

**Safety Data Sheet**  
**According to Regulation (EU) No. 1907/2006, Annex II,**  
**According to Regulation (EU) No. 1272/2008,**  
**Amended by REGULATION (EU) No 453/2010**

DTDM

SDS Record Number: C555-TCO-010-110053  
Version 1.1      Revision date: 16/02/2011

Printing date:16/02/2011

**1 Identification of the substance and of the company/undertaking**

**1.1 Product identifier:**

Identification on the label/Trade name: DTDM  
Additional identification: 4,4'-Dithiodimorpholine  
Identification of the product: CAS#103-34-4; EC#203-103-0  
Index Number: Not available  
REACH registration No.: Not available

**1.2 Relevant identified uses of the substance and uses advised against:**

**1.2.1 Identified uses:**

Used as rubber accelerator.

**1.2.2 Uses advised against:**

Not available.

**1.3 Details of the supplier of the safety data sheet:**

Supplier(Only representative): Chemical Inspection & Regulation Service Limited  
Supplier(Manufacturer): Shanghai Rokem International Co., Ltd  
Address: 9D, Double Dove Great Tower, 438, Pudian Road. Shanghai, 200122, P.R.CHINA  
Contact person(E-mail): -  
Telephone: +86-21-50812951  
Fax: +86-21-58818728

**1.4 Emergency telephone Number:**

+353 41 980 6916

Available outside office hours?      YES            NO     

**2 Hazards Identification**

**2.1 Classification of the substance**

**2.1.1 Classification:**

The substance is classified as following according to 67/548/EEC and REGULATION (EC) No 1272/2008:

REGULATION (EC) No 1272/2008	
Hazard classes/Hazard categories	Hazard statement
Skin Sens. 1	H317
Aquatic Chronic 2	H411

For full text of H- phrases: see section 2.2.

67/548/EEC	
Hazards characteristics	R-Phrases
-	R43
N	R51/53

For full text of R- phrases: see section 16.

**2.1.2 The most important adverse effects**

**2.1.2.1 The most important adverse physicochemical effects:**

Not applicable.

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**2.1.2.2 The most important adverse human health effects:**

May cause sensitization by skin contact.

**2.1.2.3 The most important adverse environmental effects:**

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**2.2 label elements**

**Hazard Pictograms:**



**Signal Word(S):**

Warning.

**Hazard Statement:**

H317: May cause an allergic skin reaction.

H411: Toxic to aquatic life with long lasting effects.

**Precautionary Statement:**

P261: Avoid breathing dust/fume/ gas/mist/vapours/spray.

P272: Contaminated work clothing should not be allowed out of the workplace.

P273: Avoid release to the environment.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

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

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

P363: Wash contaminated clothing before reuse.

P391: Collect spillage.

P501: Dispose of contents/container to local/regional/national/ international regulation (to be specified)

**2.3 Other hazards**

Not available (PBT,vPvB, Substance is an endocrine disruptor etc.)

**3 Composition/information on ingredients**

**Substance/Mixture:** Substance

**Ingredient(s):**

Chemical Name	Registration No.	CAS No.	EC No.	Concentration
4,4'-Dithiodimorpholine	N/A	103-34-4	203-103-0	≥96%

**4 First aid measures**

**4.1 Description of first aid measures:**

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

**4.1.1 In case of inhalation:**

Remove from exposure site to fresh air and keep at rest. Obtain medical advice.

**4.1.2 In case of skin contact:**

Remove any contaminated clothing or shoes. Wash affected areas thoroughly with soap and water for at least 15 minutes. If irritation persists or any sign of tissue damage is apparent, seek medical attention.

**4.1.3 In case of eyes contact:**

Remove contact lenses. Hold eyelids apart. Flush immediately with water for at least 15 minutes. Seek medical attention.

**4.1.4 In case of ingestion:**

Only when conscious, rinse mouth, give plenty of water to drink. DO NOT induce vomiting. Seek medical advice.

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**4.2 Most important symptoms and effects, both acute and delayed**

May cause sensitization by skin contact.

**4.3 Indication of any immediate medical attention and special treatment needed**

If skin irritation or rash occurs, get medical advice/attention.

**5 Fire-Fighting measures**

**5.1 Extinguishing media:**

**Suitable extinguishing media:** Carbon dioxide, appropriate foam or dry chemical, water spray, water mist.

**Unsuitable extinguishing media:** Water jet.

**5.2 Special hazards arising from the substance or mixture**

Emits toxic fumes under fire conditions. Carbon monoxide (CO), Sulfur oxides (SO<sub>x</sub>), nitrous gases (NO<sub>x</sub>).

