1. IDENTIFICATION

Product Name	**Sulphuric Acid <51%**
Other Names	Dihydrogen Sulfate; Dipping Acid; SULFURIC ACID; Sulfuric Acid <51%
Uses	Fertilisers, explosives, battery acid (battery grades only), electroplating, dyes, drugs, detergents, adhesives, plastics, paints, tanning, food processing, water treatment.
Chemical Family	No Data Available
Chemical Formula	H2SO4
Chemical Name	Sulphuric Acid <51%
Product Description	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
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) 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 1A

Pictograms			
Signal Word		Danger	
Hazard Statements		**H290**	May be corrosive to metals.
		H314	Causes severe skin burns and eye damage.
Precautionary Statements	Prevention	**P234**	Keep only in original container.
		P264	Wash exposed skin thoroughly after handling.
		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): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
		P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position 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/physician.
		P390	Absorb spillage to prevent material damage.
	Storage	**P405**	Store locked up.
	Disposal	**P501**	Dispose of contents/container in accordance with local / regional / national / international regulations.

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

HSNO Classifications	Health Hazards	**6.1D**	Substances that are acutely toxic - Harmful
		6.7A	Substances that are known or presumed human carcinogens
		6.9A	Substances that are toxic to human target organs or systems
		8.1A	Substances that are corrosive to metals
		8.2B	Substances that are corrosive to dermal tissue UN PGII
		8.3A	Substances that are corrosive to ocular tissue
	Environmental Hazards	**9.1C**	Substances that are harmful in the aquatic environment
		9.1D	Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Sulphuric Acid	No Data Available	7664-93-9	>10.0 - 51.0 %
Water	No Data Available	7732-18-5	BALANCE %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	If swallowed, do NOT induce vomiting. Seek medical attention immediately. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).
Eye	If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor.
Inhaled	If inhaled, remove from contaminated area. To protect rescuer, use a Full-face Type B (Inorganic and acid gas) respirator or an Air-line respirator (in poorly ventilated areas). Apply artificial respiration if not breathing.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of patient. Can cause corneal burns.
Medical Conditions Aggravated by Exposure	No information available on medical conditions aggravated by exposure to this product.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, remove containers from the path of fire. Evacuate area and contact emergency services.
Flammability Conditions	Product is a non-flammable liquid.
Extinguishing Media	For large fires, flood fire area with large quantities of water while knocking down vapours with water fog. If there is insufficient water supply, knock down vapours only. For small fires, use Carbon dioxide, dry chemical, dry sand or flooding quantities of water. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. If tanks or containers are involved in the fire, cool them with copious quantities of water until well after the fire is out. Do not allow water to get inside tanks or containers. Withdraw immediately from the fire area if the tanks discolour or there is a rising sound from the safety vents. Stay away from tank ends. Use an extinguishing agent suitable for the surrounding fire including water spray, foam, carbon dioxide or dry chemical powder.
Fire and Explosion Hazard	The product is non-combustible but will support combustion of other materials and may emit toxic fumes including those of sulphuric acid fumes and sulphur dioxide. The packaging material may burn to emit noxious fumes. Reacts with most common metals to liberate hydrogen which can form explosive mixtures with air.
Hazardous Products of Combustion	Sulphur oxides.
Special Fire Fighting Instructions	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Personal Protective Equipment	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit. Please note: Structural fire fighters uniform will provide limited protection.
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	2R

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Avoid accidents, clean up immediately. May be slippery when spilt. Eliminate all sources of ignition. Increase ventilation. Isolate the danger area. Use clean, non-sparking tools and equipment. Shut off all possible sources if ignition.
Clean Up Procedures	Soak up spilled product using absorbent non-combustible material such as sand or soil. Avoid using sawdust or cellulose. When saturated collect material, transfer to suitable, labelled, dry chemical-waste containers and dispose of promptly as hazardous waste. In case of large spill, Solutions can be recovered or carefully diluted with water and cautiously neutralised with alkalis such as lime or soda ash, adjusting pH to 6-10. Neutralise the final traces and flush area with water.
Containment	Stop leak if safe to do so.
Decontamination	To avoid violent reactions, always add acid to water and never water to acid. When cleaning up residual acid after a spill, use copious (flooding) quantities of water from the outset, to provide rapid dilution.
Environmental Precautionary Measures	Do not allow product to reach drains, sewers or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Authority.

