

### 1. IDENTIFICATION

<b>Product Name</b>	<b>N-Cyclohexyl-2-benzothiazolesulfenamide</b>
<b>Other Names</b>	CBS
<b>Uses</b>	Rubber accelerator.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	C <sub>13</sub> H <sub>16</sub> N <sub>2</sub> S <sub>2</sub>
<b>Chemical Name</b>	2-Benzothiazolesulfenamide, N-cyclohexyl-
<b>Product Description</b>	No Data Available

#### Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

#### Emergency Contact Details

*For emergencies only; DO NOT contact these companies for general product advice.*

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

### 2. HAZARD IDENTIFICATION

**Poisons Schedule (Aust)** Not Scheduled

#### Globally Harmonised System

**Hazard Classification** Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

**Hazard Categories** Sensitisation (Skin) - Category 1  
Acute Hazard To The Aquatic Environment - Category 1  
Long-term Hazard To The Aquatic Environment - Category 1

**Pictograms**



**Signal Word** Warning

**Hazard Statements** **H317** May cause an allergic skin reaction.  
**H410** Very toxic to aquatic life with long lasting effects.

**Precautionary Statements**

Prevention	<b>P261</b>	Avoid breathing dust.
	<b>P272</b>	Contaminated work clothing should not be allowed out of the workplace.
	<b>P280</b>	Wear protective gloves/protective clothing/eye protection/face protection.
	<b>P273</b>	Avoid release to the environment.
Response	<b>P302 + P352</b>	IF ON SKIN: Wash with plenty of soap and water.
	<b>P333 + P313</b>	If skin irritation or rash occurs: Get medical advice/attention.
	<b>P363</b>	Wash contaminated clothing before reuse.
	<b>P391</b>	Collect spillage.
Disposal	<b>P501</b>	Dispose of contents/container in accordance with local / regional / national / international regulations.

**National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Dangerous Goods Classification** NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Environmental Protection Authority (New Zealand)**

Hazardous Substances and New Organisms Amendment Act 2015

<b>HSNO Classifications</b>	Health Hazards	<b>6.5B</b>	Substances that are contact sensitisers
	Environmental Hazards	<b>9.1A</b>	Substances that are very ecotoxic in the aquatic environment
		<b>9.1B</b>	Substances that are ecotoxic in the aquatic environment
		<b>9.1C</b>	Substances that are harmful in the aquatic environment

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**Ingredients**

Chemical Entity	Formula	CAS Number	Proportion
N-Cyclohexyl-2-benzothiazolesulfenamide	C13H16N2S2	95-33-0	>97 %
Ingredients determined not to be hazardous	Unspecified	Unspecified	Balance %

## 4. FIRST AID MEASURES

### *Description of necessary measures according to routes of exposure*

<b>Swallowed</b>	IF SWALLOWED: Rinse mouth, then drink plenty of water. Get medical advice/attention if you feel unwell.
<b>Eye</b>	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
<b>Skin</b>	IF ON SKIN: Remove material from skin immediately. Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation or rash occurs, get medical advice/attention.
<b>Inhaled</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Apply resuscitation if victim is not breathing - Administer oxygen if breathing is difficult.
<b>Advice to Doctor</b>	Treat symptomatically. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.
<b>Medical Conditions Aggravated by Exposure</b>	May cause an allergic skin reaction.

## 5. FIRE FIGHTING MEASURES

<b>General Measures</b>	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
<b>Flammability Conditions</b>	Combustible material; May burn but does not ignite readily. - Ignition temperature: ~360 °C
<b>Extinguishing Media</b>	Use dry chemical, Carbon dioxide (CO <sub>2</sub> ), foam or water spray for extinction.
<b>Fire and Explosion Hazard</b>	Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Toxic emissions may result if product is involved in a fire.
<b>Hazardous Products of Combustion</b>	Fire may produce irritating, toxic and/or corrosive fumes, including Sulfur dioxide gas.
<b>Special Fire Fighting Instructions</b>	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
<b>Personal Protective Equipment</b>	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
<b>Flash Point</b>	~177 °C
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	349 °C
<b>Hazchem Code</b>	No Data Available

## 6. ACCIDENTAL RELEASE MEASURES

<b>General Response Procedure</b>	Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Clean up spills immediately. Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing.
<b>Clean Up Procedures</b>	Collect material (wet-sweep or vacuum up) and place into suitable containers for disposal (see SECTION 13). Avoid dispersal of dust in the air (i.e. clearing dusty surfaces with compressed air). Non-sparking tools should be used.
<b>Containment</b>	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Prevent dust cloud.
<b>Decontamination</b>	No information available.
<b>Environmental Precautionary Measures</b>	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
<b>Evacuation Criteria</b>	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground.
<b>Personal Precautionary Measures</b>	Use personal protective equipment as required (see SECTION 8).