**5.3 Advice for fire-fighters:**

Firefighters must wear fire resistant protective equipment. Wear self contained breathing apparatus and protective gloves.

**6 Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures:**

**6.1.1 For non-emergency personnel:**

Remove ignition sources. Provide adequate ventilation. Avoid inhalation of vapour or dust. Avoid skin and eye contact. Wear protective gloves/protective clothing/eye protection/face protection.

**6.1.2 For emergency responders:**

Wear an appropriate NIOSH/MSHA approved respirator if mist, vapor or dust is generated.

**6.2 Environmental Precautions:**

Avoid disposing into drainage/sewer system or directly into the aquatic environment. Keeping away from drains, surface- and ground-water and soil.

**6.3 Methods for Containment and Cleaning up:**

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal. Clean up affected area.

**6.4 Reference to other sections:**

See Section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

**6.5 Additional information:**

Wet clean or vacuum up solids.

Don't use a brush or compressed air for cleaning surfaces or clothing.

Clear spills immediately.

**7 Handling and storage**

**7.1 Precautions for safe handling:**

**7.1.1 Protective measures:**

Do not breathe dusts/vapor. Handle in well ventilated areas. Eliminate all sources of ignition, and do not generate flames or sparks. Take precautionary measures against static discharges.

**7.1.2 Advice on general occupational hygiene:**

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Do not eat, drink and smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas.

**7.2 Conditions for safe storage, including any incompatibilities:**

Requirements for storage rooms and vessels. Keep in original packaging, tightly closed. Advice on storage assembly. Do not store together with foodstuffs. Do not store together with: Acids and Bases.

Further information on storage conditions: Keep container tightly closed and dry in a cool, well-ventilated place.

**7.3 Specific end use(s):**

Not applicable.

**8 Exposure control/personal protection**

**8.1 Control parameters:**

**8.1.1 Occupational exposure limits:** WEL-TWA: 4 mg/m<sup>3</sup> (respirable dust)

OES-TWA: 10.0 mg/m<sup>3</sup> (inhalable dust) OES-TWA: 4.0 mg/m<sup>3</sup> (respirable dust)

**8.1.2 Additional exposure limits under the conditions of use:** Not available.

**8.1.3 DNEL/DMEL and PNEC-Values:** Not available.

**8.2 Exposure controls**

**8.2.1 Appropriate engineering controls:**

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

**8.2.2 Individual protection measures, such as personal protective equipment:**

Eye/face protection                      Wear appropriate goggles to prevent eye exposure.

Hand protection                            Wear appropriate gloves to prevent skin exposure.

Body protection                            Wear suitable protective clothing to prevent skin exposure.

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

Thermal hazards                            Wear suitable protective clothing to prevent heat.

**8.2.3 Environmental exposure controls:**

Avoid discharge into the environment. This material and its container must be disposed of as hazardous waste.

According to local regulations, Federal and official regulations.

**9 Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

Appearance:	Dedusted powder; pellets
Colour:	White, off white
Odour:	Mild, amine like
Odour threshold:	Not available
pH:	Not determined
Melting point/range (°C):	120 - 130 °C (initial), 123 - 131 °C (final)
Boiling point/range (°C) :	Not determined
Flash point (°C) :	154 °C (Cleveland, open cup)
Evaporation rate:	Not applicable
Flammability (solid, gas);	Not flammable
Ignition temperature (°C) :	Not determined
Upper/lower flammability/explosive limits:	Not determined
Vapour pressure (20°C) :	Negligible at room temperatures
Vapour density:	Not applicable
Relative Density (25°C):	1360 kg/m <sup>3</sup>
Bulk density (kg/m <sup>3</sup> ) :	Not determined

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Water solubility (g/l) at 20°C :	0.237 kg/m <sup>3</sup> (25 °C)
n-Octanol/Water (log Po/w) :	Log pow = 2.49
Auto-ignition temperature:	Not available
Decomposition temperature:	Not available
Viscosity, dynamic (mPa s) :	Not determined
Explosive properties:	Not determined
Oxidising properties:	Not applicable

**9.2. Other information:**

Fat solubility(solvent– oil to be specified) etc:	Not available
Surface tension:	Not available
Dissociation constant in water( pKa):	Not available
Oxidation-reduction Potential:	Not available

**10 Stability and reactivity**

**10.1 Reactivity:**

The substance is stable under normal storage and handling conditions.

