

SECTION 1: Identification

1.1. Identification

Product form	: Substance
Trade name	: Westco DTDM
Chemical name	: 4,4'-Dithiodimorpholine
CAS-No.	: 103-34-4
Formula	: C8H16N2O2S2
Synonyms	: Morpholine, 4,4'-dithiobis; Accelerator DTDM, Morpholine disulfide, Di-morpholine disulfide, or Dithiodimorpholine

1.2. Recommended use and restrictions on use

Use of the substance/mixture	: Vulcanizing agent
Restrictions on use	: Other

1.3. Supplier

Western Reserve Chemical Corporation
4837 Darrow Road
Stow, OH 44224 - USA
T 330 650 2244 - F 330 650 2255
www.wrchem.com

1.4. Emergency telephone number

Emergency number : CHEMTREC 1 800 424 9300 USA

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS classification

Skin sensitization, Category 1	H317	May cause an allergic skin reaction
Specific target organ toxicity (single exposure) Category 3	H335	May cause respiratory irritation
Combustible Dust		May form combustible dust concentrations in air

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS labeling

Hazard pictograms (GHS) :



Signal word (GHS) :

Warning

Hazard statements (GHS) :

May form combustible dust concentrations in air
H317 - May cause an allergic skin reaction
H335 - May cause respiratory irritation

Precautionary statements (GHS) :

P261 - Avoid breathing dust.
P271 - Use only outdoors or in a well-ventilated area.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P280 - Wear protective clothing, eye protection, protective gloves.
P302+P352 - If on skin: Wash with plenty of water.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
P312 - Call a poison center or doctor if you feel unwell.
P321 - Specific treatment (see supplemental first aid instruction on this label).
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P363 - Wash contaminated clothing before reuse.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

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2.4. Unknown acute toxicity (GHS)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	GHS classification
4,4'-Dithiodimorpholine (Main constituent)	(CAS-No.) 103-34-4	100	Skin Sens. 1, H317 STOT SE 3, H335 Comb. Dust

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists.
- First-aid measures after ingestion : Rinse mouth.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : May cause an allergic skin reaction. May cause respiratory irritation.

4.3. Immediate medical attention and special treatment, if necessary

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire : Sulphur oxides. Nitrogen oxides.

5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Remove ignition sources. No open flames. No smoking. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel

- Protective equipment : Wear suitable protective clothing and gloves. Use suitable eye protection. Do not breathe dust.
- Emergency procedures : Stop leak, if possible without risk. Avoid dust formation.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection. Chemical goggles or safety glasses. Wear suitable protective clothing and gloves. Where excessive dust may result, use approved respiratory protection equipment.
- Emergency procedures : Avoid raising powdered materials into airborne dust, creating an explosion hazard. Do not breathe dust.

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6.2. Environmental precautions

Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Take up mechanically (sweeping, shoveling) and collect in suitable container for disposal.
Minimize generation of dust.

6.4. Reference to other sections

Section 7: safe handling. Section 8: personal protective equipment. Section 13: disposal information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Avoid breathing dust. Use only outdoors or in a well-ventilated area.

Hygiene measures : Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : On contact with humidity, irritating vapors are released.

Storage conditions : Keep container tightly closed. Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight.

Incompatible products : Oxidizer.

Heat-ignition : Keep away from heat, sparks and flame.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls : Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Protect from moisture. Use enclosed processes where appropriate and possible. Local exhaust is needed at source of dust.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure.

Materials for protective clothing:

Wear suitable coveralls to prevent exposure to the skin

Hand protection:

Wear protective gloves, neoprene/butyl rubber. Gloves should be well cleaned before being removed. Store in a well-ventilated place.

Eye protection:

tightly fitting safety goggles

Respiratory protection:

If dust is formed: Wear respiratory protection. High efficiency particulate air filter (HEPA filter)

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Powder, granules.