## 7. HANDLING AND STORAGE

<b>Handling</b>	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust/vapours and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Avoid release to the environment - Collect spillage (see SECTION 6).
<b>Storage</b>	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Avoid exposure to air. Protect from moisture/humidity. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10).
<b>Container</b>	Keep in the original container.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	No specific exposure standards are available for this product. For dusts from solid substances without specific occupational exposure standards: - Safe Work Australia Exposure Standard for Nuisance dusts: 8 hr TWA = 10 mg/m <sup>3</sup> (measured as inhalable dust). - New Zealand WES for Particulates not otherwise classified: TWA = 10 mg/m <sup>3</sup> ; TWA = 3 mg/m <sup>3</sup> (respirable dust).
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available.
<b>Engineering Measures</b>	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. It is recommended that all dust control equipment, such as local exhaust ventilation and material transport systems, involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment.
<b>Personal Protection Equipment</b>	- Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Organic vapour/particulate filter respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Tightly fitting safety goggles. - Hand protection: Wear protective gloves. Recommended: Chemical-resistant, impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, safety shoes.
<b>Special Hazards Precautions</b>	No information available.
<b>Work Hygienic Practices</b>	Do not eat, drink or smoke when using this product. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas. Work clothes should be washed separately at the end of each work day; Disposable clothing should be discarded. Contaminated work clothing should not be allowed out of the workplace. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Powder or granules
<b>Odour</b>	Slight
<b>Colour</b>	White to off-white
<b>pH</b>	No Data Available
<b>Vapour Pressure</b>	Negligible (@ 20 °C)
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	No Data Available
<b>Melting Point</b>	~98 °C
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Slightly soluble in water - Soluble in acetone, ether, ethanol
<b>Specific Gravity</b>	1.3

<b>Flash Point</b>	~177 °C
<b>Auto Ignition Temp</b>	349 °C
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	1,280 kg/m <sup>3</sup>
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available
<b>Density</b>	No Data Available
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	264.4
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	4.93 (log Pow)
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	No information available.
<b>Potential for Dust Explosion</b>	Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
<b>Fast or Intensely Burning Characteristics</b>	No information available.
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No information available.
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No information available.
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	Combustible material; May burn but does not ignite readily.
<b>Reactions That Release Gases or Vapours</b>	Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including Carbon oxides, oxides of Nitrogen, oxides of Sulfur, amines.
<b>Release of Invisible Flammable Vapours and Gases</b>	No information available.

## 10. STABILITY AND REACTIVITY

<b>General Information</b>	Under normal conditions, not hazardous reactions will occur.
<b>Chemical Stability</b>	The substance is stable under normal storage and handling conditions.
<b>Conditions to Avoid</b>	Avoid generating dust. Keep away from heat and sources of ignition. Protect from moisture. Avoid exposure to air.
<b>Materials to Avoid</b>	Incompatible/reactive with acids, oxidising agents, reducing agents, insoluble sulfur.
<b>Hazardous Decomposition Products</b>	Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including Carbon oxides, oxides of Nitrogen, oxides of Sulfur, amines.
<b>Hazardous Polymerisation</b>	No information available.

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	<ul style="list-style-type: none"> <li>- Acute toxicity: Not classified.</li> <li>- Skin corrosion/irritation: Slightly irritating to skin but not sufficient for classification.</li> <li>- Eye damage/irritation: Slightly irritating to eyes but not sufficient for classification.</li> <li>- Respiratory/skin sensitisation: May cause an allergic skin reaction.</li> </ul>
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- Germ cell mutagenicity: Not classified.
- Carcinogenicity: Not classified.
- Reproductive toxicity: Not classified.
- STOT (single exposure): Not classified.
- STOT (repeated exposure): Not classified.
- Aspiration toxicity: Not classified.

**Acute**

**Ingestion**

Acute toxicity (Oral):  
 - LD50, Rat: 5,300 mg/kg [Supplier's SDS].

