

MATERIAL SAFETY DATA SHEET

: According to EC-directive 2001/58/EC

Vulcanizing agent DTDM

HS Code:38121000.00

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product label name	4,4' -dithiodimorpholine
Supplier	Qingdao YLSCH Industry&Trade Co.,Ltd Room 501,2-3 Unit. No.8,Zhengzhou Road, Qingdao,China. TEL: +86 18661665800
Emergency telephone	TEL: +86 18661665800
Intended use	Rubber Vulcanizing agent

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	4,4'-dithiodimorpholine
CAS NO.	103-34-4
Chemical description	White acicular crystal powder
TSCA NO.	none
EINECS NO.	none
Other information	$C_8H_{16}N_2O_2S_2$

3. HAZARDS IDENTIFICATION

Emergency overview:	Warning combustible dust- explosion potential. Keep away from heat, sparks, and flame. This material is irritating to eyes and respiratory tract.
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4. FIRST AID MEASURES

Symptoms and effects	Dust may be irritating to the respiratory tract and cause symptoms of bronchitis. Ingestion: The product produces characteristic stomach breath odour, nausea or vomiting. Eye: Particulates of the material may cause mechanical irritation. Skin: In case of prolonged contact: Slight irritation. In case of repeated contact: Risk of dermatitis.
First aid	

General	In all cases of doubt, or when symptoms persist, seek medical attention.
Inhalation	Move to fresh air. If symptoms persist, seek medical advice.
Skin	Wash immediately with soap and water. Launder clothes before reuse.
Eye	Rinse thoroughly with plenty of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if irritation develops.
Ingestion	Rinse mouth, give water to drink. Seek medical advice.
Advice to physician	Symptomatic treatment is advised.

5. FIRE-FIGHTING MEASURES

Extinguishing media	Large quantities of water, waterspray, water mist, foam, dry chemical powder, CO ₂ , sand.
Unsuitable extinguishing media	Waterjet Combustible powder. Dust explosion possible in the presence of air.
Special exposure hazards	Burns with nearly invisible flame. Emits toxic and corrosive fumes under fire conditions.
Hazardous decomposition/ combustion products	Sulfur oxides (SO _x): May cause delayed pulmonary oedema.
Protective equipment	Wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	For personal protection see Section 8. Avoid dust generation.
Environmental precautions	Avoid discharge into the environment. Collect as much as possible in a clean container for (preferable) reuse or disposal.
Methods for cleaning up	

7. HANDLING AND STORAGE

Handling	Keep away from sources of ignition - No smoking! Use non-sparking handtools. Avoid dispersing the dust into clouds. Avoid contact with eyes. Good industrial practice in housekeeping and personal hygiene should be followed. Dust/air mixtures may ignite violently upon exposure to sparks or sources of ignition.
Fire and explosion prevention	Avoid dust accumulation. Avoid dispersing the dust into clouds. Eliminate all sources of ignition, and do not generate flames or sparks. Prevent electrostatic discharges. Use grounded equipment. And hoppers to prevent generation of dust clouds.
Storage requirements	Store away from sources of heat and ignition. Store away from reactive

products (refer to sec. 10). Keep the original package or container closed if not in use. Protect from direct sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls Avoid dust generation. Ensure good ventilation and local exhaustion of the working area.

Exposure limits

Name:4,4'-dithiodimorpholine

Personal protection

Respiratory Avoid breathing dust. In case of insufficient ventilation, wear suitable respiratory equipment.

Hand Wear suitable gloves.

Eye Wear safety goggles.

Skin and body Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White acicular crystal powder	Colour	White
Odour	----	Boiling point	----
Melting point ≥	≥120°C	Flash point	----
Flammability	----	Loss on drying%(Max)	0.50
Explosive properties		Auto ignition temperature	> 290 ° C
Oxidizing properties	----	Vapour pressure	<0.01 mBar (20°C)
Density	1.28-1.32 g/cm ³ (25°C)	Bulk density	----
Solubility in water	Insoluble in water	Solubility in other solvents	Partly soluble
pH value	----	Partition coefficient	----
Mooney Viscosity	----	Relative vapour density	----
Residues (150um)% Max	0.10(Max)	Explosion limits	----
Strength of grain(N)	----	Copper content % Max	----
Assay Content % ≥	96	Element Sulfur content%	----

10. STABILITY AND REACTIVITY

Stability	Stable under recommended storage and handling conditions (see section 7).
Conditions to avoid	Heat, sources of heat, naked flames, sparks, direct sunlight
Materials to avoid	Oxidants, amines
Hazardous decomposition products	Sulfur oxides (SO _x).

11. TOXICOLOGICAL INFORMATION

Name	4,4'-dithiodimorpholine
Acute toxicity	
Oral LD50	rat: 5600 mg/kg.
Dermal LD50	rabbit: >5010 mg/kg.
Irritation	
Skin	rabbit: Non-irritating
Eye	rabbit: Non-irritating
Respiratory	rabbit: Non-irritating
Sensitization	Patch testing (Human experience): Not sensitizing
Genotoxicity	Not mutagenic (in vitro)
Other toxicological information	Chronic toxicity: NOEL (No Observable Effect Level) (rat, oral): 500 mg/kg.

12. ECOLOGICAL INFORMATION

Name	4,4'-dithiodimorpholine
Ecotoxicity	
Fish	96h-LC50 (Rainbow Trout)=1.8 mg/l.
Algae Toxicity	96hr-EC50 Algae =29.0mg/l.
Biodegradability	Assimilation and consumption in proteic synthesis

13. DISPOSAL CONSIDERATIONS

Product	Small quantities: According to local regulations. (most probably controlled incineration). The incinerator must be equipped with a system for the neutralization of SOx. Large quantities: Consult YLSCH Chemical for special advice.
Contaminated packaging	According to local regulations.

14. TRANSPORT INFORMATION

Land transport (ADR/ RID)

ADR class	9	RID class	9
ADR/RID packing group	----	Hazard Identification No.	----
Substance Identification No.	----	UN number	3077

Proper Shipping Name 4,4'-dithiodimorpholine
Other information Documentation justifying the non-dangerous goods properties is available on request.

**Sea transport (IMDG-code/ IMO)**

Correct technical name	9	IMDG Class	9
UN Number		Packaging group	
EMS Number	----		
Other information	Documentation justifying the non-dangerous goods properties is available on request.		

Air transport (ICAO-TI/ IATA-DGR)

ICAO-TI/IATA-DGR Class	9	UN number	3077
Packing group			

Correct technical name	4,4'-dithiodimorpholine
Other information	Documentation justifying the non-dangerous goods properties is available on request.

15.REGULATORY INFORMATION

Chemical description	4,4'-dithiodimorpholine
Labelling according to EC directives	
EC-number	See section 2
Classification based on	Tests
R(isk) phrase(s)	None
S(afety) phrase(s)	None

16.OTHER INFORMATION

This information only concerns the above mentioned product and does not need to be valid if used with other product(s) or in any process. The information is to our best present knowledge correct and complete and is given in good faith but without warranty. It remains the user's own responsibility to make sure that the information is appropriate and complete for his special use of this product.