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| Infosafe No™ | 1CH71 | Issue Date : August 2014 | RE-ISSUED by CHEMSUPP |
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Product Name : **SULFUR**

Classified as hazardous

1. Identification

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| GHS Product Identifier | SULFUR | |
| Company Name | CHEM-SUPPLY PTY LTD (ABN 19 008 264 211) | |
| Address | 38 - 50 Bedford Street GILLMAN SA 5013 Australia | |
| Telephone/Fax Number | Tel: (08) 8440-2000 Fax: (08) 8440-2001 | |
| Recommended use of the chemical and restrictions on use | Sulfuric acid manufacture, paper and pulp manufacture, carbon disulfide, rubber vulcanization, detergents, petroleum refining, dyes and chemicals, drugs and pharmaceuticals, explosives, insecticides, rodent repellents, soil conditioner, fungicide, coating for controlled-release fertilisers, nucleating agent for photographic film, cement sealant, binder and asphalt extender in road paving, base material for low-temperature mortars, and laboratory reagent. | |
| Other Names | Name | Product Code |
| | SULFUR Small Pastilles | ST262 |
| | SULFUR Roll | ST053 |
| | Brimstone | |
| | Flowers of sulfur | |
| | SULFUR LR | SL006 |
| | SULFUR TG | ST006 |
| Additional Information | Sulfur is not subject to the provisions of the Australian Dangerous Goods Code entry Sulfur UN 1350 when it is transported in quantities of less than 400 kg per package, or when it has been formed to a specific shape (e.g. prills, granules, pellets, pastilles or flakes). Sulfur is not subject to the provisions of the International Maritime Dangerous Goods Code entry Sulfur UN 1350 when it has been formed to a specific shape (e.g. prills, granules, pellets, pastilles or flakes). | |
| Other Information | EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm, Monday to Friday. | |

Chem-Supply Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon Chem-Supply Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of Chem-Supply Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

2. Hazard Identification

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| GHS classification of the substance/mixture | Flammable Solids: Category 2 Skin Corrosion/Irritation: Category 2 |
| Signal Word (s) | WARNING |
| Hazard Statement (s) | H228 Flammable solid. H315 Causes skin irritation. |
| Pictogram (s) | Exclamation mark, Flame |



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| Precautionary statement – Prevention | P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking. P264 Wash thoroughly after handling. P280 Wear protective gloves/protective clothing/eye protection/face protection. |
| Precautionary statement – Response | P302+P352 IF ON SKIN: Wash with plenty of soap and water. P332+P313 If skin irritation occurs: Get medical advice/attention. P362 Take off contaminated clothing and wash before reuse. P370+P378 In case of fire: Use dry chemical, CO2, water spray or foam. |



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3. Composition/information on ingredients

Chemical Solid

Characterization

| Ingredients | Name | CAS | Proportion | Hazard Symbol | Risk Phrase |
|-------------|--------|-----------|------------|---------------|-------------|
| | Sulfur | 7704-34-9 | 100 % | Xi, F | R36/38, R11 |

4. First-aid measures

Inhalation If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

Ingestion Rinse mouth thoroughly with water immediately. Give plenty of water to drink. Do not induce vomiting. Seek medical attention.

Skin Wash with plenty of soap and water. Remove contaminated clothing and wash before re-use. Seek immediate medical advice.

Eye contact Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek medical attention.

First Aid Facilities Maintain eyewash fountain and safety shower in work area.

Advice to Doctor Treat symptomatically or consult a Poisons Information Centre.

Other Information For advice, contact the National Poisons Information Centre (Phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products Librates toxic fumes in fire (sulfur oxides, hydrogen sulfide gas).

Specific Methods Small fire: Use dry chemical, CO₂, water spray or foam.
Large fire: Use water spray, fog or foam.
If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after fire is out.

Specific hazards arising from the chemical May be ignited by friction, heat, sparks or flame. Vapours, dust, borings or turnings may form combustible mixtures with air. May burn fiercely. May re-ignite after fire is extinguished. Fire may produce irritating, poisonous and/or corrosive gases. Containers may explode when heated. Runoff may pollute waterways. May be transported in a molten form. Solids may melt and flow when heated or involved in a fire.

Hazchem Code 1Z

Precautions in connection with Fire Wear SCBA and chemical splash suit. Structural firefighter's uniform may provide limited protection.

