



Chemicals Corp.

## Technical Data Sheet

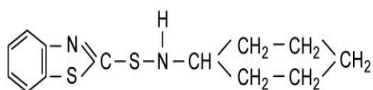
# CBS

N-Cyclohexyl-2-benzothiazole sulphenamide

CAS Number: 95-33-0

Molecular weight: 264.40

Molecular formula: C<sub>13</sub>H<sub>16</sub>N<sub>2</sub>S<sub>2</sub>



### PRODUCT INFORMATION

PRODUCT SPECIFICATIONS		GRANULES	OIL POWDER	POWDER
Appearance		White granules	White oil powder	White powder
Melting Point	°C min	98.0	98.0	98.0
Loss on drying	% max	0.30	0.40	0.30
Ash	% max	0.30	0.40	0.30
Free Amine	% max	0.40	0.40	0.40
Residue on sieve (150µm)	% max	-	0.10	0.10
Oil content	%	-	1.0-2.0	-
<u>Typical properties</u>				
Density	g/cm <sup>3</sup>	1.31-1.34		
<u>Packaging</u>				
Bag		25kg (55 lbs)		
Pallet		500kg or 600kg (1102 lbs or 1323 lbs)		

### FUNCTION

CBS functions as a delayed action accelerator providing a good scorch delay and fast cure rates.

## **APPLICATIONS AND PROPERTIES**

- CBS is a medium to fast primary accelerator suitable for NR, IR, SBR, NBR, HR and EPDM.
- Material is an outstanding delayed action accelerator.
- Product is most effective and safest when used at ordinary processing temperatures, causing no scorching.
- Once vulcanized, CBS shows excellent physical properties.
- Material has a slight odour.
- Soluble in benzene, chloroform, carbon disulfide. Insoluble in water.
- CBS 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 cool, dry, well ventilated area, away from high temperatures. The maximum recommended storage life is 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 3, 2014 by kk]*

## Safety Data Sheet

### CBS

#### 1. IDENTIFICATION OF SUBSTANCE / COMPANY INFORMATION

Chemical Name	N-Cyclohexyl-2-benzothiazole sulfenamide
Synonyms	Antioxidant CBS, Perkacit CBS; Santocure, CBS; 2-Benzothiazolesulfenamide, N-cyclohexyl
CAS #	95-33-0
Formula	C <sub>13</sub> -H <sub>16</sub> -S <sub>2</sub> -N <sub>2</sub>
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 INGREDIENTS

<u>Component</u>	<u>CAS No.</u>	<u>Weight %</u>	<u>EC No.</u>
N-Cyclohexyl-2-Benzothiazole Sulfenamide	95-33-0	> 98	202-411-2
Vegetable Oil (powder only)	8013-07-8	1 - 2	232-410.2
	<u>Symbols(s)</u>	<u>Risk Phrase(s)</u>	
	Xi, N	R36/37/38; R43; R50/53	

#### 3. HEALTH HAZARDS INFORMATION

##### EMERGENCY OVERVIEW

Signal word: WARNING!

Avoid Dust Generation – Explosion Potential!

Irritating to eyes, respiratory system and skin.

May cause sensitisation by skin contact.

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

#### Potential Health Effects:

Inhalation	Causes moderate respiratory irritation. Irritating vapour causes immediate distress. Irritates mucous membranes. 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. May cause skin defatting with prolonged exposure.
Eye Contact	Causes moderate eye irritation. Signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

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#### **4. EMERGENCY FIRST AID PROCEDURES**

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Inhalation	Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion	If swallowed, 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.

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#### **5. FIRE AND EXPLOSION HAZARD MEASURES**

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Flammability	Not determined
Flash Point	350°F / 177°C
Flash Point Method	Cleveland Open Cup
DOT Category	Not regulated
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 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 protective clothing, including self-contained breathing equipment.

## 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. Close 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. Slowly degrades and releases irritating vapours under warm, humid conditions.

## 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  
N-Cyclohexyl-2-benzothiazole  
sulfenamide

ACGIH TLV  
None Listed

OSHA PEL  
None Listed



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.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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Appearance	White powder or granules.
Odour	Mild amine
Specific Gravity	1.3 @ 25°C
Density	1.31-1.34 g/cm <sup>3</sup>
Bulk Density	1280 kg/m <sup>3</sup>
Solubility in water	INSOLUBLE
pH	Not applicable
Other Solubility	Soluble in acetone, benzene, chloroform
Boiling point	Not determined
Melting Point	97-105°C
Molecular Weight	264.4
Molecular Formula	C <sub>13</sub> -H <sub>16</sub> -S <sub>2</sub> -N <sub>2</sub>

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## 10. STABILITY AND REACTIVITY

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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.

