



Chemicals Corp.

Technical Data Sheet

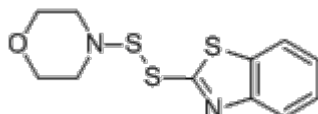
MDB

Benzothiazole, 2-(4-morpholinyl)dithio)

CAS Number: 95-32-9

Molecular weight: 284.43

Molecular formula: $C_{11}H_{12}N_2OS_3$



PRODUCT INFORMATION

PRODUCT SPECIFICATIONS		GRANULES	OIL POWDER	POWDER
Appearance		Light yellow granules	Light yellow oil powder	Light yellow powder
Initial Melting Point	°C min	125.0	125.0	125.0
Loss on drying	% max	0.30	0.40	0.30
Ash	% max	0.30	0.40	0.30
Residue on sieve (150µm)	% max	-	0.10	0.10
Oil content	%	-	0.0-2.0	-
<u>Typical properties</u>				
Density	g/cm ³	1.51		
<u>Packaging</u>				
Bag		25kg (55 lbs)		
Pallet		500kg or 600kg (1102 lbs or 1323 lbs)		

FUNCTION

MDB is a fast curing primary or secondary accelerator for NR, SBR, Nitrile and EPDM.

APPLICATIONS AND PROPERTIES

- MDB closely resembles TMTD in its applications.
- MDB is less prone to scorching, blooming and has a good processing safety.
- Can be used in CR as an anti-scorching agent.
- Can also be used as raw material for germicides, pesticides and medicine.
- Soluble in chloroform and partly soluble in CS₂ and acetone.
- Insoluble in Sherwood oil, benzene, alcohol and water.
- MDB is not regulated for use in food contact applications under FDA 21 CFR.

STORAGE

Material should be stored in a tightly closed container in a cool, dry, well ventilated area. Avoid exposure to direct sunlight. The recommended storage life is 18 months - 2 years when stored under normal conditions.

HANDLING PRECAUTIONS

For detailed information on toxicological properties and handling precautions, please refer to the current Safety Data Sheet. This information is available by request from **SunBoss Chemicals Corp.**

[Revised: November 6, 2014 by kk]

Safety Data Sheet

MDB

1. IDENTIFICATION OF SUBSTANCE / COMPANY INFORMATION

Chemical Name	Benzothiazole, 2-(4'-Morpholinodithio)
Synonyms	Accelerator MDB, MBDS
CAS #	95-32-9
Formula	C ₁₁ H ₁₂ N ₂ OS ₃
Chemical Family	Accelerator
Supplier	SunBoss Chemicals Corp.
Address	8-110 West Beaver Creek Road Richmond Hill, ON L4B 1J9
Telephone	905-707-3433
Fax	905-707-7393

Emergency Information

After normal hours call Chemtrec at 1-800-424-9300

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS No.</u>	<u>Weight %</u>	<u>EC No.</u>
4-morpholinyl-2-benzothiazole disulfide	95-32-9	99	202-410-7
White mineral oil	8042-47-5	1	232-455-8
	<u>Symbol(s)</u>	<u>Risk Phrase(s)</u>	
	Xi	R36, R43	

3. HEALTH HAZARDS INFORMATION

EMERGENCY OVERVIEW

Signal Word: WARNING!
COMBUSTIBLE DUST – EXPLOSION POTENTIAL!
Irritating to eyes.
May cause sensitisation by skin contact.

Potential Health effects

Inhalation

Causes moderate respiratory irritation. Irritating vapour causes immediate distress. Irritates mucous membranes. Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

Ingestion

May be harmful if large amounts are swallowed. May cause liver and kidney damage.

Skin contact	May cause an allergic skin reaction. May cause a rash and itching of the skin.
Eye Contact	May cause mild eye irritation. Signs/symptoms can include redness, swelling, pain and tearing.

4. EMERGENCY FIRST AID PROCEDURES

Inhalation	Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion	Do not induce vomiting. Immediately give two glasses of water, a little at a time. Never give anything by mouth to an unconscious person. Call a physician. If vomiting occurs spontaneously, lower head below waist to prevent fluid from entering the lungs.
Skin	After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.
Eyes	Check for and remove any contact lenses. Flush with running water for at least 15 minutes. Do not use an eye ointment. Seek medical attention.
Note to Physician	Provide symptomatic/supportive care as necessary. Treatment based on sound judgment of physician and individual reactions of patient. Observe for signs of respiratory distress.

