



Chemicals Corp.

Technical Data Sheet

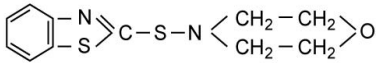
OBTS/MBS/MOR

N-Oxydiethylene-2-Benzothiazole sulfenamide

CAS Number: 102-77-2

Molecular weight: 253.35

Molecular formula: C₁₁H₁₂N₂S₂O



PRODUCT INFORMATION

PRODUCT SPECIFICATIONS		GRANULES	CRYSTALS
Appearance		Light yellow granules	Light yellow crystals
Initial Melting Point	°C min	80.0	80.0
Loss on drying	% max	0.50	0.50
Ash	% max	0.30	0.30
<u>Typical properties</u>			
Density	g/cm ³	1.34-1.40	
<u>Packaging</u>			
Bag		25kg (55 lbs)	
Pallet		500kg or 600kg (1102 lbs or 1323 lbs)	

FUNCTION

OBTS is an excellent after-effect accelerator mainly used in the manufacture of tires.

APPLICATIONS AND PROPERTIES

- OBTS is a vulcanizing accelerator with delayed reaction and short cure time.
- Widely used in NR, IR, SBR, NBR and EPDM.
- Can be used alone or with other vulcanization accelerators such as thiurams, guanidines and dithiocarbamates to improve activity.
- OBTS has high anti-scorching qualities and a processing safety.
- It is used in the manufacture of tires, rubber tubes, rubber footwear and hoses.
- Especially suitable for synthetic rubber mixed with fine furnace carbon black.
- Soluble in acetone organic liquids, including fats and oils of ether.
- Insoluble in water.
- OBTS is regulated for use under the following sections of FDA 21 CFR:
177.2600 – Rubber Articles Intended for Repeated Use in Food Contact.

STORAGE

Material should be stored at a low temperature and away from heat and excess moisture, to avoid degradation. The maximum recommended storage life is 8 months -1 year 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

OBTS

1. IDENTIFICATION/OF SUBSTANCE / COMPANY INFORMATION

Chemical Name	N-Oxydiethylene-2-Benzothiazole sulfenamide
Synonyms	Santocure MOR; Perkacit MBS; 2-(4morpholiniothio)- Benzothiazole
CAS #	102-77-2
Formula	C ₁₁ H ₁₂ N ₂ S ₂ O
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>
N-oxydiethylenebenzothiazole-2-sulfenamide	102-77-2	> 99	203-052-4
	<u>Symbol(s)</u>	<u>Risk Phrase(s)</u>	
	Xi, N	R36/38, R43, R51/53	

3. HEALTH HAZARDS INFORMATION

EMERGENCY OVERVIEW

Signal word: WARNING!

Irritating to eyes and skin.

May cause sensitisation by skin contact.

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

Potential Health Hazards

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.

Skin contact	May cause an allergic skin reaction. May cause a rash and itching of the skin. May cause skin de-fatting with prolonged exposure.
Eye Contact	Causes moderate eye irritation. Signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

4. EMERGENCY FIRST AID PROCEDURES

Inhalation	Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical attention.
Ingestion	Call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
Skin	Remove contaminated clothing, wash skin with water, using soap if available. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.
Eyes	In case of contact, immediately flush eyes with plenty of 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 patient. Observe for signs of respiratory distress.

5. FIRE AND EXPLOSION HAZARD MEASURES

Flammability	Not determined
Flash Point	Not determined
Flash Point Method	Cleveland Open Cup
DOT Category	UN 3077, Environmentally Hazardous Substance, Solid, N.O.S., (N-Oxydiethylene-2-Benzothiazole sulfenamide) 9,PG III
Extinguishing Media	Water fog, carbon dioxide, foam, dry chemical
Auto Ignition Temperature	660°F / 349°C (Dust)
Flammable Limits	Not determined
Special Fire Fighting Procedures	Fight fire from a safe distance and from a protected location. Flammable dust when in finely divided and highly suspended state. Use spray to cool fire exposed surfaces. Decomposition in fire may produce toxic gases. Do not allow run-off to enter waterways.
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	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. Wash hands before eating, drinking, using tobacco or using the toilet.
Storage	Close containers of unused product. Do not reuse this container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	Local exhaust ventilation as necessary to control any air contaminants to within their exposure limits during the use of this product. Adequate ventilation should be provided to keep dust concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with the applicable air pollution control regulations. Eliminate ignition sources.
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Exposure Limits

N-Oxydiethylene-2-Benzothiazole sulfenamide

WEL - TWA – 4mg/m³ (respirable dust)
 OES – TWA – 10 mg/m³ (total inhalable dust)



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 granules or crystals
Odour	Mild Amine
Specific Gravity	1.40 @ 25°C

