

**MATERIAL SAFETY DATA SHEET:** According to EC-directive 2001/58/EC**Vulcanization Agent DTDM****38121000.00****1. 化学品及企业标示(CHEMICAL PRODUCT AND COMPANY IDENTIFICATION)**

产品标签名/ Product label name	4,4' -二硫基二吗啉 4,4' -dithiodimorpholine 深圳市华起达实业有限责任公司 Meyors Chemical INC Limited 深圳市罗湖区中兴路, 外贸集团大厦 2610-2611 室
供应商/ Supplier	RM 2610-2611 Foreign Trade Building, Zhong Xing Road Shen Zhen. China TEL: +86-755-82184166 FAX: +86-755-82187033
紧急电话/ Emergency telephone	+86-755-82190130
产品用途/ Intended use	橡胶硫化剂/ Rubber Vulcanization Agent

2. 成分/组成信息(COMPOSITION/INFORMATION ON INGREDIENTS)

化学名/ Chemical name	4,4' -二硫基二吗啉 4,4'-dithiodimorpholine
CAS 编号/ CAS NO.	103-34-4
产品描述/ Chemical description	白色粉末/White powder
TSCA NO. 编码/ TSCA NO.	无/none
EINECS 号码/ EINECS NO.	无/none
其他信息/ Other information	无/none

3. 危险性鉴定(HAZARDS IDENTIFICATION)

3.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

The following Hazard Statements are applicable only to the EU regulations and not the US GHS regulation:H400,H410.



GHS09 Environment
Aquatic Acute 1
Aquatic Chronic 1

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.



GHS07
Eyes Irrit. 2
Skin Sens. 1

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

Information concerning particular hazards for human and environment: Not applicable.

3.2 Label elements

Labeling according to Regulation (EC) No 1272/2008

The product is additionally classified and labelled according to the Globally Harmonized System (GHS)
within the United States.



The following Hazard Statements are applicable only to the EU regulations and not the US GHS regulation:

H400.

The substance is classified and labeled according to the CLP regulation.

Hazard pictograms



GHS07



GHS09

Signal word: Warning

Hazard-determining components of labeling: 4,4'-dithiodimorpholine

Hazard statements

The following Hazard Statements are applicable only to the EU regulations and not the US GHS regulation: H410

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

H410 Very Toxic to aquatic life with long lasting effects.

Precautionary statements

P280 Wear protective gloves and eye protection.

P264 Wash thoroughly after handling.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P337+P313 If eye irritation persists: Get medical advice/attention.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

Hazard description

NFPA ratings (scale 0-4)



HMIS ratings (scale 0-4)



Health = 1

Fire = 1

Reactivity = 0

Health = 1

Fire = 1

Reactivity = 0

HMIS Long Term Health Hazard Substances: Substance is not listed.

3.3 Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

4. 急救措施(FIRST AID MEASURES)

症状和效果/ 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.

粉尘可能吸入呼吸道，从而导致支气管炎。

摄取：产品的特性会导致胃胀，恶心或呕吐。

急救/First aid**通常情况/ General**

In all cases of doubt, or when symptoms persist, seek medical attention.

任何可疑情况，或有任何症状出现，请马上找医生咨询。

吸入/ Inhalation

Move to fresh air. If symptoms persist, seek medical advice.

呼吸新鲜空气。如果有持续症状，请马上就医。

皮肤/ Skin

Wash immediately with soap and water. Launder clothes before reuse.

用肥皂和水立即清洗。洗熨衣物后再使用。

Rinse thoroughly with plenty of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if irritation develops.

眼睛/ Eye

用大量清水彻底冲洗。眼睑应远离眼球，以确保彻底冲洗。如果刺激发展，寻求医疗建议。

摄取/ Ingestion

Rinse mouth, give water to drink, Seek medical advice.

漱口，饮水，求医。

医生建议/ Advice to physician

Symptomatic treatment is advised.

建议对症治疗。

5. 消防措施(FIRE-FIGHTING MEASURES)**灭火媒介/ Extinguishing media**

Large quantities of water, waterspray, water mist, foam, dry chemical powder, CO₂, sand.

不适用的灭火媒介

大量的水、喷水、水雾、泡沫、干粉、二氧化碳、沙子。

/ Unsuitable extinguishing media

Waterjet.

水注（流）

特殊危险/ Special exposure hazards

Combustible powder. Dust explosion possible in the presence of air. Burns with nearly invisible flame. Emits toxic and corrosive fumes under fire conditions.

