



Chemicals Corp.

Technical Data Sheet

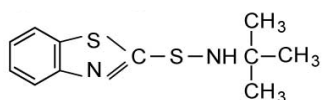
TBBS

N-Tertiarybutyl-2-benzothiazole sulfenamide

CAS Number: 95-31-8

Molecular weight: 238.40

Molecular formula: C₁₁H₁₄N₂S₂



PRODUCT INFORMATION

PRODUCT SPECIFICATIONS		GRANULES	OIL POWDER	POWDER
Appearance		Grey-white granules	Grey-white oil powder	Grey-white powder
Initial Melting Point	°C min	103.0-115.0	103.0-115.0	103.0-115.0
Loss on drying	% max	0.40	0.40	0.40
Ash	% max	0.40	0.40	0.40
Residue on sieve (63µm)	% max	-	0.50	0.50
Residue on sieve (150µm)	% max	-	0.10	0.10
Oil content	%	-	0.0-2.0	-
<u>Typical properties</u>				
Density	g/cm ³	1.26-1.32		
<u>Packaging</u>				
Bag		25kg (55 lbs)		
Pallet		500kg or 600kg (1102 lbs or 1323 lbs)		

FUNCTION

TBBS is a fast curing accelerator used in modulus development in NR, SBR, BR and blends.

APPLICATIONS AND PROPERTIES

- TBBS is normally used alone or with small quantities of ultra accelerators in tire compounds or industrial rubber products.
- Product has a slight odour and a bitter taste.
- Soluble in ethanol, carbon tetrachloride, acetone, benzene, carbon disulfate and chloroform.
- Insoluble in gasoline, water, acid and alkalis with lower concentration.
- Material is not hygroscopic.
- TBBS 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 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

TBBS

1. IDENTIFICATION OF SUBSTANCE / COMPANY INFORMATION

Chemical Name	N-Tertiarybutyl-2-Benzothiazole Sulfenamide
Synonyms	Accelerator TBBS
CAS #	95-31-8
Formula	C ₁₁ H ₁₄ N ₂ S ₂
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-Tertiarybutyl-2-Benzothiazole Sulfenamide	95-31-8	> 97	202-409-1
White Mineral Oil (powder only)	8042-47-5	1-2	232-455-8
	<u>Symbol(s)</u>	<u>Risk Phrase(s)</u>	
	Xi	R43, R53	

3. HEALTH HAZARDS INFORMATION

EMERGENCY OVERVIEW

Signal word: WARNING!
COMBUSTIBLE DUST - EXPLOSION POTENTIAL!
May cause sensitisation by skin contact.
May cause long-term adverse effects in the aquatic environment.

Potential Health Effects

Inhalation	Inhalation may cause upper respiratory irritation.
Ingestion	Ingestion of large quantities can cause damage to the liver and kidneys.
Skin contact	Skin contact may cause allergic reaction.
Eye Contact	Eye irritant - can cause redness, tearing and swelling.

4. EMERGENCY FIRST AID PROCEDURES

Inhalation	Remove person to fresh air. Get immediate medical attention if breathing is laboured.
Ingestion	Immediately rinse mouth with water. Induce vomiting only at the advice of a physician. Seek immediate medical attention.
Skin	Immediately wash contaminated skin with running water and soap. Remove contaminated clothing and wash before reuse.
Eyes	Flush with water for at least 15 minutes. Seek 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	330°F / 166°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	660°F / 349°C (Dust)
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. Decomposition in fire may produce toxic gases. Do not allow run-off 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	Clothing suitable to avoid skin contact, local ventilation and dust mask recommended.
Clean up Methods	Sweep and place into a suitable container. Avoid generation of dust. Do not use water to remove spilled material.

7. HANDLING AND STORAGE

Handling	Handle with care and avoid extreme conditions when transporting; do not breathe dust or vapours; do not get on skin or in eyes.
Storage	Store in an area that is clean, dry and well-ventilated.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	General; 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 pollutions control regulations. Eliminate ignition sources.
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Exposure Limits	ACGIH (TWA)	OSHA (TWA)
N-Tertiarybutyl-2-Benzothiazole Sulfenamide	10mg/m ³	15 mg/m ³
White Mineral Oil	5mg/m ³	5mg/m ³



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	Greyish white powder or granules
Odour	Slight
Specific Gravity	1280kg/m ³ at 25°C
Density	1.26 - 1.32 g/cm ³
Bulk Density	Not determined
Solubility in water	INSOLUBLE
pH	Not determined

Other Solubility	Soluble in ethanol, carbon tetrachloride, acetone, benzene, carbon disulphate and chloroform
Boiling point	Not determined
Melting Point	105°C min
Molecular Weight	238.4
Molecular Formula	C ₁₁ H ₁₄ N ₂ S ₂

10. STABILITY AND REACTIVITY

Chemical Stability	This material is stable under normal handling and storage conditions.
Conditions to avoid	Strong oxidizers, acids and water
Incompatibility	Strong acids; strong oxidizing agents
Hazardous Polymerization	Does not occur
Hazardous Decomposition Products	Carbon monoxide, amines, oxides of nitrogen and sulphur.
Additional Guidelines	None

11. TOXICOLOGICAL INFORMATION

Acute oral LD 50 (mg/kg)	>6310 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	Illness may occur after a single swallowing of relatively large quantities of this material.
Skin contact	Causes mild skin irritation. Signs/symptoms can include redness, swelling, and itching. May cause an allergic skin reaction.
Inhalation	May cause mild respiratory irritation. May irritate mouth, nose, and throat. Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.
Eye Contact	Causes mild eye irritation. Signs/symptoms can include redness, swelling, pain and tearing.
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	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	Slightly irritating to skin and eyes. Possible sensitizer. Similar compounds have at least some potential for allergic skin reactions in humans after prolonged and repeated exposures.
Genotoxicity	Both negative and weak positive results in standard in vitro and in vivo tests using mammalian cells.
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 = 1.6 mg/l. 96Hr LC50 Bluegill Sunfish = 1.2 mg/l. 96Hr LC50 Fathead Minnow = 21 mg/l.
Acute Crustacean Toxicity	48Hr LC50 Daphnia Magna = >100 mg/l
Octonal/Water Coefficient	Log P = 2.56
Chemical Fate Information	Bio-concentration Factor: 310 (Calculated)
Other Information	Rapid degradation via hydrolysis. Tests indicate this material will not bio-accumulate or persist in the environment.

13. DISPOSAL CONSIDERATIONS

Waste Disposal	Recycle where possible. Incinerate according to local regulation. Do not discharge into the drains/surface water/groundwater.
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
<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: 202-409-1
Classification based on: TESTS



IRRITANT (Xi)

CLASSIFIED ACCORDING TO DIRECTIVE 199/45/EC

Risk Phrases: R43 – May cause sensitization by skin contact.
R53 – May cause long-term adverse effects in the aquatic environment.

Safety Phrases: S22 – Do not breathe dust.
S24 – Avoid contact with skin.
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 None Found
SARA 311/312 Hazard Categories Immediate Delayed Fire
SARA 313 Chemical Component 2-Mercaptobenzothiazole
RCRA Status Not a RCRA waste

Canadian Regulations

WHMIS Hazard Class



D2B TOXIC MATERIALS/Material 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 9, 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