SAFETY DATA SHEET
SODIUM HYDROSULPHIDE SOLUTION
REVISION 6, DATE 24 AUG 21

1. IDENTIFICATION

Product Name	**Sodium Hydrosulphide Solution**
Other Names	Sodium Hydrosulphide 17.5% w/w; Sodium Hydrosulphide 30% w/w; Sodium Hydrosulphide 35% w/w
Uses	Industrial applications; Flotation agent in mining and metal extraction.
Chemical Family	No Data Available
Chemical Formula	HNaS
Chemical Name	Sodium hydrosulfide, aqueous solution
Product Description	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)	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			Corrosive to Metals - Category 1 Acute Toxicity (Oral) - Category 3 Skin Corrosion/Irritation - Category 1B Serious Eye Damage/Irritation - Category 1
Pictograms			
Signal Word			Danger
Hazard Statements		**AUH031**	Contact with acids liberates toxic gas
		H290	May be corrosive to metals.
		H301	Toxic if swallowed.
		H314	Causes severe skin burns and eye damage.
Precautionary Statements	Prevention	**P260**	Do not breathe mist/vapour/spray.
		P270	Do not eat, drink or smoke when using this product.
		P280	Wear protective gloves/protective clothing/eye protection/face protection.
	Response	**P301 + P330 + P331**	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
		P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
		P304 + P340	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		P310	Immediately call a POISON CENTER or doctor.
		P363	Wash contaminated clothing before reuse.
		P390	Absorb spillage to prevent material-damage.
	Storage	**P405**	Store locked up.
		P406	Store in corrosive resistant container with a resistant inner liner.
	Disposal	**P501**	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	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Sodium hydrosulfide	HNaS	16721-80-5	17.5 - 35 % w/w
Sodium sulphide	Na2S	1313-82-2	<=2.5 %
Water	H2O	7732-18-5	Balance %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth, then drink 1 or 2 glasses of water. Do NOT induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Immediately call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

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 rinsing for at least 20 minutes. Immediately call a Poison Centre or doctor/physician for advice.
*Chemical burns must be treated promptly by a physician!

Skin IF ON SKIN (or hair): Remove and isolate contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Immediately flush skin and hair with running water for at least 20 minutes. For minor skin contact, avoid spreading material on unaffected skin. Immediately call a Poison Centre or doctor/physician for advice. Wash contaminated clothing and shoes before reuse.
*Chemical burns must be treated promptly by a physician!

Inhaled IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Immediately call a Poison Centre or doctor/physician for advice. Give artificial respiration if victim is not breathing. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation! 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 Treat symptomatically. Keep victim calm and warm. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.

Medical Conditions Aggravated by Exposure No information available.

5. FIRE FIGHTING MEASURES

General Measures Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if you can do it without risk. Cool containers with water spray until well after fire is out. Dike fire control water for later disposal; do not scatter the material.

Flammability Conditions Non-combustible; substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.

Extinguishing Media If material is involved in a fire, use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction - Do not use water jet.
*Use an extinguishing agent suitable for the surrounding fire.

Fire and Explosion Hazard Contact with metals may evolved flammable hydrogen gas. In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous Products of Combustion Fire or heat may produce irritating, corrosive and/or toxic gases, including carbon dioxide, carbon monoxide, sulfur oxides, metal oxide/oxides, Hydrogen sulfide (H2S).

Special Fire Fighting Instructions Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and pollute waterways.

Personal Protective Equipment Wear liquid-tight chemical protective clothing in combination with positive pressure self-contained breathing apparatus

	(SCBA). 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	No Data Available
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	No action shall be taken involving any personal risk or without suitable training. Ensure adequate ventilation - Ventilate enclosed areas. ELIMINATE all ignition sources. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Slippery when spilt. Avoid accidents, clean up immediately! Do not breathe vapours and prevent contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material. Collect and seal in properly labelled containers for disposal (see SECTION 13). *Contaminated absorbent material may pose the same hazard as the spilled product.
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Move containers from spill area.
Decontamination	For residues, preferably oxidize with a weak 3-5% hydrogen peroxide solution to stop release of hydrogen sulfide.
Environmental Precautionary Measures	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Evacuation Criteria	Immediately isolate spill or leak area. Keep unauthorized personnel away. Stay upwind and/or uphill.
Personal Precautionary Measures	Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing when there is no risk of fire. It provides little or no thermal protection.

