



SAFETY DATA SHEET SULPHAMIC ACID SOLUTION REVISION 3, DATE 02 MAY 19

1. IDENTIFICATION

Product Name	Sulphamic Acid Solution
Other Names	Aminosulfonic acid solution; Sulfamic acid solution; Sulphamic Acid 15% Solution
Uses	Sulphonating agent; pH control; hard-water scale removal; bleaching paper/pulp and textiles.
Chemical Family	No Data Available
Chemical Formula	Unspecified
Chemical Name	Sulfamic acid, 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)

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 Corrosive to Metals - Category 1
Skin Corrosion/Irritation - Category 1C
Serious Eye Damage/Irritation - Category 1

Pictograms

Signal Word Danger

Hazard Statements		H290	May be corrosive to metals.
		H314	Causes severe skin burns and eye damage.
Precautionary Statements	Prevention	P260	Do not breathe mist/vapour/spray.
		P280	Wear protective gloves/eye protection/face protection.
	Response	P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
		P310	Immediately call a POISON CENTER or doctor.
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		P390	Absorb spillage to prevent material-damage.
		P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
		P363	Wash contaminated clothing before reuse.
		P304 + P340	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
	Storage	P406	Store in corrosive resistant container with a resistant inner liner.
		P405	Store locked up.
	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
Sulfamic acid	H3NO3S	5329-14-6	10 - <30 %
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 a glass of water. Do NOT induce vomiting. Immediately 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 or a doctor, or for at least 15 minutes. Transport promptly to hospital or medical centre - Material is strongly acidic and corrosive; Can cause corneal burns! *Take care not to rinse contaminated water into the unaffected eye or onto the face!
Skin	IF ON SKIN (or hair): Remove contaminated clothing and shoes immediately. Flush skin and hair with running water for at least 15 minutes. For minor skin contact, avoid spreading material on unaffected skin. In case of gross contamination, drench contaminated clothing and skin with plenty of water before removing clothes. Immediately call a Poison Centre or doctor/physician for advice. Wash contaminated clothing and shoes before reuse or discard (leather goods).
Inhaled	IF INHALED: Remove victim to fresh air and keep warm and at rest in a position comfortable for breathing. Remove contaminated clothing and loosen remaining clothing. Immediately call a Poison Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or proper respiratory device - Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically. Keep victim calm and warm - Obtain immediate medical care. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves. Avoid direct contact. Wear chemical protective gloves, if necessary.
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. Avoid getting water inside containers.
Flammability Conditions	Non-combustible; however, following evaporation of the water component, the residual material may burn if ignited.
Extinguishing Media	If material is involved in a fire, use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction - Do not use water jets. Extinguish fire using extinguishing agents suitable for the surrounding fire.
Fire and Explosion Hazard	Containers may explode when heated. Contact with metals may evolve flammable hydrogen gas.
Hazardous Products of Combustion	Fire or heat will produce irritating, toxic and/or corrosive gases, including oxides of nitrogen, oxides of sulfur and hydrogen chloride.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for this material.
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	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Do not touch or walk through spilled material - 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 hazards as the spilled product!

Containment

Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.

Decontamination

Neutralise residues with lime or soda ash. Wash area down with excess water.

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. Keep unauthorised personnel away. Keep upwind and to higher ground.

Personal Precautionary Measures

Wear protective equipment to prevent skin and eye contact and breathing in vapours. 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. 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). Corrosive to metals - Absorb spillage to prevent material damage (see SECTION 6). Never return contaminated material to its original container!

Storage

Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed - Check regularly for leaks. Inspect containers for damage or leaks before handling. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up. Keep out of reach of children. Have suitable emergency equipment for fires, spills and leaks readily available.

Container

Keep only in the original, labelled container.

*Empty containers may contain hazardous residues. Protect label and keep it visible. If the original label is damaged or missing replace with a workplace label.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**General**

No value assigned for this specific material by Safe Work Australia.

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: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists. Recommended: Suitable mist respirator (refer to AS/NZS 1715 & 1716).

- Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Chemical goggles, face-shield.

- Hand protection: Wear protective gloves. Recommended: Elbow-length, impervious gloves.

- Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Overalls, splash apron or equivalent chemical-impervious outer garment, rubber boots.

