

## 1. IDENTIFICATION

<b>Product Name</b>	<b>Polyhexamethylene biguanide hydrochloride (PHMB)</b>
<b>Other Names</b>	PHMB, 20% aqueous solution; Polihexanide [CAS#28757-47-3]; Polyhexamethylene biguanide, hydrochloride [CAS#32289-58-0]
<b>Uses</b>	Used as a preservative in personal care products at low concentrations.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	Unspecified
<b>Chemical Name</b>	Polyhexamethylene biguanide, aqueous solution
<b>Product Description</b>	No Data Available

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

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox 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)

Schedule 6

## Globally Harmonised System

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

**Hazard Categories**

Acute Toxicity (Oral) - Category 5  
 Acute Toxicity (Inhalation) - Category 2  
 Serious Eye Damage/Irritation - Category 1  
 Sensitisation (Skin) - Category 1  
 Carcinogenicity - Category 2  
 Specific Target Organ Toxicity (Repeated Exposure) - Category 1  
 Acute Hazard To The Aquatic Environment - Category 1  
 Long-term Hazard To The Aquatic Environment - Category 1

**Pictograms**

**Signal Word** Danger

**Hazard Statements**

**H303** May be harmful if swallowed.  
**H317** May cause an allergic skin reaction.  
**H318** Causes serious eye damage.  
**H351** Suspected of causing cancer.  
**H372** Causes damage to organs through prolonged or repeated exposure.  
**H410** Very toxic to aquatic life with long lasting effects.  
**H330** Fatal if inhaled.

<b>Precautionary Statements</b>	Prevention	<b>P280</b>	Wear protective gloves/protective clothing/eye protection/face protection.
		<b>P260</b>	Do not breathe mist/vapour/spray.
		<b>P201</b>	Obtain special instructions before use.
		<b>P273</b>	Avoid release to the environment.
		<b>P271</b>	Use only outdoors or in a well-ventilated area.
		<b>P272</b>	Contaminated work clothing should not be allowed out of the workplace.
		<b>P270</b>	Do not eat, drink or smoke when using this product.
		<b>P284</b>	Wear respiratory protection.
	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 attention.
		<b>P308 + P313</b>	IF exposed or concerned: Get medical attention.
		<b>P391</b>	Collect spillage.
		<b>P304 + P340</b>	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
		<b>P305 + P351 + P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		<b>P310</b>	Immediately call a POISON CENTER or doctor.
		<b>P362 + P364</b>	Take off contaminated clothing and wash it before reuse.
	Storage	<b>P405</b>	Store locked up.
		<b>P403 + P233</b>	Store in a well-ventilated place. Keep container tightly closed.
	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)

**Safe Work Australia**  
National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

**Hazard Classification** Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Water	H2O	7732-18-5	80 %
Polyhexamethylene biguanide hydrochloride	Unspecified	32289-58-0	20 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

**Swallowed** IF SWALLOWED: Rinse mouth with water. Do not induce vomiting. Call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person.

**Eye** 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 flushing until advised to stop by a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor, or for at least 15 minutes.

**Skin** IF ON SKIN: Remove and isolate contaminated clothing and shoes. Immediately flush skin with running water for at least 15 minutes. If skin irritation or rash occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse. Contaminated work clothing should not be allowed out of the workplace.  
\*For minor skin contact, avoid spreading material on unaffected skin.

**Inhaled** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison Centre or doctor/physician for advice. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.

**Advice to Doctor** Keep victim calm and warm. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.  
\*Most important symptoms and effects, both acute and delayed: Fatal if inhaled. Causes serious eye damage. May cause an allergic skin reaction. Suspected of causing cancer. Causes damage to organs through prolonged or repeated exposure.

**Medical Conditions Aggravated by Exposure** No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Dike fire-control water for later disposal; do not scatter the material. *Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.
Flammability Conditions	Combustible; Material may be ignited if preheated to temperatures above the flash point in the presence of a source of ignition.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Use fire extinguishing media suitable for the surrounding fire.
Fire and Explosion Hazard	When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards! Containers may explode when heated.
Hazardous Products of Combustion	Fire may produce irritating, corrosive and/or toxic gases, including oxides of Carbon, oxides of Nitrogen, Hydrogen chloride (HCl).
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may be corrosive and/or toxic and cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing - It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
Flash Point	>98 °C
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	2X

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed areas before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Do not breathe mist/vapours and avoid contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13). *Major spills: Use explosion-proof pump to transfer to tank truck or special collector; recycle or transport to waste disposal site for disposal.
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas.
Decontamination	Scrub the contaminated ground with soap or detergent; put the diluted sewage into the wastewater system.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
Evacuation Criteria	Spill or leak area should be isolated immediately. Evacuate personnel to safe areas. Keep unauthorised personnel away. Keep upwind and to higher ground.
Personal Precautionary Measures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated area. Obtain special instructions before use - Do not handle until all safety precautions have been read and understood. Open and handle receptacle with care. Do not breathe mist/vapours/spray and avoid contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator (see SECTION 8). Avoid release to the environment; Collect spillage (see SECTION 6).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.