7. HANDLING AND STORAGE

Handling	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. Do not breathe mist/vapours/aerosols and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8). Absorb spillage to prevent material damage (see SECTION 6).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep containers closed when not in use - check regularly for leaks. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Use appropriate containment to avoid environmental contamination.
Container	Keep only in the original container or corrosive resistant container with a resistant inner liner. Do not store in unlabelled containers. *Empty containers retain product residue and can be hazardous. Do not reuse container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No value assigned for this specific material by Safe Work Australia. DECOMPOSITION PRODUCT: Hydrogen sulfide (CAS No. 7783-06-4): - Safe Work Australia Exposure Standard: TWA = 10 ppm (14 mg/m3); STEL = 15 ppm (21 mg/m3). DECOMPOSITION PROUCT: Sulfur dioxide (CAS No. 7446-09-5): - Safe Work Australia Exposure Standard: TWA = 2 ppm (5.2 mg/m3); STEL = 5 ppm (13 mg/m3).

Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	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.
Personal Protection Equipment	- Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: If determined by a risk assessment an inhalation risk exists, wear a suitable mist respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead. - Hand protection: Wear protective gloves. Recommended: Wear elbow-length, chemcial-resistant impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Wear overalls, splash apron or equivalent chemical impervious outer garment, and rubber boots.
Special Hazards Precaustions	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Hydrogen sulfide (rotten egg), hydrocarbon (mercaptan)
Colour	Yellow to red, dark green to black
pH	>=11.5
Vapour Pressure	17 mmHg (@ 20 °C)
Relative Vapour Density	1.17 Air = 1
Boiling Point	123 - 132 °C
Melting Point	-18°C (20 wt% solution) - 13°C (45 wt% solution)
Freezing Point	No Data Available
Solubility	Easily soluble in cold water and hot water
Specific Gravity	1.15 - 1.33
Flash Point	No Data Available
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	May be corrosive to metals.
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	Non-combustible; substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
Reactions That Release Gases or Vapours	Fire or heat may produce irritating, corrosive and/or toxic gases, including carbon dioxide, carbon monoxide, sulfur oxides, metal oxide/oxides, Hydrogen sulfide (H2S).
Release of Invisible Flammable Vapours and Gases	Can react with acids evolving flammable and toxic hydrogen sulphide gas.

10. STABILITY AND REACTIVITY

General Information	Under normal conditions of storage and use, hazardous reactions will not occur. Can react with acids evolving flammable and toxic hydrogen sulphide gas. Corrosive to steel above 65.5°C.
Chemical Stability	Stable under normal conditions.
Conditions to Avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
Materials to Avoid	Incompatible/reactive with Acid,. Diazonium salts, Aluminium, Copper, Zinc, Galvanised metals.
Hazardous Decomposition Products	Hydrogen sulfide, Oxides of sulfur, Sodium oxides.
Hazardous Polymerisation	Under normal conditions of storage and use, hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: Toxic if swallowed. Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract (mouth, throat, and stomach).
- Skin corrosion/irritation: Causes severe skin burns. Contact with skin will result in severe irritation. Corrosive to skin - may cause skin burns.
- Eye damage/irritation: Causes serious eye damage. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury.
- Respiratory/skin sensitisation: Not a respiratory sensitiser. Not expected to be a skin sensitizer.
- Germ cell mutagenicity: No information available.
- Carcinogenicity: This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
- Reproductive toxicity: No information available.
- STOT (single exposure): Not classified. Breathing in mists or aerosols may produce respiratory irritation.
- STOT (repeated exposure): Not classified.
- Aspiration toxicity: Not an aspiration hazard.

Acute

Ingestion

Acute toxicity (Oral):
- LD50, Rat: 100 - 215 mg/kg (Sodium hydrosulfide).