Special Hazards Precautions

No information available.

Work Hygienic Practices

Do not eat, drink or smoke when using this product. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES**Physical State**

Liquid

Appearance	Liquid
Odour	Odourless
Colour	Colourless to light yellow
pH	<1
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	~100 °C (Water)
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Miscible with water
Specific Gravity	~1.06
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	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	Non-combustible; however, following evaporation of the water component, the residual material may burn if ignited.
Reactions That Release Gases or Vapours	Fire or heat will produce irritating, toxic and/or corrosive gases, including oxides of nitrogen, oxides of sulfur and hydrogen chloride.
Release of Invisible Flammable Vapours and Gases	Contact with metals may evolve flammable hydrogen gas.

10. STABILITY AND REACTIVITY

General Information	This product is a strong acid. May be corrosive to metals. Reacts violently with chlorine and nitric acid.
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Chemical Stability	Stable under normal conditions of use.
Conditions to Avoid	Avoid contact with incompatible materials. Keep away from heat and sources of ignition.
Materials to Avoid	Incompatible/reactive with strong bases, strong oxidisers, chlorine, cyanide, hypochlorite, hypochlorous acid, metals, sulfur.
Hazardous Decomposition Products	Fire or heat will produce irritating, toxic and/or corrosive gases, including oxides of nitrogen, oxides of sulfur and hydrogen chloride.
Hazardous Polymerisation	Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none">- Acute toxicity: Corrosive on ingestion; Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract.- Skin corrosion/irritation: Corrosive to skin; Causes severe skin burns. Contact can cause corneal burns. Contamination of eyes can result in permanent injury.- Eye damage/irritation: Corrosive to eyes; Causes serious eye damage.- Respiratory/skin sensitisation: This product and its components at their listed concentration have no known sensitizing effects.- Germ cell mutagenicity: This product and its components at their listed concentration have no known mutagenic effects.- Carcinogenicity: This product and its components at their listed concentration have no known carcinogenic effects.- Reproductive toxicity: This product and its components at their listed concentration have no known reproductive effects.- STOT (single exposure): Breathing in mists or aerosols may produce respiratory irritation.- STOT (repeated exposure): Sulfamic acid is considered of low repeated-dose toxicity.- Aspiration toxicity: No information available.
Acute	
Ingestion	Acute toxicity (Oral): COMPONENT: Sulfamic acid (CAS No. 5329-14-6): - LD50, Rat: 3,160 mg/kg
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Sulfamic acid is harmful to aquatic life with long lasting effects.
Persistence/Degradability	Sulfamic acid is an inorganic substance, which is stable in the environment.
Mobility	This product is water soluble, will not adsorb to soil and may contaminate ground water.
Environmental Fate	Prevent entry into drains and waterways.
Bioaccumulation Potential	This product is not expected to bioaccumulate.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Contaminated packaging: Do not remove label, follow label warnings even after the container is empty. Empty containers should be recycled or disposed of at an approved waste handling facility.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains Sulfamic acid)
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	3264
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains Sulfamic acid)
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	3264
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains Sulfamic acid)
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	3264
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains Sulfamic acid)
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
ERG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	3264
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Sea Transport

IMDG Code

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Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains Sulfamic acid)
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	3264
Hazchem	2X
Pack Group	III
Special Provision	No Data Available
EMS	F-A, S-B
Marine Pollutant	No

Air Transport

IATA DGR

Proper Shipping Name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Contains Sulfamic acid)
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	3264
Hazchem	2X
Pack Group	III
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)
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15. REGULATORY INFORMATION

General Information	SULFAMIC ACID
Poisons Schedule (Aust)	Schedule 6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	Not Assessed
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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	SUACIL1000, SUACIL1500, SUACIL1510, SUACIL1511, SUACIL1600, SUACIL1610, SUACIL1700
Revision	3
Revision Date	02 May 2019
Key/Legend	<p>< Less Than > Greater Than AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² 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/cm³ 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/m³ 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 m³ Cubic Metre mbar Millibar mg Milligram mg/24H Milligrams per 24 Hours mg/kg Milligrams per Kilogram mg/m³ Milligrams per Cubic Metre</p>

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 Health 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