



INDOFIL INDUSTRIES LIMITED
 KOLSHET, OFF SWAMI VIVEKANAND ROAD,
 AZAD NAGAR, SANDOZ BAUG P.O.,
 THANE – 400 607. MAHARASHTRA (INDIA)
 TEL. NO. : 00-91-22- 67999100
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2-R&D-MSDS-AGRO-FP-461

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT IDENTIFICATION

Chemical Name	TRICYCLAZOLE + MANCOZEB 18% + 62% WETTABLE POWDER	Company Identification INDOFIL INDUSTRIES LIMITED KOLSHET, OFF SWAMI VIVEKANAND ROAD, AZAD NAGAR, SANDOZ BAUG P.O., THANE – 400 607. MAHARASHTRA (INDIA) TEL. NO. : 00-91-22- 67999100 FAX NO. : 00-91-22-2589 83 57 / 59
Trade Name	Comrade	
Synonyms	TRICYCLAZOLE, MANCOZEB	GROUP: Azole Alkylene Bis Dithiocarbamate
IUPAC Name	Mancozeb: manganese ethylene bis (dithiocarbamate) polymeric complex with zinc salt Tricyclazole: 5-methyl-1,2,4,-triazolo[3,4-b][1,3]benzothiazole.	
CAS Number	Mancozeb : 8018-01-7 Tricyclazole: 41814-78-2	CLASS: Alkylene bis dithiocarbamate fungicide Triazole fungicide
Formula	Mancozeb: C ₈ H ₁₂ MnN ₄ S ₈ Zn Tricyclazole: C ₉ H ₇ N ₃ S	

SECTION 2: COMPOSITION / INFORMATION OF INGREDIENTS

COMPONENT NAME	CAS REGISTRY NO	CONCENTRATION
Tricyclazole	41814-78-2	18%
Mancozeb	8018-01-7	62%
Other ingredients	---	20%

SECTION 3: HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW**

Physical state : Powder

Colour : Yellow

Harmful or fatal if swallowed - can enter lungs and cause damage

Contact can cause eye or skin irritation effects known.

IMMEDIATE HEALTH EFFECTS

Eye contact	This material can cause eye irritation with tearing, redness or a stinging or burning feeling.
Skin contact	Prolonged or repeated skin contact may cause irritation.
Ingestion	Swallowing this material may be harmful. Swallowing this material may cause stomach or intestinal upset with pain, nausea, and / or diarrhea. This material can get into the lungs during swallowing or vomiting. Ingestion can cause temporary CNS depression, drowsiness, and changes in the liver and weight loss.
Inhalation	Breathing high concentrations may be harmful. Inhalation can cause irritation of nose and throat.

DELAYED OR OTHER HEALTH EFFECTS

Target organs	-----
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An "X" in the box adjacent to the hazard title indicates OSHA Hazard classification. If no "X" is present, the product does not exhibit the hazard as defined in the OSHA Hazard Communication standard (29 CFR 1910.1200)

OSHA Health Hazard Classification	OSHA Physical Hazard Classification
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Toxic <input type="checkbox"/>	Highly Toxic <input type="checkbox"/>	Flammable <input type="checkbox"/>	Oxidizer <input type="checkbox"/>
Irritant <input type="checkbox"/>	Sensitizer <input type="checkbox"/>	Combustible <input type="checkbox"/>	
Corrosive <input type="checkbox"/>	Carcinogenic <input type="checkbox"/>	Explosive <input type="checkbox"/>	Organic Peroxide <input type="checkbox"/>
		Pyrophoric <input type="checkbox"/>	unstable <input type="checkbox"/>
		Organic peroxide <input type="checkbox"/>	water-reactive <input type="checkbox"/>

SECTION 4: FIRST AID MEASURES

Eye	Flush eyes with water immediately while holding with eyelids open. Get medical attention if irritation persists.
Skin	Wash skin with water immediately and remove contaminated clothing

	and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion	Call a physician or the poison control center immediately. Drink one or two glasses of water and induce vomiting by touching the back of the throat with finger. Repeat until vomit fluid is clear. Do not induce vomiting or give anything by mouth to an unconscious person.
Inhalation	Immediately move victim to fresh air. If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention if breathing difficulties continue.
Notes to physician	Antidote none known