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Very toxic to aquatic life.
Persistence/Degradability	No information available.
Mobility	No information available.
Environmental Fate	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
Special Precautions for Land Fill	This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium hydrosulfide solution)
Class	8 Corrosive Substances
Subsidiary Risk(s)	6.1 Toxic and Infectious Substances - Toxic Substances
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	2922
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium hydrosulfide solution)
Class	8 Corrosive Substances
Subsidiary Risk(s)	6.1 Toxic and Infectious Substances - Toxic Substances
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	2922
Hazchem	2X
Pack Group	II

Special Provision	No Data Available

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium hydrosulfide solution)
Class	8 Corrosive Substances
Subsidiary Risk(s)	6.1 Toxic and Infectious Substances - Toxic Substances
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	2922
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

Land Transport (United States of America)
US DOT

Proper Shipping Name	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium hydrosulfide solution)
Class	8 Corrosive Substances
Subsidiary Risk(s)	6.1 Toxic and Infectious Substances - Toxic Substances
ERG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	2922
Hazchem	2X
Pack Group	II
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium hydrosulfide solution)
Class	8 Corrosive Substances
Subsidiary Risk(s)	6.1 Toxic and Infectious Substances - Toxic Substances
UN Number	2922
Hazchem	2X
Pack Group	II
Special Provision	No Data Available
EMS	F-A, S-B
Marine Pollutant	No

Air Transport
IATA DGR

Proper Shipping Name	CORROSIVE LIQUID, TOXIC, N.O.S. (Sodium hydrosulfide solution)
Class	8 Corrosive Substances
Subsidiary Risk(s)	6.1 Toxic and Infectious Substances - Toxic Substances
UN Number	2922
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	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	Not Assessed

National/Regional Inventories

Australia (AIIC)	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)	Not Determined
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	SOHYDL0030, SOHYDL0035, SOHYDL0175, SOHYDL0300, SOHYDL0350, SOHYDL1000, SOHYDL1705, SOHYDL2000, SOHYDL2001, SOHYDL2500, SOHYDL3000, SOHYDL3001, SOHYDL3500, SOHYDL3550, SOHYDL4200, SOHYDL5000, SOHYDL5001, SOHYDL5002, SOHYDL5003, SOHYDL5010, SOHYDL5020, SOHYDL5021, SOHYDL5030, SOHYDL6000, SOHYDL7000, SOHYDL7001, SOHYDL7500, SOHYDL8000, SOHYDL8001, SOHYDL8500, SOHYDL9000

Revision	6
Revision Date	24 Aug 2021
Reason for Issue	update sds
Key/Legend	**<** Less Than **>** Greater Than **AICS** Australian Inventory of Chemical Substances **atm** Atmosphere **CAS** Chemical Abstracts Service (Registry Number) **cm^2** Square Centimetres **CO2** Carbon Dioxide **COD** Chemical Oxygen Demand **deg C (°C)** Degrees Celcius **EPA (New Zealand)** Environmental Protection Authority of New Zealand **deg F (°F)** Degrees Farenheit **g** Grams **g/cm^3** Grams per Cubic Centimetre **g/l** Grams per Litre **HSNO** Hazardous Substance and New Organism **IDLH** Immediately Dangerous to Life and Health **immiscible** Liquids are insoluable in each other. **inHg** Inch of Mercury **inH2O** Inch of Water **K** Kelvin **kg** Kilogram **kg/m^3** Kilograms per Cubic Metre **lb** Pound **LC50** 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. **LD50** 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. **ltr** or **L** Litre **m^3** Cubic Metre **mbar** Millibar **mg** Milligram **mg/24H** Milligrams per 24 Hours **mg/kg** Milligrams per Kilogram **mg/m^3** Milligrams per Cubic Metre **Misc** or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present. **mm** Millimetre **mmH2O** Millimetres of Water **mPa.s** Millipascals per Second **N/A** Not Applicable **NIOSH** National Institute for Occupational Safety and Health **NOHSC** National Occupational Heath and Safety Commission **OECD** Organisation for Economic Co-operation and Development **Oz** Ounce **PEL** 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