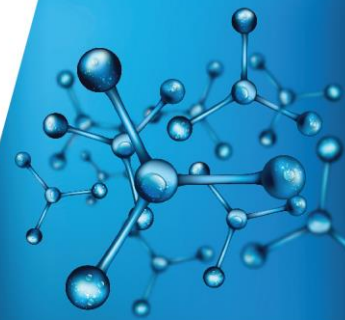




MATERIAL SAFETY DATA SHEET

Revision date: 01/10/2022

1. Product and Company Identification

Company Name: Integrated Chemical Solutions (Pty) Ltd
Telephone number: 0105943979
Address: Sandton City, Office towers, 2146
Product: SULPHURIC ACID 98 %
Chemical family: Inorganic Acid
Chemical name: Sulphuric acid
Synonyms: Oil of vitriol; BOU; Dipping Acid; Vitriol Brown Oil; Sulphuric; Acid Mist;

2. Composition

Hazardous components: SULPHURIC ACID 98 %

poison! danger! corrosive. liquid and mist cause severe burns to all body tissue. may be fatal if swallowed or contacted with skin. harmful if inhaled. affects teeth. water reactive. cancer hazard. strong inorganic acid mists containing sulfuric acid can cause cancer. risk of cancer depends on duration and level of exposure.

3. Hazards Identification

Main hazard: Danger! Extremely corrosive! Causes severe burn and eye damage. Strong inorganic acid mists containing sulfuric acid are carcinogenic. Harmful if inhaled. Harmful or fatal if swallowed. Reacts violently with water. Concentrated Sulfuric Acid will react with many organic materials and may cause fire due to the heat of the reaction. Not flammable, but reacts with most metals to form explosive/flammable hydrogen gas. Read the entire MSDS for a more thorough evaluation of the hazards.

Eye effects: eyes: Corrosive. Contact can cause blurred vision, redness, pain, and severe tissue burns. Can cause blindness.

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Health effects - skin: Corrosive. Symptoms of redness, pain, and severe burn can occur. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow skin contact or ingestion. Circulatory shock is often the immediate cause of death.

Health effects - ingestion: Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach, leading to death. Can cause sore throat, vomiting, and diarrhoea. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow ingestion or skin contact. Circulatory shock is often the immediate cause of death.

Health effects - inhalation: Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Symptoms may include irritation of the nose and throat, and laboured breathing. May cause lung oedema, a medical emergency.

Carcinogenicity: The International Agency for Research on Cancer (IARC) has concluded that occupational exposure to strong inorganic acid mists containing sulphuric acid is carcinogenic to man, causing cancer of the larynx (the voice box) and, to a lesser extent, the lung. Although no direct link has been established between exposure to sulphuric acid itself, and cancer in man, exposure to any mist or aerosol during the use of this product should be avoided and, in any case, keep exposures below the occupational exposure limit for sulphuric acid

4. First-aid Measures

Product in eye: Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately

Product on skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Excess acid on skin can be neutralized with a 2% solution of bicarbonate of soda. Call a physician immediately

Product ingested: DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.

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Product inhaled: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

Note to Physicians: This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration.

Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. Following exposure, the patient should be kept under medical review for at least 48 hours as delayed pneumonitis may occur. DO NOT attempt to neutralize the acid with weak bases since the reaction will produce heat that may extend the corrosive injury

5. Fire-fighting Measures

Not considered to be a fire hazard. However, if involved in a fire will emit toxic fumes including sulphuric acid fumes and sulphur dioxide. Reaction with certain metals will produce flammable hydrogen gas, which will burn if ignited. Heating may cause expansion or decomposition leading to violent rupture of containers. Fire fighters to wear self-contained breathing apparatus and full protective clothing when fighting fire.

Extinguishing media: Water fog (if unavailable water spray), foam, carbon dioxide or dry chemical powder.

Protective clothing: In the event of a fire, wear full protective clothing and NIOSH approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Structural fire fighter's protective clothing is ineffective for fires involving this material. Stay away from sealed containers.

6. Accidental Release Measures

Personal precautions: As a minimum use chemical-resistant gloves, eye/face and breathing protection.

Environmental precautions: Downwind evacuation may be necessary

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Steps to be taken in the event of a spill or leak: Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up. Remove all ignition sources (no smoking, flares, sparks, or flames). All equipment should be grounded. Ventilate area. Use appropriate Personal Protection Equipment. Prevent liquid from entering sewers or waterways. Stop or reduce leak if safe to do so.

Small spills: Cover with DRY earth, sand, or other non-combustible material. Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal

Large spills: Prevent liquid from entering sewers or waterways. Dike with inert material (sand, earth, etc.). Collect into plastic containers for disposal. Consider in situ neutralization and disposal. Ensure adequate decontamination of tools and equipment following clean up. Comply with Federal, Provincial/State and local regulations on reporting releases

Waste Disposal Methods: Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal garbage or to sewer systems.

7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, always add the acid to water; never add water to the acid. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product.

