



Chemicals Corp.

Technical Data Sheet

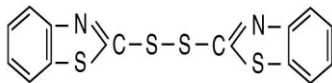
MBTS

Dibenzothiazole Disulfide

CAS Number: 120-78-5

Molecular weight: 332.50

Molecular formula: $C_{14}H_8N_2S_4$



PRODUCT INFORMATION

PRODUCT SPECIFICATIONS		GRANULES	OIL POWDER	POWDER
<u>Appearance</u>		Light yellow granules	Light yellow oil powder	Light yellow powder
Initial Melting Point	°C min	164.0	164.0	164.0
Loss on drying	% max	0.30	0.40	0.30
Ash	% max	0.30	0.40	0.30
Residue on sieve (63µm)	% max	-	0.50	0.50
Residue on sieve (150µm)	% max	-	0.10	0.10
Oil content	%	-	1.0-2.0	-
<u>Typical properties</u>				
Density	g/cm ³	1.45-1.54		
<u>Packaging</u>				
Bag		25kg (55 lbs)		
Pallet		500kg or 600kg (1102 lbs or 1323 lbs)		

FUNCTION

MBTS is a moderately fast curing primary accelerator for natural and synthetic rubbers.

APPLICATIONS AND PROPERTIES

- MBTS is used for moderately fast cures in NR and SR.
- Also used in a wide range of general purpose rubber.
- Used as a plasticizer and/or retardant in polychloroprene rubber.
- Secondary acceleration is usually required for synthetic polymers.
- Better scorch safety than MBT.
- MBTS is non-staining and non-discolouring. Has a slightly bitter taste.
- Soluble in chloroform, toluene, benzene, carbon tetrachloride.
- Insoluble in water and ethyl alcohol.
- MBTS is regulated for use under the following sections of FDA 21 CFR:
175.105 – Components of Adhesives.
177.2600 – Rubber Articles Intended for Repeated Use in Food Contact.

STORAGE

Material should be stored in a tightly closed container in a cool, dry, well ventilated area. The maximum recommended storage life is 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

MBTS

1. IDENTIFICATION OF SUBSTANCE / COMPANY INFORMATION

Chemical Name	Dibenzothiazole Disulfide
Synonyms	MBTS, N-Oxydiethylene-benzothiazole-2-sulfenamide; 2-(4 morpholinothio)-Benzothiazole Santocure MOR; Perkacit MBTS;
CAS #	120-78-5
Formula	C ₁₄ H ₈ N ₂ S ₄
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

1. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS No.</u>	<u>Weight %</u>	<u>EC No.</u>
Mercaptobenzothiazole Disulfide	120-78-5	97 – 100	204-424-9
White Mineral Oil	8042-47-5	1 - 2	232-455-8
	<u>Symbol(s)</u>	<u>Risk Phrase(s)</u>	
	Xi, N	R31, R38, R50/53	

2. HEALTH HAZARDS INFORMATION

EMERGENCY OVERVIEW

Signal Word: **WARNING!**

COMBUSTIBLE DUST!

Contact with acids liberates toxic gas.

Irritating to skin.

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

Potential Health Effects

Inhalation

May cause mild respiratory irritation.

Ingestion

Swallowing a relatively large amount of this material is unlikely to produce serious illness or death.

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

4. EMERGENCY FIRST AID PROCEDURES

Inhalation	Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.
Ingestion	Seek immediate medical advice. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
Skin	Remove contaminated clothing. Immediately wash skin with water and soap and rinse thoroughly. Seek immediate medical attention if irritation persists.
Eyes	Immediately flush eyes with plenty of running water for at least 15 minutes and get medical attention if irritation persists.
Note to Physician	Provide symptomatic/supportive care as necessary. Treatment based on sound judgment of physician and individual reactions of the patient.

5. FIRE AND EXPLOSION MEASURES

Flammability	Not determined
Flash Point	520°F / 271°C
Flash Point Method	Cleveland Open Cup
DOT Category	Not regulated
Extinguishing Media	Use water fog, carbon dioxide, foam or dry chemical.
Auto Ignition Temperature	680°F / 360°C
Flammable Limits	Not determined
Special Fire Fighting Procedures	Fight fire from a safe distance and from a protected location. Combustible dust when in a finely divided and highly suspended state. Use water spray to cool fire exposed surfaces. Do not allow runoff to enter waterways.
Special Protective Equipment	Fire fighters should wear full impervious 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	Isolate the area. Turn off all potential sources of ignition. Work only with non-sparking tools and equipment. Wear gloves and clothing suitable to avoid skin contact, local ventilation and dust mask recommended. Do not discharge into drains, surface water or groundwater.
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Clean up Methods

Scoop up and remove material. Reuse if not contaminated. Do NOT spread spilled product with water.

7. HANDLING AND STORAGE

Handling

Good hygienic practices should be observed. Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded with material. Avoid generating or breathing dust. Avoid contact with eyes, skin and clothing. Reclose containers of unused product. Wash hands before eating, drinking, and chewing gum, using tobacco or using the toilet. Do not reuse this container.

Storage

Store closed containers in a cool, dry, well-ventilated area. Store away from strong oxidizing materials. Avoid exposure to direct sunlight.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

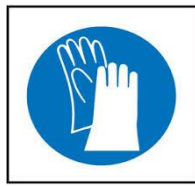
Engineering Controls

Ensure good ventilation and local exhaustion of the working area as necessary to control any air contaminants to within their exposure limits. Discharge from the ventilation system should comply with the air pollutions control regulations. Eliminate ignition sources. Avoid dust generation.