5. FIRE AND EXPLOSION HAZARD MEASURES

Flammability	May be combustible at high temperatures
Flash Point	Not determined
Flash Point Method	Not determined
DOT Category	Not regulated
Extinguishing Media	Use dry chemicals, CO ₂ , water spray or foam. CO ₂ may be ineffective on larger fires due to lack of cooling capacity which may result in re-ignition.
Auto Ignition Temperature	Not determined
Flammable Limits	Not determined
Special Fire Fighting Procedures	As with any dry material, pouring or allowing to free-fall or to be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of material itself, or of any flammable materials which may come in contact with the material or its container.
Special Protective Equipment	Fire fighters should wear full protective clothing, including self-contained breathing equipment.
Unusual Fire and Explosion Hazards	Toxic emissions may result if product is involved in a fire. Fire produces highly toxic sulphur dioxide gas.

6. ACCIDENTAL RELEASE MEASURES

Procedures	Wear protective equipment specified. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.
Clean up Methods	Isolate area and remove sources of friction, impact, heat, low level electrical current, and RF energy. Isolate spill and stop leak where safe. Remove ignition sources and work with non-sparking tools. Scoop up and remove. Do NOT spread spilled product with water.

7. HANDLING AND STORAGE

Handling	DO NOT breathe dust. Do not ingest. Avoid contact with skin and eyes. DO NOT use in presence of electrostatic discharges. Ground all equipment containing material. Wash thoroughly after using.
Storage	Store closed containers in a cool, dry, well-ventilated area. Ground all equipment containing material. Keep container tightly closed. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	Avoid dust generation. Ensure good ventilation and local exhaustion of the working area as necessary to control any air contaminants to within their exposure limits. Adequate ventilation should be provided to keep dust concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with the applicable air pollutions control regulations. Eliminate ignition sources.
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Exposure Limits
Benzothiazole, 2-(4'-Morpholinodithio)
White Mineral Oil

ACGIH TLV
None listed
5 mg/m³

OSHA PEL
None listed
5 mg/m³



Respiratory	Appropriate respiratory protection shall be worn when applied engineering controls are not adequate to protect against inhalation exposure. Firefighting; use a Positive Pressure Demand Full Face Self Contained Breathing Apparatus.
Eyes	Wear safety glasses or goggles to protect against exposure. Eye protection is not required during typical product use conditions.
Skin	Normal work coveralls. Launder contaminated clothing before reuse.
Gloves	Use gloves as a standard industrial handling procedure. All cleanable impervious glove types are acceptable.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Light yellow powder or granules
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Odour	Mild amine
Specific Gravity	1.51 @ 25°C
Density	1.51 g/mc ³
Bulk Density	Not determined
Solubility in water	INSOLUBLE
pH	Not determined
Other Solubility	Soluble in chloroform and partly soluble in acetone and CS ₂
Boiling point	Not determined
Melting Point	125°C
Molecular Weight	284.43
Molecular Formula	C ₁₁ H ₁₂ N ₂ OS ₃

10. STABILITY AND REACTIVITY

Chemical Stability	This product is stable under normal conditions.
Conditions to avoid	Keep away from heat, sparks and flame.
Incompatibility	Avoid contact with nitrosating agents. Combining with N-nitrosamines, nitrogen oxides, nitrates, or nitrites and/or other nitrosating agents, such as N-nitrosodiphenylamine, may lead to the formation of nitrosamines, which cause cancer. Reacts with strong oxidizing agents, such as hydrogen peroxide, permanganates and perchlorates. Contact can result in intense heat, boiling flame, explosion or toxic gas generation depending on the amount and specific material involved.
Hazardous Polymerization	Will not occur
Hazardous Decomposition Products	Not determined
Additional Guidelines	Instability temperature: Prolonged storage above 44°C will initiate chemical changes.

11. TOXICOLOGICAL INFORMATION

Acute oral LD 50 (mg/kg)	11500 mg/kg (Rat)
Acute Dermal LD 50 (mg/kg)	Not determined
Acute Inhalation LC50 (mg/l)	Not determined
Principle routes of Exposure	Eyes. Inhalation. Dermal - skin.
Ingestion	May be harmful if large amounts are swallowed. May cause liver and kidney damage.

Skin contact	This product may irritate the skin upon contact.
Inhalation	Causes moderate respiratory irritation. Irritating vapour causes immediate distress. Irritates mucous membranes. Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.
Eye Contact	This product is an eye irritant.
Aggravated Conditions	Pulmonary disorders. Dermal ailments. Eye ailments.
Carcinogenicity	Negative in standard tests using bacteria and/or yeast cells.
Primary Irritation Effect	Moderately irritating.
Genotoxicity	Negative for genetic activity – in vitro tests. Negative for genetic activity – in vivo tests.
Reproductive/Developmental Toxicity	No evidence of teratogenicity in animal studies using rats, mice and hamsters.