Evacuation Criteria	Do not enter area, walk though spilled material or touch damaged containers. Restrict access downwind and for at least 25 metres in other directions, unless appropriate PPE is worn. Ventilate area where possible.
Personal Precautionary Measures	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Remove contaminated clothing promptly. Keep contaminated clothing in closed containers. Discard or launder before rewearing. Inform laundry personnel of contaminant's hazards. Do not eat, drink or smoke in work areas. Avoid generating mist or spray. When diluting solution, add material to water in small amounts. Label containers. Empty containers may contain residues which are hazardous. Use smallest possible amounts in designated areas with adequate ventilation. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Avoid contact with eyes, skin and clothing. Do not inhale product vapours. Avoid prolonged or repeated exposure.
Storage	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Keep containers upright to prevent leakage and protect against physical damage. Inspect regularly for deficiencies such as damage or leaks. Store away from incompatible materials as listed in section 10. Materials that react violently with acids should not be stored in the same area. Storage tanks should be above ground and surrounded with dykes capable of holding entire contents. Limit quantity of material in storage. Restrict access to storage area. Post warning signs when appropriate. Keep storage area separate from populated work areas. This product has a UN classification of 2796 and a Dangerous Goods Class 8 (Corrosive) according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.
Container	Container type/packaging must comply with all applicable local legislation. Store in original packaging as approved by manufacturer.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	The following exposure standard has been established by The Safe Work Australia (SWA); Sulphuric Acid CAS 7664-93-9: TWA = 1 mg/m3 STEL = 3 mg/m3 NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
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. Adequate ventilation should be provided so that exposure limits are not exceeded. Use a corrosion-resistant ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Use local exhaust ventilation, and process enclosure if necessary, to control airborne spray/ mists. Supply sufficient air to make up for air removed by exhaust systems.
Personal Protection Equipment	RESPIRATOR: Where risk assessment shows air-purifying respirators are appropriate use a Full Facepiece Gas Mask/Chemical Cartridge Respirators as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards (AS1715/1716). EYES: Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards (AS1336/1337). HANDS: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product (AS2161). HANDS: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. (AS2161). CLOTHING: Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. (AS3765/2210). Full contact Material: Fluorinated rubber Minimum layer thickness: 0.7 mm Break through time: 480 min Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M) Splash contact Material: Nitrile rubber

	Minimum layer thickness: 0.2 mm Break through time: 30 min Material tested:Dermatril® P (KCL 743 / Aldrich Z677388, Size M)
Work Hygienic Practices	Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Slight Odour
Colour	Clear/colourless
pH	<1
Vapour Pressure	1.33 hPa (@ 145.8 °C)
Relative Vapour Density	3.39 Air = 1
Boiling Point	No Data Available
Melting Point	3 °C
Freezing Point	No Data Available
Solubility	Completely Soluble 25°C
Specific Gravity	1.20 - 1.40
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	1.403 g/ml
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	Surface tension 55.1 mN/m at 20 °C Relative vapour density 3.39 - (Air = 1.0)
Potential for Dust Explosion	Product is a liquid.
Fast or Intensely Burning Characteristics	No Data Available
Flame Propagation or Burning Rate of Solid Materials	No Data Available
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No Data Available
Properties That May Initiate or Contribute to Fire Intensity	No Data Available
Reactions That Release Gases or Vapours	Reacts with most metals generating flammable/explosive hydrogen gas.

Release of Invisible Flammable Vapours and Gases	No Data Available

10. STABILITY AND REACTIVITY

General Information	Corrosive liquid. Corrosive to many metals with the liberation of extremely flammable hydrogen gas.
Chemical Stability	Potential for exothermic hazard. Can react violently, releasing heat, when mixed with water and strong alkalis (bases). May evolve flammable, and when confined, explosive hydrogen gas in contact with some metals.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources.
Materials to Avoid	Bases, Halides, Organic materials, Carbides, fulminates, Nitrates, picrates, Cyanides, Chlorates, alkali halides, Zinc salts, permanganates, e.g. potassium permanganate, Hydrogen peroxide, Azides, Perchlorates., Nitromethane, phosphorous, Reacts violently with:, cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorous(III) oxide, Powdered metals
Hazardous Decomposition Products	This product and its solutions will not burn or support combustion. However, reaction with a number of commonly encountered oxidisable materials (see Reactivity) can generate sufficient heat to ignite nearby combustible materials. Reacts with most metals generating flammable/explosive hydrogen gas. Avoid addition of water to product - generates considerable heat and spattering. Will emit toxic fumes in fire, including sulfuric acid fumes and sulfur dioxide.
Hazardous Polymerisation	Hazardous polymerization Does not occur.