SECTION 5: FIRE FIGHTING MEASURES

NFPA Flammability Classification	-----
NFPA RATINGS	Health: 1 Flammability:1 Reactivity: -----
OSHA classification	No data
Flash point	Not applicable
Flammability (Explosive limits)	Not applicable
Auto ignition Temperature	No data
Hazardous Combustion products	No data
Extinguishing Media	Small fire: Use dry chemicals, carbon dioxide, foam Large fire: Use Foam, dry chemicals, carbon dioxide
Protection of Fire Fighters	Wear NIOSH / MSHA approved self-contained breathing apparatus and full protective clothing. Water can release flammable carbon disulfide from Mancozeb. Contain water run-off
Special Properties	Unusual fire and explosion hazards In fire situations, toxic oxides of nitrogen, oxides of sulfur, ethylene thiourea and toxic and flammable carbon disulfide can be released.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Protective Measures	Eliminate all sources of ignition in the vicinity of the spill. If this material is released into the work area, evacuate the area immediately.
Spill Management	Wear a NIOSH/MSHA approved dust respirator and all appropriate protective equipment. Do not touch or walk through spilled material. Prevent spilled material from entering waterways, sewers, basements or confined areas. Clean up spill as soon as possible. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations

SECTION 7: HANDLING AND STORAGE

Handling	A spill can cause an immediate fire or explosion hazard. Keep containers closed and do not handle or store near heat, sparks or any other potential ignition sources. Use only with adequate ventilation and personal protection. Avoid contact with eyes, skin, and clothing. Prevent contact with food and tobacco products. Do not reuse empty bag When performing repairs and maintenance on contaminated equipment, Keep unnecessary persons away from area. Eliminate all potential ignition sources. Use gloves constructed of impervious materials and protective clothing if direct contact is anticipated. Provide adequate ventilation. Promptly remove contaminated clothing. Wash exposed skin thoroughly with soap and water after handling.
Storage	Store and transport in accordance with all applicable laws. Keep containers tightly closed and store in a cool, dry, well-ventilated place, plainly labeled and out of closed vehicles. Keep away from all ignition sources. All electrical equipment in areas where this material is stored or handled should be installed in accordance with applicable regulatory requirements and the national electrical code.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls	Provide exhaust ventilation or other engineering controls. An emergency eye wash station and safety shower should be located near the work-station.
Personal Protective Equipment	<p>Eye Protection: Wear eye protection such as safety glasses, chemical goggles, or face shields if engineering controls or work practices are not adequate to prevent eye contact. Contact lenses should not be worn when working with this chemical</p> <p>Hand protection: Avoid skin contact .Use gloves. Wash hands with plenty of mild soap and water before eating, drinking, use of toilet facilities or leaving work.</p> <p>Body protection: Avoid skin contact. Wear long-sleeved fire-retardant garments. Additional chemical-resistant protective gear may be required. This may include an apron, boots and additional facial protection.</p> <p>Respiratory Protection: Dust / mist filtering respirator or a NIOSH approved respirator.</p> <p>Work practices: users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible wash thoroughly and change into clean clothing. Deluge safety shower and eye wash station should be located in work area</p>

Occupational exposure limits

Component	Limit		
Mancozeb	ACGIH	Not determined (threshold limit value)	
Mancozeb	OSHA	Not determined (Permissible exposure limit)	
Tricyclazole	OSHA	Not determined	
Tricyclazole	ACGIH	Not determined	

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES			
Physical state	Solid powder	Colour	Yellow
Odor	Characteristics odour	pH	6 to 7.5
Specific gravity	NA	Solubility in water	Forms Suspension in water
Bulk density	0.43 ± 0.04 gm/ml		
Vapor pressure	NA	Vapor density	NA
Viscosity	NA	Boiling point	NA
Melting / Freezing point	NA		

SECTION 10: STABILITY AND REACTIVITY	
Chemical stability	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Conditions to Avoid	Keep away from heat, flame and other potential ignition sources. Keep away from strong oxidizing conditions and agents.
Material Incompatibility	May react with strong oxidizing agents.
Hazardous Decomposition Products	Oxides of nitrogen, sulfur, ethylene thiourea, carbon disulfide.
Hazardous Polymerization	Will not occur