**10.2 Chemical stability:**

Under normal conditions, the product is stable. No hazardous reaction when handled and stored according to provisions.  
Hazardous reactions are not known.

**10.3 Possibility of hazardous reactions:**

Under normal conditions, not hazardous reactions will occur.

**10.4 Conditions to avoid:**

Heating > 130 °C: Releases morpholine which is harmful and irritant.

**10.5 Incompatible materials:**

During the vulcanization process, traces of carcinogenic N-nitrosamines may be formed from decomposition products (amines) in the presence of nitrosating agents.

**10.6 Hazardous decomposition products:**

Thermal decomposition products: carbon monoxide (CO), nitrous gases (NO<sub>x</sub>), Sulfur oxides (SO<sub>x</sub>).

**11 Toxicological information**

**11.1 Toxicokinetics, metabolism and distribution**

**Non-human toxicological data:** Not available

**Method:** Not available

**Dosis:** Not available

**Routes of administration:** Not available

**Results:** Not available

**Absorption:** Not available

**Distribution:** Not available

**Metabolism:** Not available

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**Excretion:** Not available

**11.2 Information on toxicological effects**

**Acute toxicity:**

LD50( Oral, Rat): 5600 mg/kg  
 LD50(Dermal Rabbit): > 5010 mg/kg  
 LD50(Inhalation, Rat): Not available

**Skin corrosion/Irritation:** Not classified

**Serious eye damage/irritation:** Not classified

**Respiratory or skin sensitization:** May cause sensitization by skin contact.

**Germ cell mutagenicity:** Not classified

**Carcinogenicity:** Not classified

**reproductive toxicity:** Not classified

**STOT- single exposure:** Not classified

**STOT-repeated exposure:** Not classified

**Aspiration hazard:** Not classified

**12 Ecological information**

**Toxicity:**

Acute toxicity		Time	Species	Method	Evaluation	Remarks
LC50	1.6 mg/l	96h	Fish(Lepomis macrochirus)	OECD 203	N/A	N/A
EC50	4.5 mg/l	48h	Daphnia	OECD 202	N/A	N/A
EC50	29 mg/l	96h	Algae	OECD 201	N/A	N/A

**Persistence and degradability:**

**Degradation Abiotic:** Hydrolysis: t1/2 = 42 hours

**Degradation Biotic:** 34.6 % (35 days, Shake flask CO2 evolution assay)

**Bioaccumulative potential:**

**Bioaccumulation:** Log Pow = 2.49 Bio Concentration Factor (BCF) = 29 (calculated)

**Mobility in soil:**

Not available.

**Results of PBT&vPvB assessment:**

Not available.

**Other adverse effects:**

Not applicable.

**13 Disposal considerations**

**13.1 Waste treatment methods**

Avoid discharge into the environment. This material and its container must be disposed of as hazardous waste. According to local regulations, Federal and official regulations.

**13.2 Product / Packaging disposal:**

If empty container retains product residues, all label precautions must be observed. Return for reuse or dispose according to national or local regulations. .

**14 Transport information**

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO/IATA)
<b>UN-Number:</b>	UN3077	UN3077	UN3077

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<b>UN Proper shipping name:</b>	Environmentally hazardous substance, solid, n.o.s. (not including waste)	Environmentally hazardous substance, solid, n.o.s. (not including waste)	Environmentally hazardous substance, solid, n.o.s. (not including waste)
<b>Transport hazard Class:</b>	9	9	9
<b>Packaging group:</b>	III	III	III
<b>Environmental hazards:</b>	Environmentally hazardous substance	Environmentally hazardous substance	Environmentally hazardous substance
<b>Special precautions for user:</b>	See section 2.2	See section 2.2	See section 2.2
<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	IBC08	IBC08	IBC08

**15 Regulation information**

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

**Relevant information regarding authorization:**

Not applicable.

**Relevant information regarding restriction:**

Not applicable.

**Other EU regulations:**

Employment restrictions concerning young person must be observed. For use only by technically qualified individuals.

**Other National regulations:**

Not applicable

**Chemical Safety Assessment has been carried out?**

YES

NO

**16 Other information**

**16.1 Indication of changes**

Version 1.1 Amended by EU No 453/2010

**16.2 Relevant R- phrases (number and full text):**

R43: May cause an allergic skin reaction.

R51/53: Toxic to aquatic life with long lasting effects.

**16.3 Training instructions:**

Not applicable.

**16.4 Further information:**

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

**16.5 Notice to reader:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees.

This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.