Density	1.34 - 1.40 g/cm ³
Bulk Density	1360 kg/m ³
Solubility in water	INSOLUBLE
pH	Not applicable
Other Solubility	Soluble in acetone organic liquids, including fats and oils of ether
Boiling point	Not determined
Melting Point	80°C
Molecular Weight	253.35
Molecular Formula	C ₁₁ H ₁₂ N ₂ S ₂ O

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. Stable if protected from heat and exposure to air. Loses potency with time. Protect from moisture.
Conditions to avoid	Keep away from heat, sparks and flame.
Incompatibility	Reducing agents. Contact with acids. Avoid contamination of product with small amounts of water.
Hazardous Polymerization	Will not occur
Hazardous Decomposition Products	Carbon monoxide, oxides of nitrogen, oxides of sulphur amines.
Additional Guidelines	Amine vapours can cause insoluble sulphur to revert to soluble form.

11. TOXICOLOGICAL INFORMATION

Acute oral LD 50 (mg/kg)	>7940 mg/kg
Acute Dermal LD 50 (mg/kg)	>7940 mg/kg
Acute Inhalation LC50 (mg/l)	Not determined
Principle routes of Exposure	Eyes. Inhalation. Dermal - skin.
Ingestion	May be harmful if large amounts are swallowed.
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	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	Causes moderate eye irritation. Signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.
Aggravated Conditions	Pulmonary disorders. Dermal ailments. Eye, skin, respiratory, blood, liver and/or kidney ailments. This material or its emissions may cause an allergic or sensitization reaction and thereby aggravate systemic disease.
Carcinogenicity	Both negative and positive results in standard tests using animals, animal and bacterial cells. This product or one of its ingredients present 0.1% or more is NOT listed as a carcinogen or suspected carcinogen by NTP, IARC, or OSHA.
Primary Irritation Effect	Moderately irritating. Sensitizer.
Genotoxicity	No adverse effects in standard tests using yeast cells. Reproductive/Developmental
Reproductive/Developmental Toxicity	No evidence of teratogenicity in animal studies using rats, mice and hamsters.

12. ECOLOGICAL INFORMATION

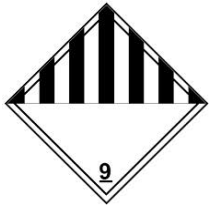
Acute Fish Toxicity	96Hr LC50 Rainbow Trout = 1.3 mg/l. 96Hr LC50 Bluegill Sunfish = 4.4 mg/l. 96Hr LC50 Fathead Minnow = 3.5 mg/l. 48Hr LC50 Midge = 5.3 mg/l.
Acute Crustacean Toxicity	48Hr LC50 Daphnia Magna = 4.10 mg/l
Octonal/Water Coefficient	3100
Chemical Fate Information	Not determined
Other Information	None

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

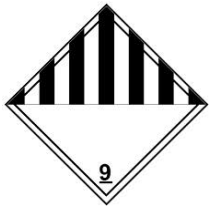
DOT



UN/ID No.
Proper Shipping Name
Hazard Class
Packing Group
Note

UN 3077
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.,
(N-Oxydiethylene-2-benzothiazole sulfenamide)
9
III
Not listed in DOT Marine Pollutant list Appendix B to 172.101, therefore not regulated as Marine Pollutant by DOT.

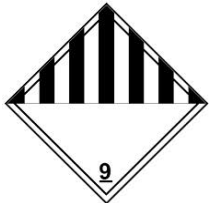
IATA



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

UN 3077
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.,
(N-Oxydiethylene-2-benzothiazole sulfenamide)
9
III
No

IMDG



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



UN 3077
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.,
(N-Oxydiethylene-2-benzothiazole sulfenamide)
9
III
No

TDG (Canada)

See DOT

15. REGULATORY INFORMATION

LABELLING ACCORDING TO DIR 67/548 EEC

EC Number: 203-052-4
Classification based on: TESTS



IRRITANT (Xi)



DANGEROUS FOR THE ENVIRONMENT (N)

CLASSIFIED ACCORDING TO DIRECTIVE 199/45/EC

Risk Phrases:

R36/38 – Irritating to skin and eyes.
 R43 – May cause sensitization by skin contact.
 R51/53 – Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.

Safety Phrases:

S24 – Avoid contact with skin.
 S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S37 – Wear suitable gloves.
 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 FDA 21 CFR:
 177.2600 – Rubber articles intended for repeated use in food contact.

TSCA

Listed

Canadian DSL

Listed

EINECS/ELINCS

Listed

US Regulations

SARA Section 302
 SARA 311/312 Hazard Categories
 SARA 313 Chemical
 RCRA Status

None Found
 Immediate Delayed Fire
 Component 2-Mercaptobenzothiazole
 Not a RCRA waste

Canadian Regulations

WHMIS Hazard Class



D2B TOXIC MATERIALS/Materials Causing Other Toxic Effects

NPRI

Component 2-Mercaptobenzothiazole: NPRI Part 1, Group 1, ID# 148,
 minimum concentration 1%.

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