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## 11. TOXICOLOGICAL INFORMATION

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Acute oral LD 50 (mg/kg)	5300 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. May cause liver and kidney damage.
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. 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	Negative in standard tests using bacteria and yeast cells.
Primary Irritation Effect	Moderately irritating.
Genotoxicity	None.
Reproductive/Developmental Toxicity	No evidence of teratogenicity in animal studies using rats, mice and hamsters.

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## 12. ECOLOGICAL INFORMATION

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Acute Fish Toxicity	96Hr LC50 Rainbow Trout = 5.4 mg/l 96Hr LC50 Bluegill Sunfish = 7.9 mg/l 96Hr LC50 Fathead Minnow = >1000 mg/l
Acute Crustacean Toxicity	48Hr LC50 Daphnia Magna = 18.0 mg/l
Octonal/Water Coefficient	4.93 log P
Chemical Fate Information	Biodegradability: 4% CO2 evolution
Other Information	Not available

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## 13. DISPOSAL CONSIDERATIONS

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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.

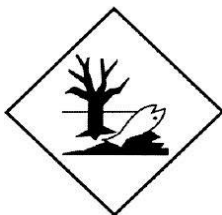
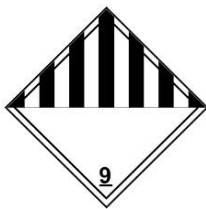
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## 14. TRANSPORT INFORMATION

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<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

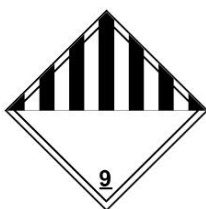


UN/ID No.  
Proper Shipping Name

UN 3077  
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(N-Cyclohexyl-2-Benzothiazole sulfenamide),  
9  
III  
Yes  
Symbol (fish and tree)

Hazard Class  
Packing Group  
Marine Pollutant  
Special Markings

IMDG



UN/ID No.  
Proper Shipping Name

UN 3077  
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(N-Cyclohexyl-2-Benzothiazole sulfenamide),  
9  
III  
Yes  
Symbol (fish and tree)

Hazard Class  
Packing Group  
Marine Pollutant  
Special Markings

TDG (Canada)

Not regulated

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**15. REGULATORY INFORMATION**

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**LABELLING ACCORDING TO DIR 67/548 EEC**

**EC Number:** 212-344-0  
**Classification based on:** TESTS



**IRRITANT (Xi)**



**DANGEROUS FOR THE ENVIRONMENT (N)**

**CLASSIFIED ACCORDING TO DIRECTIVE 199/45/EC**

**Risk Phrases:** R36/37/38 – Irritating to skin and eyes.  
R43 – May cause sensitization by skin contact.  
R50/53 – Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.



**Safety Phrases:**

S22 – Do not breathe dust.  
 S24 – Avoid contact with skin.  
 S36 – Wear suitable protective clothing.  
 S37 – Wear suitable gloves.  
 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:  
 177.2600: Rubber articles intended for repeated use in food contact.

TSCA

Listed

Canadian DSL

Listed

EINECS/ELINCS

Not determined

**US Regulations**

SARA Section 302

Not applicable

SARA 311/312 Hazard Categories

Immediate Delayed.

SARA 313 Chemical

2-Mercaptobenzothiazole.

RCRA Status

Not a RCRA waste

**Canadian Regulations**

WHMIS Symbol / Hazard Class



D2B – Toxic material causing other toxic effects

NPRI

Not determined

**16. HAZARD RATING SYSTEM**

NFPA Rating (Scale 0-4)

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

<b>HEALTH</b>	<b>2</b>
<b>FIRE</b>	<b>1</b>
<b>REACTIVITY</b>	<b>0</b>

HMIS Classification (Scale 0-4)

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

<b>HEALTH</b>	<b>2</b>
<b>FIRE</b>	<b>1</b>
<b>REACTIVITY</b>	<b>0</b>

**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)  
TDG: Transportation of Dangerous Goods (Canada)  
TLV: Threshold Limit Value  
TWA: Time Weighted Average  
WHMIS: Workplace Hazardous Materials Information Systems (Canada)

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### **18. REVISION DATE**

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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