可燃性粉末。粉尘在空气中爆炸是可能的。Burns 几乎看不见火焰。在火灾条件下发出有毒和腐蚀性的烟雾。

分解危险/燃烧产品/

Sulfur oxides (SO_x): May cause delayed pulmonary oedema.

Hazardous decomposition/**Combustion products**

硫氧化物（SOX）：可能导致延迟肺水肿。

保护设备/ Protective equipment

Wear self-contained breathing apparatus.

佩戴自给式呼吸器。

6. 泄露应急处理(ACCIDENTAL RELEASE MEASURES)**个人防范/ Personal precautions**

For personal protection see Section 8. Avoid dust generation.

对于个人防范请参照第 8 部分。避免粉尘的产生。

**环境预防/ Environmental precautions**

Avoid discharge into the environment.

避免流入环境之中。

清洁处理方法/ Methods for cleaning up

Collect as much as possible in a clean container for (preferable) reuse or disposal.

尽可能的将其收集在清洁的容器里以便回收或集中处理。

7. 操作处置与储存(HANDLING AND STORAGE)**操作处置/ 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.

远离火源，禁止吸烟！使用不起火的手工工具。避免将灰尘分散到云层中。

避免接触眼睛。

在家务卫生和个人卫生方面应遵循良好的工业惯例。

Dust/air mixtures may ignite violently upon exposure to sparks or sources of ignition..

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.

灰尘或空气混合物可能在暴露于火花或点火源时剧烈燃烧。避免灰尘堆积。避免将灰尘分散到云层中。消除所有的点火源，不产生火焰或火花。防止静电放电。使用接地设备。料斗，防止尘云的产生。

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.

储存远离热源和点火。远离反应性产品（参阅 SEC）。10）。如果不使用，请保持原包装或容器关闭。避免阳光直射。

防火防爆/Fire and explosion prevention**储存要求/ Storage requirements****8. EXPOSURE CONTROLS/PERSONAL PROTECTION****工程学控制/ Engineering controls**

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

避免粉尘产生。确保当地工作场所通风。

暴露限制/ Exposure limits**个体防护/ Personal protection****呼吸器/ Respiratory**

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

避免吸入粉尘。在通风不畅的情况下请佩戴相应的呼吸器。



手/ Hand	Wear suitable gloves. 佩戴相应的长手套。
眼/ Eye	Wear safety goggles. 佩戴防护眼罩。
皮肤和身体/ Skin and body	Wear suitable protective clothing. 穿戴相应的保护服装。

9. 物理和化学特性(PHYSICAL AND CHEMICAL PROPERTIES)

外观/ Appearance	White powder 白色粉末	颜色/ Colour	White 白色
气味/ Odor	----	沸点/ Boiling point	---
熔点/ Melting point	≥120 °C	闪点/ Flash point	----
易燃/Flammability	----	Loss on drying%(Max) 加热减量%(Max)	0.50
爆炸性/Explosive properties	----	自燃温度 /Autoignition temperature	> 290 °C
氧化性能/Oxidizing properties	----	蒸汽压力/Vapour pressure	<0.01 mBar (20°C)
比重/Density	1.28-1.32 g/cm ³ (25°C)	体积密度/Bulk density	----
在水中溶解/Solubility in water	Insoluble in water 不溶于水	在其他溶剂中的溶解度 /Solubility in other solvents	Partly soluble. 部分溶解
PH 值/pH value	----	分配系数/Partition coefficient	----
Residues (150um)% Max 筛余物(150um)% 最大值	0.10(Max)	相对蒸汽密度/Relative vapour density	----
Assay Content % ≥ 纯度 % ≥	96		

10. 稳定性和反应性(STABILITY AND REACTIVITY)

稳定性/ Stability	Stable under recommended storage and handling conditions (see section 7). 在推荐的储存和处理条件下稳定 (见第 7 节)。
应避免的情况/ Conditions to avoid	Heat, sources of heat, naked flames, sparks, direct sunlight 热, 热源, 裸露的火焰, 火花, 直射的阳光
避免材料/Materials to avoid	Oxidants, amines 氧化剂, 胺
有害分解产物/Hazardous decomposition products	Sulfur oxides (SOx). 硫氧化物 (SOX)

11. 毒理学资料(TOXICOLOGICAL INFORMATION)