Container Keep in the original container. Empty containers retain product residue (liquid and/or vapour) and can be hazardous.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	Use a system of local and/or general exhaust 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.
Personal Protection Equipment	<div>- Respiratory protection: Wear respiratory protection if mist/vapours/aerosols are generated. Recommended: Acid gas/particulate filter respirator (refer to AS/NZS 1715 &amp; 1716).</div> <div>- Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Chemical goggles.</div> <div>- Hand protection: Wear protective gloves. Recommended: Impervious gloves, e.g. rubber.</div> <div>- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Impervious clothing; protective boots and apron.</div>
Special Hazards Precautions	No information available.
Work Hygienic Practices	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Take off contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Odourless
Colour	Colourless to pale yellow
pH	6.0 - 8.0
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	99 - 102 °C
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Fully miscible with water
Specific Gravity	1.05 - 1.15
Flash Point	>98 °C
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available

Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Combustible; Material may be ignited if preheated to temperatures above the flash point in the presence of a source of ignition.
Reactions That Release Gases or Vapours	Fire/decomposition may produce irritating, corrosive and/or toxic gases, including oxides of Carbon, oxides of Nitrogen, Hydrogen chloride (HCl).
Release of Invisible Flammable Vapours and Gases	When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards!

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	Stable at room temperature under normal pressure.
Conditions to Avoid	Keep away from heat and sources of ignition.
Materials to Avoid	Incompatible/reactive with Sodium hydroxide, metals, copper, silver.
Hazardous Decomposition Products	Fire/decomposition may produce irritating, corrosive and/or toxic gases, including oxides of Carbon, oxides of Nitrogen, Hydrogen chloride (HCl).
Hazardous Polymerisation	Product will not undergo hazardous polymerisation.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none"><li>- Acute toxicity: May be harmful if swallowed. Fatal if inhaled. Polihexanide has moderate acute toxicity based on results from animal tests following oral exposure; and has moderate acute inhalation toxicity in animal tests [NICNAS].</li><li>- Skin corrosion/irritation: Polihexanide is reported to slightly irritate skin in animal studies [NICNAS].</li><li>- Eye damage/irritation: Causes serious eye damage. Based on the results from eye irritation studies in rabbits, Polihexanide was found to be highly irritating; Effects were not reversible within the observation period [NICNAS].</li><li>- Respiratory/skin sensitisation: May cause an allergic skin reaction. Polihexanide is considered to be a moderate skin sensitiser based on the positive results seen in guinea pig maximisation tests (GPMT) [NICNAS].</li><li>- Germ cell mutagenicity: Based on the limited publicly available data, Polihexanide is not considered genotoxic in vivo or in vitro [NICNAS].</li><li>- Carcinogenicity: Suspected of causing cancer. whilst the cancer-related effects of polihexanide may be relevant to human health, the tumours in rodents were only observed in high doses, above the maximum tolerated dose. Hence, this is not likely to be relevant under the conditions of human exposure [NICNAS].</li><li>- Reproductive toxicity: Based on the data available from several animal studies, there is no evidence of reproductive toxicity [NICNAS].</li><li>- STOT (single exposure): Polihexanide is not expected to cause respiratory irritation; However, was reported to cause</li></ul>
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respiratory irritation in a repeat dose inhalation toxicity study in rats [NICNAS].  
- STOT (repeated exposure): Causes damage to organs through prolonged or repeated exposure through inhalation.  
Based on the treatment-related effects reported in repeated dose toxicity studies, repeated inhalation exposure Polihexanide is considered to cause serious damage to health [NICNAS].  
- Aspiration toxicity: No information available.

