.

SECTION 7 - HANDLING AND STORAGE

Handling precautions	1. Stored in a fireproof dark cool and dry area, away from ignitable materials and incompatible materials packed in MS/HDEPE/FIBRE drums with polyethylene liner. 2. Avoid getting in eyes or on skin, or clothing and breathing dust. Remove Contaminated clothing immediately. Wash thoroughly after handling.
Storage precautions	Keep in original container. Do not store or transport near food or feed. Do not Contaminate food or feed. Do not put concentrate into food or drink containers. Do not Dilute concentrate in food or drink containers. Store in a cool, dry place, out of direct Sunlight.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering controls	Use in well ventilated space or provide ventilation if necessary to control exposure levels below airborne exposure limits listed below.
Respiratory protection	Ensure good ventilation. For maximum protection, wear a supplied air, full-face piece respirator, air lined hood, or full-face piece self-contained breathing apparatus.
Hand protection	Wear chemical protective gloves, eg. PVC
Eye protection	Safety glasses with side shields. Chemical goggles.
Skin and body protection	Wearing water proof gloves is recommended. Wash exposed skin thoroughly with soap and water after handling.
Environmental exposure controls	Prevent the contamination of the floor and of beds of

	water. Isolate contaminated water.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical state (Appearance)	Crystalline solid
Color	Colorless
Odor	Mild chemical odor
pH value	5.0-8.0
Boiling point	NA
Melting point	172^0C (Decompose)
Flash point	NA
Specific gravity	1.45 g/ml
Vapor pressure	0.0088mPa (25^0C)
Solubility in Water	20mg/l (20^0C)
Solubility in other solvents	Slightly soluble in acetone, cyclohexanone, methanol. acetonitrile, ethyl acetate, hexane and in most organic solvents.

SECTION 10 - STABILITY AND REACTIVITY

Chemical stability	Stable under normal temperature and pressure at pH 4-5.
Conditions to avoid	Fire, heat and high temperature.
Materials to avoid	Incompatible with highly alkaline materials, oxidizing agents, lime Sulfur, bordeux mixture, copper compounds.

SECTION 11 - TOXICOLOGICAL INFORMATION

ACUTE TOXICITY	
Rat LD_{50} oral, Rats	>5000mg/kg
Rat LD_{50} dermal, Rats	>2000mg/kg
LC_{50} Inhalation	1.7mg/l
Skin irritation	Slight irritant
Eye irritation	Moderate irritant
Skin sensitization	Slight skin sensitiser (guinea pigs)
LONG TERM STUDIES	
Carcinogenicity	There were no effects on tumor incidence in two-year feeding studies of mice or rats consuming the equivalent of up to 96 mg/kg body weight/day (640 5 ppm) or 32 mg/kg body weight/day of thiophanate-methyl, respectively.

Mutagenicity	Groups of 10 males ICR-strain mice were administered thiophanate-methyl intraperitoneally at a single dose level of 0, 8, 40, 200, 400 or 500 mg/kg and mated with virgin females which were replaced weekly for a period of eight weeks. At a dosage of 400 mg/kg and above there appeared to be a reduction in the incidence of pregnancies. However, there was no systematic variation indicative of a mutagenic potential over the entire eight-week mating period.
Reproductive toxicity	There was no effect on reproduction activities on animals fed dietary levels of 640 ppm.
Chronic effects	No chronic effect is reported

SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICITY	
Fish, golden orfe	Fish (96 hr LC_{50} mg/L): Practically non-toxic to Carp (>100) and Fiddler crab (>560) Slightly toxic to Bluegill (15.8), Daphnid (15.6), and Shrimp (25.1) Moderately toxic to Trout (2.2) and Oysters (4.6) Highly toxic to catfish (<1.2)
Bees	LD_{50} for bees >100µg/bee
Birds, Japanese quails	LD_{50} for wild duck >4640mg/kg
Mobility	Moderately mobile
Persistence and degradability	It has a low aqueous solubility, low volatility and tends not to be persistent in soil or water systems.
Environmental hazards	Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinse it. Do not contaminate water used for irrigation or domestic purposes

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste disposal	Incinerate it in register-licensed incinerator for hazardous waste. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

Container disposal	Shake empty product container to remove all possible material. When bags are empty, they may be disposed of in a sanitary landfill, or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

SECTION 14 - TRANSPORT INFORMATION

Proper shipping name	Environmentally Hazardous Substance, Solid, N.O.S. (Thiophanate-methyl)
UN-Number	3077
UN Class	9
Packing group	III
Other information	Thiophanate-methyl designated a marine pollutant.

SECTION 15 - REGULATORY INFORMATION

Hazard symbol	
Xn	Harmful
Xi	Irritant
N	Dangerous for the environment.
Risk phrases	
R20	Harmful by inhalation.
R40	Limited evidence of a carcinogenic effect.
R43	May cause sensitization by skin contact.
50/53	Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.
R68	Possible risk of irreversible effects.
Safety phrases	
S7	Keep container tightly closed.
S9	Keep container in a well-ventilated place.
S13	Keep any from food, drink and animal feeding stuffs.
S36	Wear suitable protective clothing.
S39	Wear eye/face protection.

SECTION 16 – OTHER INFORMATION

CAS	Chemical Abstract Service Number
UN	United National Number
LD_{50}	Lethal Dose – 50% (Specify Animal species and route for test)
LC_{50}	Lethal Concentration – 50% (Specify Animal species and route for test)
EC_{50}	Effective Concentration
TDG	Transport of Dangerous Goods Flammability

NFPA	National Fire Protection Agency
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
MDL	Molecular Design Limited
NA	Not Available
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
ADR	Agreement on Dangerous Goods by Road
RID	Regulations concerning the Intl Transport of Dangerous Goods by Rail
IARC	International Agency for Research on Cancer

NOTE:

1. Information contained in this Material Safety Data Sheet is believed to be reliable but no representation; guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. It is up to the manufacturer / seller to ensure that the information contained in the Material Safety Data Sheet is relevant to the product manufactured / handled or sold by him as the case may be. This information is intended to describe safety requirements and not to be taken as warranty implied in respect of the adequacy of this document.
2. The regulatory information is based on Insecticides Act 1968 amended in 2004, Insecticides Rule 1971 chapter 5, rule 19.
3. This document is not for legal purpose.

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Signature & Date :	**Signature & Date :**