11. TOXICOLOGICAL INFORMATION

General Information	No Data Available
EyeIrritant	Extremely corrosive. Can penetrate deeply causing irritation or severe burns depending on the concentration and duration of exposure. In severe cases, ulceration and permanent damage may occur.
Ingestion	Burning of the mouth, throat and oesophagus; vomiting; diarrhoea; collapse and possible death may result. Highly corrosive. Ingestion of large quantities may result in ulceration, unconsciousness, convulsions and death.
Inhalation	Effects of inhaling vapour & mists have not been clearly established. Most references indicate that irritation of the nose, throat and lungs would occur due to the corrosive nature of the product. Highly corrosive - severe irritant. Over exposure may result in mucous membrane irritation of the respiratory tract coughing, bronchitis, ulceration, bloody nose, lung tissue damage, chemical pneumonitis, pulmonary oedema and death.
SkinIrritant	Extremely corrosive. Capable of causing severe burns with deep ulceration. Can penetrate to deeper layers of skin. Corrosion will continue until removed. Severity depends on concentration and duration of exposure. Repeated or prolonged contact with dilute solutions may lead to irritant contact dermatitis.
Carcinogen Category	No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity	No ecological information available for this product.
Persistence/Degradability	No information available on persistence/degradability for this product.
Mobility	Sulfuric acid is miscible with water and its dilution will increase the velocity of downward movement in the soil where it may dissolve the soil material.
Environmental Fate	Do NOT allow product to enter waterways, drains or sewers.
Bioaccumulation Potential	No information available on bioaccumulation potential for this product.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice. Wearing the protective equipment detailed above, neutralise to pH 6-8 by SLOW addition to a saturated sodium bicarbonate solution or similar basic solution. Dilute with excess water and flush to drain. Waste disposal should only be undertaken in a well ventilated area.

14. TRANSPORT INFORMATION

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	SULPHURIC ACID with not more than 51% acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	2796
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	SULPHURIC ACID with not more than 51% acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2796
Hazchem	2R
Pack Group	II
Special Provision	No Data Available
EMS	FA,SB
Marine Pollutant	No

Air Transport
IATA DGR

Proper Shipping Name	SULPHURIC ACID with not more than 51% acid
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2796
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	6

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

Approval Code	HSR001572

National/Regional Inventories

Australia (AICS)	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

Additional Information ABBREVIATIONS: SAR = supplied-air respirator SCBA = self-contained breathing apparatus IDLH = Immediately Dangerous to Life or Health.

16. OTHER INFORMATION

Related Product Codes SULACC1200, SULACC1300, SULACC2000, SULACC2001, SULACC2100, SULACC3500, SULACC5400, SULACD1400, SULACD1500, SULACD1501, SULACD1502, SULACD2600, SULACD2700, SULACD5400, SULACD5401, SULACD5402, SULACI1200, SULACI1201, SULACI1400, SULACI1401, SULACI1500, SULACI1501, SULACI2700, SULACI2800, SULACI3500, SULACI3501, SULACI4100, SULACI5000, SULACI1804, SULACI1805, SULACI1806, SULACI1807, SULACI1808, SULACI1809, SULACI1810, SULACI1811, SULACI1812, SULACI1813, SULACI1814, SULACI1815, SULACI1816, SULACI1817, SULACI1818, SULACI1822, SULACI1823, SULACI1824, SULACI1848, SULACI1849, SULACI1850, SULACI1851, SULACI1857, SULACI1873, SULACI1874, SULACI1875, SULACI1876, SULACI1877, SULACI1878, SULACI1879, SULACI1880, SULACI1881, SULACI1882, SULACI1883, SULACI1884, SULACI1885, SULACI1886, SULACI1887, SULACI1888, SULACI1889, SULACI1892, SULACI1893, SULACI1894, SULACI1895, SULACI1901, SULACI1902, SULACI1903, SULACI1904, SULACI1906, SULACI1907, SULACI1908, SULACI1909, SULACI1910, SULACI1911, SULACI1912, SULACI1913, SULACI1914, SULACI1915, SULACI1916, SULACI1922, SULACI1923, SULACI1930, SULACI1939, SULACI1940, SULACI1941, SULACI1943, SULACI1964, SULACI1965, SULACI1966, SULACI1967, SULACI1968, SULACI1969, SULACI1970, SULACI1971, SULACI1979, SULACI1980, SULACI1983, SULACI1984, SULACI1991, SULACI1992, SULACI1996, SULACI1998, SULACI1999, SULACI3502, SULACI2004, SULACI2005, SULACI2006, SULACI2008, SULACI1781, SULACI2014, SULACI2016, SULACI1007, SULACI2017, SULACI2018, SULACI2021, SULACI2024, SULACI2025, SULACI2026, SULACI3503, SULACI5100, SULACI7500, SULACI7510, SULACI2035, SULACI2036

Revision 2

Revision Date 24 Oct 2014

Key/Legend

< 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
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