**Other**

Acute toxicity (Dermal):  
 - LD50, Rabbit: >7,940 mg/kg [Supplier's SDS].

**Carcinogen Category**

None

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

Aquatic toxicity:  
 - LC50, Fish (Bluegill sunfish): 7.9 mg/l (96 h) [OECD 203; Supplier's SDS].  
 - EC50, Crustacea (Daphnia): 18 mg/l (48 h) [OECD 202; Supplier's SDS].  
 - LC50, Algae: 1.1 mg/l (96 h) [OECD 201; Supplier's SDS].

**Persistence/Degradability**

No information available.

**Mobility**

No information available.

**Environmental Fate**

Prevent entry into drains and waterways.

**Bioaccumulation Potential**

No information available.

**Environmental Impact**

No Data Available

**13. DISPOSAL CONSIDERATIONS**

**General Information**

Dispose of contents/container as hazardous waste and in accordance with local/regional/national regulations.

**Special Precautions for Land Fill**

If empty container retains product residues, all label precautions must be observed.

**14. TRANSPORT INFORMATION**

**Land Transport (Australia)**

ADG Code

**Proper Shipping Name**

N-Cyclohexyl-2-benzothiazolesulfenamide

**Class**

No Data Available

**Subsidiary Risk(s)**

No Data Available

**EPG**

47 Low To Moderate Hazard Substances

**UN Number**

No Data Available

**Hazchem**

No Data Available

**Pack Group**

No Data Available

**Special Provision**

AU01

**Comments**

UN#3077: Not regulated as DG when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs.

**Land Transport (Malaysia)**

ADR Code

<b>Proper Shipping Name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (N-Cyclohexyl-2-benzothiazolesulfenamide)
<b>Class</b>	9 Miscellaneous Dangerous Goods and Articles
<b>Subsidiary Risk(s)</b>	No Data Available
<b>EPG</b>	47 Low To Moderate Hazard Substances
<b>UN Number</b>	3077
<b>Hazchem</b>	2Z
<b>Pack Group</b>	III
<b>Special Provision</b>	No Data Available

#### Land Transport (New Zealand)

NZS5433

<b>Proper Shipping Name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (N-Cyclohexyl-2-benzothiazolesulfenamide)
<b>Class</b>	9 Miscellaneous Dangerous Goods and Articles
<b>Subsidiary Risk(s)</b>	No Data Available
<b>EPG</b>	47 Low To Moderate Hazard Substances
<b>UN Number</b>	3077
<b>Hazchem</b>	2Z
<b>Pack Group</b>	III
<b>Special Provision</b>	No Data Available

#### Land Transport (United States of America)

US DOT

<b>Proper Shipping Name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (N-Cyclohexyl-2-benzothiazolesulfenamide)
<b>Class</b>	9 Miscellaneous Dangerous Goods and Articles
<b>Subsidiary Risk(s)</b>	No Data Available
<b>ERG</b>	171 Substances (Low to Moderate Hazard)
<b>UN Number</b>	3077
<b>Hazchem</b>	2Z
<b>Pack Group</b>	III
<b>Special Provision</b>	No Data Available

#### Sea Transport

IMDG Code

<b>Proper Shipping Name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (N-Cyclohexyl-2-benzothiazolesulfenamide)
<b>Class</b>	9 Miscellaneous Dangerous Goods and Articles
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	3077
<b>Hazchem</b>	2Z
<b>Pack Group</b>	III
<b>Special Provision</b>	No Data Available
<b>EMS</b>	F-A, S-F
<b>Marine Pollutant</b>	Yes

#### Air Transport

IATA DGR

<b>Proper Shipping Name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (N-Cyclohexyl-2-benzothiazolesulfenamide)
<b>Class</b>	9 Miscellaneous Dangerous Goods and Articles

<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	3077
<b>Hazchem</b>	2Z
<b>Pack Group</b>	III
<b>Special Provision</b>	No Data Available

### National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

<b>Dangerous Goods Classification</b>	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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## 15. REGULATORY INFORMATION

<b>General Information</b>	No Data Available
<b>Poisons Schedule (Aust)</b>	Not Scheduled

### Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

<b>Approval Code</b>	HSR003964
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### National/Regional Inventories