Exposure Limits

Dibenzothiazole Disulfide

OES-TWA – 5.0 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 DATA

Appearance

Light yellow powder or granules

Odour

Slightly aromatic

Specific Gravity

1.54 @ 20°C

Density

1.45 - 1.54 g/cm³

Bulk Density

1540 kg/m³ at 20°C

Solubility in water	INSOLUBLE
pH	Not determined
Other Solubility	Soluble in chloroform, toluene, benzene and carbon tetrachloride
Boiling point	Not determined
Melting Point	164°C min
Molecular Weight	332.5
Molecular Formula	C ₁₄ H ₈ N ₂ S ₄

10. STABILITY AND REACTIVITY

Chemical Stability	Stable when stored at room temperature in closed original container. Stable under normal conditions of handling, use and transportation.
Conditions to avoid	Keep away from heat, sparks and flame. Dispersion of dust. Avoid contact with strong oxidizing agents such as liquid chlorine and concentrated oxygen.
Incompatibility	Strong oxidizing agents. Strong acids.
Hazardous Polymerization	Will not occur
Hazardous Decomposition Products	Carbon monoxide. Oxides of nitrogen and sulphur
Additional Guidelines	None

11. TOXICOLOGICAL INFORMATION

Acute oral LD 50 (mg/kg)	>7940 mg/kg (Rat)
Acute Dermal LD 50 (mg/kg)	>7940 mg/kg (Rabbit)
Acute Inhalation LC50 (mg/l)	Not determined
Principle routes of Exposure	Eyes. Inhalation. Dermal - skin.
Ingestion	Swallowing a relatively large amount of this material is unlikely to produce serious illness or death.
Skin contact	May cause an allergic skin reaction. May cause a rash and itching of the skin. May cause skin defatting with prolonged exposure.
Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation. Signs/symptoms can include redness, swelling, pain and tearing.
Aggravated Conditions	Pulmonary disorders. Dermal ailments. Eye ailments.
Carcinogenicity	Negative in standard tests using bacteria and/or yeast cells. This product or one of its ingredients present at 0.1% or more, is NOT listed as a carcinogen or suspected carcinogen by NTP, IARC or OSHA.

Primary Irritation Effect	Practically non-irritating
Genotoxicity	None
Reproductive/Developmental Toxicity	No evidence of teratogenicity in animal studies using rats, mice and/or hamsters.

12. ECOLOGICAL INFORMATION

Acute Fish Toxicity	96Hr LC50 Rainbow Trout = 66.0 mg/l. 96Hr LC50 Bluegill Sunfish = 82.0 mg/l. 96Hr LC50 Fathead Minnow = >1000 mg/l.
Acute Crustacean Toxicity	48Hr LC50 Daphnia Magna = 82.0 mg/l
Octonal/Water Coefficient	4.5 (Estimated)
Chemical Fate Information	Sunlight Photolysis: T(1/2) = 3 hours.
Other Information	Marginally susceptible to indirect photolysis.

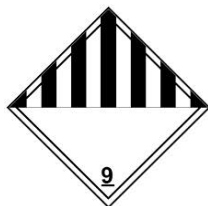
13. DISPOSAL CONSIDERATIONS

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 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 containers according to national or local regulations.

14. TRANSPORT INFORMATION

<u>DOT</u>	Not regulated
Note	Not listed in DOT Marine Pollutant list Appendix B to 172.101, therefore not regulated as Marine Pollutant by DOT.

IATA

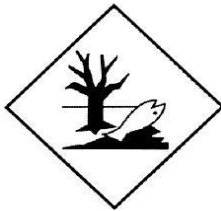


UN/ID No.
Proper Shipping Name
Hazard Class
Packing Group
Marine Pollutant
Special Markings



UN 3077
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Dibenzothiazole Disulfide)
9
III
Yes
Symbol (fish and tree)

IMDG



UN/ID No.
Proper Shipping Name

UN 3077
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
(Dibenzothiazole Disulfide)

Hazard Class
Packing Group
Marine Pollutant
Special Markings

9
III
Yes
Symbol (fish and tree)

TDG (Canada)

Not regulated

15. REGULATORY INFORMATION

LABELLING ACCORDING TO DIR 67/548 EEC

EC Number: 204-424-9
Classification based on: TESTS



IRRITANT (Xi)



DANGEROUS FOR THE ENVIRONMENT (N)

CLASSIFIED ACCORDING TO DIRECTIVE 199/45/EC

Risk Phrases:

R31 – Contact with acids liberates toxic gas.
R38 – Irritating to skin.
R50/53 – Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.

Safety Phrases:

S36/37 – Irritating to eyes and respiratory system.
S60 – This material and its container must be disposed of as a hazardous waste.
S61 – Avoid release to the environment. Refer to Special Instructions/Safety Data Sheet.

FDA Status 21 CFR

Regulated for use under the following sections of 21 CFR:
175.105: Components of adhesives.
177.2600: Rubber articles intended for repeated use in food contact.

TSCA

Listed

Canadian DSL

Listed

EINECS/ELINCS

Listed

US Regulations

SARA Section 302 None Found
SARA 311/312 Hazard Categories Immediate Fire
SARA 313 Chemical None
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	1
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	1
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 2, 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