Color : white to yellow

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Odor	: Odorless
Odor threshold	: No data available
pH	: No data available
Melting point	: 125 – 130 °C
Freezing point	: 125 – 130
Boiling point	: 371.4 °C
Flash point	: 154 °C
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: 0.000035 hPa
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Specific gravity / density	: 1.36 g/cm ³
Solubility	: Water: 237 ppm
Log Pow	: 2.49 < 3
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: Dust may form explosive mixture in air.
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Avoid creating or spreading dust. Ignition sources when dusting occurs.

10.5. Incompatible materials

Oxidizer.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO₂). Sulfur oxides. Nitrogen oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

Westco DTDM (103-34-4)	
LD50 oral rat	5600 mg/kg body weight
LD50 dermal rat	> 2000 mg/kg
ATE (oral)	5600 mg/kg body weight

Skin corrosion/irritation	: Not classified (Not irritating to rabbits on cutaneous application)
Serious eye damage/irritation	: Not classified (Not irritating to rabbits on ocular application)
Respiratory or skin sensitization	: May cause an allergic skin reaction.

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Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: May cause respiratory irritation.
STOT-repeated exposure	: Not classified

Westco DTDM (103-34-4)	
LOAEL (oral,rat,90 days)	500 mg/kg bodyweight/day
NOAEL (oral,rat,90 days)	250 mg/kg bodyweight/day

Aspiration hazard	: Not classified
Viscosity, kinematic	: No data available
Likely routes of exposure	: Dermal. Inhalation.
Symptoms/effects after inhalation	: May cause an allergic skin reaction. May cause respiratory irritation.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Toxic to aquatic life with long lasting effects.

Westco DTDM (103-34-4)	
LC50 fish 1	3.68 mg/l
EC50 crustacea	4.5 mg/l
ErC50 (algae)	35 mg/l

12.2. Persistence and degradability

Westco DTDM (103-34-4)	
Persistence and degradability	Readily biodegradable. May cause long-term adverse effects in the environment.

12.3. Bioaccumulative potential

Westco DTDM (103-34-4)	
Log Pow	2.49
Log Kow	< 3
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the ozone layer : None known

Effect on global warming : None known

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Burn in a chemical incinerator equipped with an afterburner and scrubber.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated.

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Transport by sea

Transport document description (IMDG)	: UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (4,4'-Dithiobismorpholine), 9, III, MARINE POLLUTANT
UN-No. (IMDG)	: 3077
Proper Shipping Name (IMDG)	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class (IMDG)	: 9 - Miscellaneous dangerous substances and articles
Packing group (IMDG)	: III - substances presenting low danger
Limited quantities (IMDG)	: 5 kg
Marine pollutant	: Yes



Air transport

Transport document description (IATA)	: UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (4,4'-Dithiobismorpholine), 9, III
UN-No. (IATA)	: 3077
Proper Shipping Name (IATA)	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class (IATA)	: 9 - Miscellaneous Dangerous Goods
Packing group (IATA)	: III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Westco DTDM (103-34-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Westco DTDM (103-34-4)

Listed on the Canadian DSL (Domestic Substances List)

National regulations

Westco DTDM (103-34-4)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Data sources	: toxplanet. HSDB (Hazardous Substances Data Bank). European Chemicals Agency (ECHA) Registered Substances list. Supplier's safety documents. Information from published literature and internal company data. Kristen Forsberg and S.Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition.
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Other information : None.

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Full text of H-phrases:

H317	May cause an allergic skin reaction
H335	May cause respiratory irritation

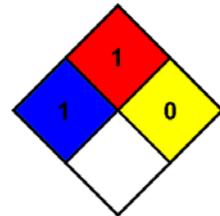
Abbreviations and acronyms:

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association
OECD	Organisation for Economic Co-operation and Development
ATE	Acute Toxicity Estimate
LC50	Median lethal concentration
LD50	Median lethal dose
NOAEL	No-Observed Adverse Effect Level

NFPA health hazard : 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard : 1 - Materials that must be preheated before ignition can occur.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



SDS Prepared by: The Redstone Group
110 Polaris Pkwy
Suite 200
Westerville, OH USA 43082
P: +1 (614) 923-7472
www.redstonegrp.com

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