6. Accidental release measures

Spills & Disposal Eliminate all ignition sources (no smoking, flares, sparks or flames) within at least 15m. Do not touch or walk through spilled material. Prevent entry into waterways, drains or confined areas. Obtain expert advice on use of water as spilled material may be water-reactive. Prevent dust cloud. Use clean non-sparking tools to collect absorbed material and place it into loosely-covered metal or plastic containers for later disposal. SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.

Personal Precautions Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.

Personal Protection Wear protective clothing specified for normal operations (see Section 8)

Clean-up Methods - Small Spillages Sweep up (avoid generating dust) and remove to a suitable, clearly labelled container for disposal in accordance with local regulations.

Clean-up Methods - Large Spillages Seek expert advice on handling and disposal.

7. Handling and storage

Precautions for Safe Handling Avoid generation or accumulation of dusts. Avoid prolonged or repeated contact with skin, eyes and clothing. Take precautionary measures against static discharges. Use in well ventilated areas away from all ignition sources. In case of insufficient ventilation, wear suitable respiratory equipment. Contaminated clothing should be removed and washed before reuse.



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Conditions for safe storage, including any incompatibilities Store away from sources of heat or ignition. Store away from combustible materials. Store in well ventilated area. Store in a cool dry place out of direct sunlight. Avoid contact with incompatible materials that support combustion such as strong oxidising agents. Keep containers securely sealed and protected against physical damage.

Other Information A bulk cargo of sulfur has a liability to dust discharge during cleaning. Explosion may be avoided by preventing the atmosphere becoming dust-laden by adequate ventilation or by hosing-down instead of sweeping.

8. Exposure controls/personal protection

Other Exposure Information A time weighted average (TWA) concentration for an 8 hour day, and 5 day week has not been established by Safe Work Australia for this product. There is a blanket limit of 10 mg/m³ for dusts or mists when limits have not otherwise been established.

Appropriate engineering controls In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.

Respiratory Protection Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

Eye Protection The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Hand Protection Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance.
Recommendation: Rubber or plastic gloves.

Personal Protective Equipment Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.

Footwear Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection Clean clothing or protective clothing should be worn, preferably with an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hygiene Measures Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form Solid

Appearance Yellow powder, granules, flakes, discs, pastilles or roll.

Odour Pure sulfur is odorless, but traces of hydrocarbon impurity may impart an oily and/or rotten egg odor.

Melting Point 113-119 °C

Boiling Point 444 - 445 °C

Solubility in Water Insoluble.

Solubility in Organic Solvents Soluble in toluene, carbon disulfide, carbon tetrachloride and benzene. Slightly soluble in acetone, ether, alcohol.

Specific Gravity 1.96 - 2.07

Vapour Pressure < 0.01 hPa (20 °C)

Vapour Density (Air=1) 8.9

Flash Point 160°C closed cup.

Flammability Flammable solid category 2.

Auto-Ignition Temperature 235 °C

Explosion Limit - Upper 40 % vol

Explosion Limit - Lower 1 % vol



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| Explosion Properties | Sulfur is a poor conductor of electricity causing charges of static electricity to build up during transport or processing. Static discharge may lead to ignition of sulfur dust. Sulfur may cause an explosion upon contact with ammonia, ammonia nitrate, ammonium perchlorate, tetraphenyllead, stannic iodide with sodium, sodium, phosphorus, iodine pentoxide, potassium perchlorate. Combination of finely divided sulfur and finely divided bromates (also chlorates or iodates) of barium, calcium, magnesium, potassium, sodium or zinc will explode with heat, percussion and sometimes, light friction. |
| Molecular Weight | 32.06 |
| Other Information | Refractive index: 2.038 |

10. Stability and reactivity

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| Reactivity | Risk of dust explosion. |
| Chemical Stability | Stable under normal use conditons. |
| Conditions to Avoid | Exposure to moisture. Heat, flames, ignition sources and incompatibles. |
| Incompatible Materials | Alkali metals, alkaline earth metals, metals, metallic oxides, non metals, nonmetallic oxides, fluorine, halogen-halogen compounds, oxidizing agents, peroxi compounds, nitrites, hydrides, nitrides, carbides, sulfides, lithium silicide, silicon compounds, carbon disulfide, ethers, acetylidene, organic nitro compounds; with mineral acids and oxidizing agent (formed could be: sulfuric acid); violent reactions possible with: chlorates, nitrates, perchlorates and permanganates. |
| Hazardous Decomposition Products | Sulfur oxides. |
| Possibility of hazardous reactions | Can react violently with halogens, carbides, halogenates, halogenites, zinc, uranium, tin, sodium, lithium, nickel, palladium, gadolinium, phosphorus, potassium, indium, calcium, boron, aluminium, ammonia, ammonium nitrate, ammonium perchlorate, chlorine dioxide, potassium permanganate, silver nitrate, silver oxide and sodium hydride. Forms explosive and sensitive mixtures with most oxidising substances such as chlorates, nitrates, perchlorates or permanganates. |
| Hazardous Polymerization | Will not occur. |
| Other Information | Transitions temperature, between alpha and beta crystalline forms, is ~ 95 °C. The conversion is slow. |