12. ECOLOGICAL INFORMATION

Acute Fish Toxicity	Not determined
Acute Crustacean Toxicity	Not determined
Octonal/Water Coefficient	Not determined
Chemical Fate Information	Not determined
Other Information	No known significant effects or critical hazards

13. DISPOSAL CONSIDERATIONS

Waste Disposal	This material is not a RCRA hazardous waste. Bury in a licensed landfill or burn in an approved incinerator according to federal, state, and local regulations. Empty containers should be handled in a manner not to cause dusting during collection, transportation and disposal.
Contaminated Packaging	If empty container retains product residues, all label precautions must be observed. Store away from ignition sources. Transport with all closures in place. Return for reuse or dispose according to national or local regulations. Dispose of container according to national or local regulations.

14. TRANSPORT INFORMATION

<u>DOT</u>	Not regulated
<u>IATA</u>	Not regulated
<u>IMDG</u>	Not regulated
<u>TDG (Canada)</u>	Not regulated

15. REGULATORY INFORMATION

LABELLING ACCORDING TO DIR 67/548 EEC

EC Number: 202-410-7
Classification based on: TESTS



IRRITANT (Xi)

CLASSIFIED ACCORDING TO DIRECTIVE 199/45/EC

Risk Phrases: R36 – irritating to eyes
R43 – May cause sensitization by skin contact.

Safety Phrases: S22 – Do not breathe dust
S24/25 – Avoid contact with skin and eyes.
S36 – Wear suitable protective clothing.

FDA Status 21 CFR Not regulated for use in food contact applications under 21 CFR.

TSCA Listed

Canadian DSL Listed

EINECS/ELINCS Listed

US Regulations

SARA Section 302 None found
SARA 311/312 Hazard Categories Immediate Delayed Fire
SARA 313 Chemical 2-Mercaptobenzothiazole
RCRA Status Not a RCRA waste.

Canadian Regulations

WHMIS Hazard Class



D2B TOXIC MATERIALS/Materials causing other toxic effects.

NPRI Not Listed

16. HAZARD RATING SYSTEM

NFPA Rating (Scale 0-4)

- 0 - Minimal Hazard
- 1 - Slight Hazard
- 2 - Moderate Hazard
- 3 - Serious Hazard
- 4 - Severe Hazard

HEALTH	2
FIRE	1
REACTIVITY	0

HMIS Classification (Scale 0-4)

- 0 - Minimal Hazard
- 1 - Slight Hazard
- 2 - Moderate Hazard
- 3 - Serious Hazard
- 4 - Severe Hazard

HEALTH	2
FIRE	1
REACTIVITY	0

17. OTHER INFORMATION

Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. SunBoss Chemicals Corp. extends no warranty and assumes no responsibility for the accuracy or sufficiency of the content and expressly disclaims all liability for reliance thereon. This safety data sheet provides guidelines for the safe handling of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required. It is the responsibility of the user to comply with all Federal, State and local laws and regulations. Individuals exposed to this product should read and understand this information and be provided pertinent training prior to working with this product.

Abbreviations and Acronyms

ACGIH: American Conference of Governmental Industrial Hygienists Inc.
CAS: Chemical Abstracts Service (Division of American Chemical Society)
DOT: Department of Transportation (USA)
EINECS: European Inventory of Existing Commercial Chemical Substances
HMIS: Hazardous Materials Identification System (USA)
IARC: Internal Agency for Research on Cancer
IATA: International Air Transport Association
IMDG: International Marine Code for Dangerous Goods
LD50: Lethal Dose Medium
LC50: Lethal Concentration Medium
EC50: Effective Concentration Medium
NIOSH: National Institute for Occupational Safety and Health
NFPA: National Fire Protection Association (USA)
NPRI: National Pollutant Release Inventory (Canada)
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration (USA)
PEL: Permissible Exposure Limits
TDG: Transportation of Dangerous Goods (Canada)
TLV: Threshold Limit Value
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Information Systems (Canada)

18. REVISION DATE

Revision number: 5

Date of Issue: September 3, 2014

Changes: Number and format of headings changed; Updates to Sections 1: Identification of Substance - EC information added; 2: Health Hazards Information; 8: Specific Personal Protection Equipment - pictograms added; 14: Transport information - pictograms added; 15: Regulatory information - EC information added; 16: Hazard Rating System - table added; 17: Abbreviations and Acronyms added