8. Exposure Control/Personal Protection

Occupational exposure limits: Work safe exposure standard for constituent Sulphuric Acid are:

TWA: 1mg/m³
STEL: 3mg/m³

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Engineering control measures: Ensure ventilation is adequate and that air concentration of components is controlled below the Exposure Standard. Use with local exhaust ventilation or while wearing acid mist respirator or air supplied mask. Keep containers closed when not in use.

Personal protection - respiratory: If the exposure limit is exceeded and engineering controls are not feasible, a full face piece respirator with an acid gas cartridge and particulate filter (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P particulate filter. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc.

Personal protection - eye: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Personal protection - skin: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Other protection: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. 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.

9. Physical and Chemical Properties

Appearance: Colourless to slightly yellow liquid of oily consistency,

Odour: odourless.

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pH: <1 highly acidic. Boiling point:
338°C

Melting point: 98%: -1.1°C (30°F)

Flash point: No known fire hazard.

Vapour pressure: <0.0001kpa

Specific gravity: 1.84 at 20°C

Solubility - water: Completely soluble in water

10. Stability and Reactivity

Stable, but reacts with moisture very exothermically, which may enhance its ability to act as an oxidizing agent. Substances to be avoided include water, most common metals, organic materials, strong reducing agents, combustible materials, bases, and oxidizing agents. Reacts violently with water - when diluting concentrated acid, carefully and slowly add acid to water, not the reverse. Reaction with many metals is rapid or violent, and generates hydrogen (flammable, explosion hazard).

Hazardous Decomposition or Combustion Products: Toxic gases and vapors (e.g. sulphur dioxide, sulphuric acid vapours/mists and sulphur trioxide) may be released when sulfuric acid decomposes.

11. Toxicological Information

Toxic data:

IHL-RAT LC50 0.51 mg/l

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UNR-MAN LDLO 135 mg kg⁻¹
ORL-RAT LD50 2140 mg kg⁻¹ (25% solution)
IHL-MUS LC50 320 mg m⁻³ / 2h

IHL-GPG LC50 18 mg m⁻³

Inhalation: May cause corrosion, pain, vomiting, burns to the mouth and throat and perforation of the oesophagus. Inhalation of the fumes may cause fluid build up on the lung (pulmonary oedema) up to 24 hours after exposure which could prove fatal

Skin and eye contact: May cause severe second and third degree burns on the skin and may cause corrosion and permanent damage if eye is not immediately irrigated

Carcinogenicity: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen, (IARC category 1). This classification applies only to mists containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions.

Mutagenicity: Cytogenic analysis (hamster) ovaries 4 mmol/L

Epidemiology: Workers exposed to industrial sulfuric acid mist showed a statistical increase in laryngeal cancer. This data suggests a possible relationship between carcinogenesis and inhalation of sulfuric acid mist.

Neurotoxicity: No data available.

Reproductive hazards: Slightly embryo toxic in rabbits (a minor, rare skeletal variation). The animals were exposed to 5 and 20 mg/m³ for 7 hrs/day throughout pregnancy. Slight maternal toxicity was present at the highest dose in both species

12. Ecological Information

Ecotoxic Effects: Harmful to aquatic life in very low concentrations. May be dangerous if it enters water intake. Fish toxicity; 2.8 µg/L 96 hrs LC50 Rainbow trout

Environmental Fate: When released into the soil, this material may leach into groundwater. When released into the air, this material may be removed from the atmosphere to a moderate

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extent by wet deposition. When released into the air, this material may be removed from the atmosphere to a moderate extent by dry deposition.

Environmental Toxicity: LC50 Flounder 100 to 330 mg/l/48 hr aerated water/Conditions of bioassay not specified; LC50 Shrimp 80 to 90 mg/l/48 hr aerated water /Conditions of bioassay not specified; LC50 Prawn 42.5 ppm/48 hr salt water /Conditions of bioassay not specified.

13. Disposal Considerations

Disposal methods: There are no uniform EC regulations for the disposal of chemicals or residues. Chemical residues generally count as special waste. The disposal of the latter is regulated in the EC member countries through corresponding laws and regulations. We recommend that you contact the authorities in charge or approved waste disposal companies, which will advise you on how to dispose of special waste.

Disposal of packaging: Disposal in accordance with local legal provisions.

14. Transport Information

UN no. 1830

Substance identity no. 8

IMDG - shipping name: Sulphuric Acid

IMDG Code: 8220

MDG - class: 8 Corrosive Group: II

IMDG - packaging group: II

IMDG - marine pollutant: yes

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15. Regulatory Information.

EEC hazard classification: 8 - Users should ensure that they comply with relevant legislation. Dangerous Substances Directive 67/548/ECC

Risk phases: R35 R36 R37 R38 R49.

Safety phases: S2 S23 S30 S36 S37 S39 S45.

National legislation: The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

16. Other Information

Reason for Alteration: General update.

This information and product are furnished on the condition that the person receiving them shall make their own determination as to suitability of the product for their particular purpose and on the condition that they assume the risk of their use thereof. The conditions and use of this product are beyond the control of Integrated chemical solutions (Pty) Ltd, and integrated chemical solution (Pty) Ltd disclaims any liability for loss or damage incurred in connection with the use or misuse of this substance.

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