11. Toxicological Information

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| Acute Toxicity - Oral | LD50 (rat): > 5000 mg/kg |
| Acute Toxicity - Dermal | LD50 (rabbit): > 2000 mg/kg |
| Acute Toxicity - Inhalation | LC50 (rat): > 9.23 mg/l/4 h. |
| Ingestion | May be harmful if ingestion. May cause gastrointestinal tract irritation with symptoms including nausea, vomiting and diarrhea. Poorly absorbed. Ingestion of large amounts may cause sore throat, headache, nausea and possible unconsciousness in severe cases. May be converted to toxic hydrogen sulfide in the intestines. Excessive amounts that are ingested may affect the central nervous system, behaviour and kidneys. |
| Inhalation | May be harmful if inhaled. Inhalation of dusts causes irritation to the mucous membranes and upper respiratory tract. Inhalation of sulfur causes irritation to the mucous membranes of the respiratory tract (nose, throat and lungs), causing coughing, sneezing, wheezing and laboured breathing. Inflammation of the respiratory tract may result in bronchitis, pulmonary edema, pneumonia, asthma. However, this reaction is potentially reversible and leaves no scar tissue. |
| Skin | May cause irritation, rash and dermatitis. |
| Eye | Contact causes irritation to the eyes. Symptoms include of tearing, redness, pain, burning, scratchy discomfort and blurred vision. Prolonged or repeated exposure may lead to possible eye damage. |
| Carcinogenicity | No evidence of carcinogenic properties. |
| Chronic Effects | Chronic exposure may lead to irritation of mucous membranes, chronic bronchitis, emphysema and bronchial asthma. May cause possible skin sensitization and permanent eye damage (clouding of lens and chronic irritation). |
| Serious eye damage/irritation | Eye irritation (human): 8 ppm. |



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Mutagenicity No evidence of mutagenic properties.**12. Ecological information****Acute Toxicity - Fish** LC50 (Br. rerio): 866 mg/l/96 h.**Acute Toxicity - Daphnia** EC50 (Daphnia magna): > 10000 mg/l/24 h.**Acute Toxicity - Bacteria** EC50 (activated sludge): 1900 mg/l/3 h.**Acute Toxicity - Other Organisms** EC50 (Protozoa, Tetrahymen pyriformis): 0.16 mg/l/24 h.**13. Disposal considerations****Disposal Considerations** Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.**14. Transport information****Transport Information** Dangerous Goods of Class 4.1 Flammable Solids, are incompatible in a placard load with any of the following: - Class 1, Class 2.1, Class 4.2, Class 5 and Class 7**U.N. Number** 1350**UN proper shipping name** SULFUR**Transport hazard class(es)** 4.1**Hazchem Code** 1Z**Packaging Method** 3.8.4.1**Packing Group** III**EPG Number** 4A1**IERG Number** 20**15. Regulatory information****Regulatory Information** Listed in the Australian Inventory of Chemical Substances (AICS).**Poisons Schedule** Not Scheduled**16. Other Information****Date of preparation or last revision of SDS** September 2009.

Literature References

'Standard for the Uniform Scheduling of Medicines and Poisons No. 4', Commonwealth of Australia, June 2013.

Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997.

National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007.

'Labelling of Hazardous Workplace Chemicals, Code of Practice' Safe Work Australia.

Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010.

Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)]'.

Safe Work Australia, 'Hazardous Substances Information System, 2005'.

Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.

Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)]'.

Contact Person/Point Paul McCarthy Ph. (08) 8440 2000 **DISCLAIMER STATEMENT:**

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Safety Data Sheet

infosafe
CS: 1.7.2

Page: 6 of 6

| | | | |
|--------------|-------|--------------------------|-----------------------|
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|--------------|-------|--------------------------|-----------------------|

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Structural Formula

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