<b>Australia (AICS)</b>	Listed
<b>Canada (DSL)</b>	Not Determined
<b>Canada (NDSL)</b>	Not Determined
<b>China (IECSC)</b>	Not Determined
<b>Europe (EINECS)</b>	202-411-2
<b>Europe (REACH)</b>	Not Determined
<b>Japan (ENCS/METI)</b>	Not Determined
<b>Korea (KECI)</b>	Not Determined
<b>Malaysia (EHS Register)</b>	Not Determined
<b>New Zealand (NZIoC)</b>	Listed
<b>Philippines (PICCS)</b>	Not Determined
<b>Switzerland (Giftliste 1)</b>	Not Determined
<b>Switzerland (Inventory of Notified Substances)</b>	Not Determined
<b>Taiwan (NCSR)</b>	Not Determined
<b>USA (TSCA)</b>	Not Determined



## 16. OTHER INFORMATION

<b>Related Product Codes</b>	CBSAAA1000, CBSAAA1001, CBSAAA1002, CBSAAA1003, CBSAAA1004, CBSAAA1005, CBSAAA1100, CBSAAA1700, CBSAAA1701, CBSAAA1702, CBSAAA1703, CBSAAA1704, CBSAAA2000, CBSAAA2500, CBSAAA3500, CBSAAA4200, CBSAAA4500, CBSAAA4600
<b>Revision</b>	4
<b>Revision Date</b>	28 May 2018
<b>Reason for Issue</b>	Updated SDS
<b>Key/Legend</b>	< Less Than > Greater Than <b>AICS</b> Australian Inventory of Chemical Substances <b>atm</b> Atmosphere <b>CAS</b> Chemical Abstracts Service (Registry Number) <b>cm<sup>2</sup></b> Square Centimetres <b>CO<sub>2</sub></b> Carbon Dioxide <b>COD</b> Chemical Oxygen Demand <b>deg C (°C)</b> Degrees Celcius <b>EPA (New Zealand)</b> Environmental Protection Authority of New Zealand <b>deg F (°F)</b> Degrees Farenheit <b>g</b> Grams <b>g/cm<sup>3</sup></b> Grams per Cubic Centimetre <b>g/l</b> Grams per Litre <b>HSNO</b> Hazardous Substance and New Organism <b>IDLH</b> Immediately Dangerous to Life and Health <b>immiscible</b> Liquids are insoluable in each other. <b>inHg</b> Inch of Mercury <b>inH<sub>2</sub>O</b> Inch of Water <b>K</b> Kelvin <b>kg</b> Kilogram <b>kg/m<sup>3</sup></b> Kilograms per Cubic Metre <b>lb</b> Pound <b>LC<sub>50</sub></b> LC stands for lethal concentration. LC <sub>50</sub> is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours. <b>LD<sub>50</sub></b> LD stands for Lethal Dose. LD <sub>50</sub> is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. <b>ltr</b> or <b>L</b> Litre <b>m<sup>3</sup></b> Cubic Metre <b>mbar</b> Millibar <b>mg</b> Milligram <b>mg/24H</b> Milligrams per 24 Hours <b>mg/kg</b> Milligrams per Kilogram <b>mg/m<sup>3</sup></b> Milligrams per Cubic Metre <b>Misc</b> or <b>Miscible</b> Liquids form one homogeneous liquid phase regardless of the amount of either component present. <b>mm</b> Millimetre <b>mmH<sub>2</sub>O</b> Millimetres of Water <b>mPa.s</b> Millipascals per Second <b>N/A</b> Not Applicable <b>NIOSH</b> National Institute for Occupational Safety and Health <b>NOHSC</b> National Occupational Health and Safety Commission <b>OECD</b> Organisation for Economic Co-operation and Development <b>Oz</b> Ounce <b>PEL</b> Permissible Exposure Limit <b>Pa</b> Pascal <b>ppb</b> Parts per Billion <b>ppm</b> Parts per Million <b>ppm/2h</b> Parts per Million per 2 Hours <b>ppm/6h</b> Parts per Million per 6 Hours <b>psi</b> Pounds per Square Inch <b>R</b> Rankine <b>RCP</b> Reciprocal Calculation Procedure <b>STEL</b> Short Term Exposure Limit <b>TLV</b> Threshold Limit Value <b>tne</b> Tonne <b>TWA</b> Time Weighted Average <b>ug/24H</b> Micrograms per 24 Hours <b>UN</b> United Nations <b>wt</b> Weight