名称/ Name	4,4'-dithiodimorpholine 4,4'-二硫基二吗啉
敏感性毒害/ Acute toxicity	



口头的/ Oral LD50	老鼠 rat: 5600mg/kg.
皮肤的/ Dermal LD50	兔子 rabbit: >5010 mg/kg.
易愤怒/ Irritation	
皮肤/ Skin	兔子 rabbit: Non-irritating
眼睛/Eye	兔子 rabbit: Non-irritating
呼吸系统/Respiratory	兔子 rabbit: Non-irritating
敏化作用/Sensitization	Patch testing (Human experience): Not sensitizing. 帕奇试验（人类经验）：不致敏。
遗传毒性/Genotoxicity	Not mutagenic (in vitro) 不致突变（体外）
其他毒理学信息/Other toxicological information	Chronic toxicity: NOEL (No Observable Effect Level) (rat, oral): 500 mg/kg. 慢性毒性：加琳诺爱儿（无明显作用水平）（大鼠，口服）：500 mg/kg。

12. 生态学资料(ECOLOGICAL INFORMATION)

名称/Name	4,4'-dithiodimorpholine 4,4'-二硫基吗啉
生态学/ Ecotoxicity	
鱼/ fish	96h-LC50 (Rainbow Trout)=1.8 mg/l.
藻类毒性/algae Toxicity	96hr-EC50 Algae =29.0mg/l.
生物蓄积/Bioaccumulation	Assimilation and consumption in proteic synthesis 蛋白质合成中的同化与消耗

13. 废弃处理(DISPOSAL CONSIDERATIONS)

产品/ 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 Meyors Chemical for special advice. 少量：按当地规定。（很可能是控制焚烧）。焚化炉必须配备一个中和 SOX 的系统。 大量：请联系美尔化工获取建议。
包装污染/ Contaminated packaging	According to local regulations. 根据当地规定。

14. TRANSPORT INFORMATION



14.1 UN-Number	
DOT, ADR, IMDG, IATA	Not regulated UN 3077
14.2 UN proper shipping name:	
DOT	Not regulated
ADR	3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID,N.O.S.(4,4'-dithiodimorpholine)
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(4,4'-dithiodimorpholine), MARINE POLLUTANT
IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(4,4'-dithiodimorpholine)
14.3 Transport hazard class(es)	
DOT Class ADR	Not regulated
 	Class:9 Miscellaneous dangerous substances and articles. Label: 9
 	Class: 9 (M7) Miscellaneous dangerous substances and articles. Label: 9
14.4 Packing group	
DOT	N/A
ADR, IMDG, IATA	III
14.5 Environmental hazards	Product contains environmentally hazardous substances:(4,4'-dithiodimorpholine)
Marine pollutant	Yes Symbol (fish and tree)
Special Marking (ADR)	Symbol(fishandtree)
Special Marking (IATA)	Symbol(fishandtree)
14.6.Special precautionsfor user	Warning: Miscellaneousdangeroussubstancesandarticles.
Danger code (Kemler)	90
EMS Number	F-A,S-F
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	Not applicable. Transport/Additional information
ADR	
Limited quantities (LQ)	5kg
Transport category	3
Tunnel restriction code	E
UN "Model Regulation"	UN 3077,ENVIRONMENTALLY HAZARDOUS SUBSTANCE,SOLID, N.O.S. (4,4'-dithiodimorpholine), 9, III

15. 法规信息(REGULATORY INFORMATION)

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

United States (USA)	
SARA Section 355 (extremely hazardous substances)	Substance is not listed.
SARA Section 313 (Specific toxic chemical listings)	Substance is not listed.
TSCA (Toxic Substances Control Act)	Substance is listed.
Proposition 65 (California)	
Chemicals known to cause cancer	Substance is not listed.
Chemicals known to cause reproductive toxicity for females	Substance is not listed.
Chemicals known to cause reproductive toxicity for males	Substance is not listed.



Chemicals known to cause developmental toxicity	Substance is not listed.
Carcinogenic Categories	
EPA (Environmental Protection Agency)	Substance is not listed.
IARC (International Agency for Research on Cancer)	Substance is not listed.
TLV (Threshold Limit Value established by ACGIH)	Substance is not listed.
NIOSH-Ca (National Institute for Occupational Safety and Health)	Substance is not listed.
OSHA-Ca (Occupational Safety & Health Administration)	Substance is not listed.
Canada	
Canadian Domestic Substances List (DSL)	Substance is listed.
Canadian Ingredient Disclosure list (limit 0.1%)	Substance is not listed.
Canadian Ingredient Disclosure list (limit 1%)	Substance is not listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16. 其他信息(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.

这些信息仅仅涉及以上提到的产品，如果用于其他产品或其他过程，本公司不付任何法律责任。这些信息是我们当前最新最好的资料编写而成，值得信任，但我们不能绝对保证没有错误。它仅仅起到提醒使用者自己使这些信息指导相关产品用于适当的地方。