Acute

Ingestion	Acute toxicity (Oral): COMPONENT: Polyhexamethylene Biguanide Hydrochloride: - LD50, Rat: 501 mg/kg [Supplier's SDS].
Inhalation	Acute toxicity (Inhalation): COMPONENT: Polyhexamethylene Biguanide Hydrochloride: - LC50, Rat: 0.03 mg/L [Supplier's SDS].
Carcinogen Category	Carc. 2

12. ECOLOGICAL INFORMATION

Ecotoxicity	Acute toxicity: - M factor: 10 (PHMB) Chronic toxicity: - M factor: 10 (PHMB)
Persistence/Degradability	Not readily biodegradable.
Mobility	No information available.
Environmental Fate	Very toxic to aquatic life with long lasting effects - Avoid release to the environment.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container to a licensed disposal site in accordance with local/regional/national regulations. Decontaminate empty containers.
Special Precautions for Land Fill	This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	TOXIC LIQUID, ORGANIC, N.O.S. (Polyhexamethylene biguanide)
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	C2 Combustible Liquids - Flash Point >93°C, Closed Cup, Not Excluded Flammable
EPG	36 Toxic And/Or Corrosive Substances Combustible
UN Number	2810
Hazchem	2X
Pack Group	II

Special Provision No Data Available

Land Transport (Malaysia)

ADR Code

Proper Shipping Name TOXIC LIQUID, ORGANIC, N.O.S. (Polyhexamethylene biguanide)  
Class 6.1 Toxic and Infectious Substances - Toxic Substances  
Subsidiary Risk(s) No Data Available  
EPG 36 Toxic And/Or Corrosive Substances Combustible  
UN Number 2810  
Hazchem 2X  
Pack Group II  
Special Provision No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name TOXIC LIQUID, ORGANIC, N.O.S. (Polyhexamethylene biguanide)  
Class 6.1 Toxic and Infectious Substances - Toxic Substances  
Subsidiary Risk(s) No Data Available  
EPG 36 Toxic And/Or Corrosive Substances Combustible  
UN Number 2810  
Hazchem 2X  
Pack Group II  
Special Provision No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name TOXIC LIQUID, ORGANIC, N.O.S. (Polyhexamethylene biguanide)  
Class 6.1 Toxic and Infectious Substances - Toxic Substances  
Subsidiary Risk(s) No Data Available  
ERG 156 Substances - Toxic and/or Corrosive (Combustible / Water-Sensitive)  
UN Number 2810  
Hazchem 2X  
Pack Group II  
Special Provision No Data Available

Sea Transport

IMDG Code

Proper Shipping Name TOXIC LIQUID, ORGANIC, N.O.S. (Polyhexamethylene biguanide)  
Class 6.1 Toxic and Infectious Substances - Toxic Substances  
Subsidiary Risk(s) No Data Available  
UN Number 2810  
Hazchem 2X  
Pack Group II  
Special Provision No Data Available  
EMS F-A, S-A  
Marine Pollutant Yes



Air Transport

IATA DGR

Proper Shipping Name	TOXIC LIQUID, ORGANIC, N.O.S. (Polyhexamethylene biguanide)
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
UN Number	2810
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

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)
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15. REGULATORY INFORMATION

General Information	POLIHEXANIDE
Poisons Schedule (Aust)	Schedule 6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002504 - Additives, Process Chemicals and Raw Materials (Acutely Toxic, Carcinogenic) Group Standard 2020
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National/Regional Inventories

Australia (AIIIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined

Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	POHEBI1000, POHEBI2000, POHEBI3000, POHEBI4000, POHEBI4600, POHEBI5000, POHEBI6300
Revision	4
Revision Date	01 Oct 2022
Reason for Issue	update sds
Key/Legend	< 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>cm²</b> Square Centimetres <b>CO2</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/cm³</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>inH2O</b> Inch of Water <b>K</b> Kelvin <b>kg</b> Kilogram <b>kg/m³</b> Kilograms per Cubic Metre <b>lb</b> Pound <b>LC50</b> LC stands for lethal concentration. LC50 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>LD50</b> LD stands for Lethal Dose. LD50 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 or L</b> Litre <b>m³</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/m³</b> Milligrams per Cubic Metre <b>Misc or Miscible</b> Liquids form one homogeneous liquid phase regardless of the amount of either component present. <b>mm</b> Millimetre <b>mmH2O</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 Heath and Safety Commission <b>OECD</b> Organisation for Economic Co-operation and Development <b>Oz</b> Ounce <b>PEL</b> Permissible Exposure Limit

**Pa** Pascal  
**ppb** Parts per Billion  
**ppm** Parts per Million  
**ppm/2h** Parts per Million per 2 Hours  
**ppm/6h** Parts per Million per 6 Hours  
**psi** Pounds per Square Inch  
**R** Rankine  
**RCP** Reciprocal Calculation Procedure  
**STEL** Short Term Exposure Limit  
**TLV** Threshold Limit Value  
**tne** Tonne  
**TWA** Time Weighted Average  
**ug/24H** Micrograms per 24 Hours  
**UN** United Nations  
**wt** Weight