SECTION 11: TOXICOLOGICAL INFORMATION	
Acute Oral toxicity	GHS Category 5
Acute Dermal toxicity	LD ₅₀ (Rat) > 2000 mg/kg
Acute Inhalation toxicity	LC ₅₀ > 1.46 mg/L
Eye irritation: Non-irritant	
Skin irritation: Non-irritant	
Skin Sensitization: Non-skin sensitizer	

SECTION 12: ECOLOGICAL INFORMATION	
Eco-toxicity	
Bird	Dietary LC ₅₀ > 5000 ppm Japanese Quail
Fish LC₅₀ (96 h)	5.02 mg/l <i>Dartio rerio</i>
Algae EC₅₀ (72 h)	Green alga <i>Pseudokirchneriella subcapitata</i> 0.636 mg/L.
Daphnia EC₅₀ (48 h)	1.87 mg/l
Honey Bee	LD ₅₀ (Contact) > 100 µg/bee
	LD ₅₀ (Oral) > 122.65 µg/bee
Earthworm	LC ₅₀ (14 d) > 1000 mg/kg <i>Eisenia foetida</i>
(Assessment completely or largely based on data for Tricyclazole and Mancozeb Active	

Substance)	
Environmental fate	Tricyclazole: Animals: Rapid and extensive metabolism Plants: The principal metabolite in plants is the hydroxymethyl analogue Soil/Environment: Loamy sand pH 6.5, 1.5% o.m.
	Mancozeb: Mancozeb breaks down rapidly in soil, sediment and water; terminal metabolites are normal products and with mineralization to carbon dioxide. It does not bioaccumulate Animals: Poorly absorbed and rapidly excreted in animals. Plants: Extensively metabolized in plants, forming ethylenethiourea, ethylenethiuram disulfide and sulfur as transitory intermediates. Soil/Environment: Rapidly degraded in the environment by hydrolysis, oxidation, photolysis and metabolism. Soil DT ₅₀ < 1d (ave. 20°C)

SECTION 13: DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR part 261) or other state and local regulations.

Dispose of empty, used containers in approved incineration plant in approved land filling area or in a disposal pit away from desirable plants and their roots and water courses. On-site disposal of undiluted product is unacceptable.

Disposal Should be in accordance with local state or national legislation. Remove to a safe location and bury on an authorized landfill site. Do not burn empty containers or Product.

SECTION 14: TRANSPORT INFORMATION

	Not regulated as a hazardous material by any mode of transportation. Marine Pollutant : Yes Export water (IMO) : Not regulated Air (ICAO / IATA) : Not regulated
DOT Shipping Name	DOT Technical Name: Mancozeb Technical and Tricyclazole Technical
DOT Hazard class	Class: 9 UN Number: 3077
DOT identification number	No data
DOT packing Group	Packing Group: 3
DOT additional information	No data

SECTION 15: REGULATORY INFORMATION

TSCA Inventory	No data
SARA 311/312 Hazard Identification	Immediate (acute) health effects: yes Delayed (chronic) health effects: yes Reactive: yes This product contains the substances subject to the reporting requirements of SARA title 3, section 313 and 40 CFR part 372.
SARA 302/304 Emergency	No data

planning and notification	
SARA 313 Toxic chemical notification and Release reporting	This product contains the following components in concentrations above that are listed as toxic chemicals in 40 CFR part 372 pursuant to the requirements of section 313 of SARA.
CERCLA	No data
Clean air act (CAA)	Not applicable

SECTION 16: OTHER INFORMATION

NFPA RATINGS	Health: 1	Flammability:1	Reactivity:1
HMIS RATINGS	Health: 1	Flammability:1	Reactivity:1
	0 = Least 1= slight 2= Moderate 3= High 4=Extreme		

ABBREVIATIONS

STEL	Short term exposure limit
ACGIH	American conference of Government Industrial Hygienists
NIOSH	National institute of safety and health
SARA	Super fund Amendments and Reauthorization Act
TWA	Time weighted average
OSHA	Occupational safety and health
NFPA	National Fire protection agency
HMIS	Hazardous Materials information system
RCRA	Resource conservation Recovery act
TSCA	Toxic substance Control Act
WHMIS	Work place Hazardous Materials information system
IRAC	International Agency for Research on Cancer

MANUFACTURE'S / SUPPLIER'S DATA

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Local Bodies Involved	Collector of Thane		

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