

**MATERIAL SAFETY DATA SHEET**

Version date: 02/07/2021  
 Version: 01

**Section 1: Identification of the product and the company**

**Identification of the chemical** : Sulfur 80% WG.  
**Recommended uses** : Crop protection, fungicide.  
**Restrictions uses** : Avoid contamination of watercourses.  
**Supplier name** : Quimetal Industrial S.A.  
**supplier address** : Los Yacimientos 1301 Maipú, Santiago – Chile.  
**Phone Number Provider** : 56 2 2381 7000.  
**Emergency phone number in Chile** : 56 2 2381 7000.  
**Telephone number of toxicological information in Chile** : 56 2 2247 3600. Chemical CITUC.  
**Electronic address of the supplier** : [www.quimetal.cl](http://www.quimetal.cl)  
[comercial@quimetal.cl](mailto:comercial@quimetal.cl)

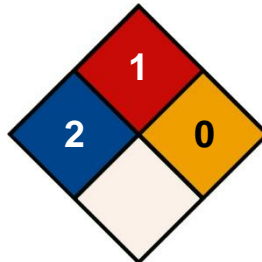
**Section 2: Hazard Identification**

**Classification according NCh382** : Non-hazardous substance.  
**Classification according NCh2190** : Does not apply.  
**Classification according GHS** : Skin irritation. Category 2.  
**Hazard pictograms (GHS)** :



**Signal word** : WARNING.  
**hazard statements** : H315 Causes skin irritation.  
**precautionary statements** : P264 Wash hands thoroughly after handling.  
 P280 Wear protective gloves.  
 P302 + IF ON SKIN: Wash with plenty of water.  
 P352  
 P321 Specific treatment (see in section 4 on this label).  
 P332 + In skin irritation occurs: get medical advice/attention.  
 P313  
 P362 + Take of contaminated and wash it before reuse.  
 P364

**Safety signal NCh1411/4** :



**Specific classification** : Does not apply.  
**Distinctive specific** : Does not apply.

- Description of hazards** : The product may cause skin irritation. Prolonged contact may cause dermatitis. There are no antecedents that show irritation to the respiratory tract. However, be careful with thermal degradation decomposition products (SO<sub>2</sub>).
- Description of specific hazards** : Combustible product. May form combustible dust concentrations in confined spaces.
- Other hazards** : None.

### Section 3: Composition/information on ingredients

**substance type** : Mixture.

	<b>Component 1</b>
<b>Systematic chemical name</b>	Sulfur
<b>Common or generic name</b>	Sulfur
<b>Concentration range</b>	77.5-82.5%
<b>CAS number</b>	7704-34-9
<b>EC number</b>	231-722-6

### Section 4: First Aid

- Inhalation** : Move the affected person to a place free of contaminants, keep them at rest, check their breathing. Seek immediate medical attention.
- Skin contact** : Remove contaminated clothing and shoes. thorough washing with plenty of water cleanses the skin, thoroughly between hair, nails and skin folds. Wash clothing before reuse. If irritation or pain persists, consult a specialist.
- Eye contact** : Wash with plenty of water for at least 15 minutes. Lift and separate the eyelids to ensure removal of the product, if necessary seek medical attention.
- Ingestion** : Take the person and the container immediately to a Healthcare Center. Do not induce vomiting. Never give anything by mouth to an unconscious person.
- Anticipated acute effects** : May cause skin irritation. Due to the localized action of the product after ingestion, it can cause irritation in the mouth and throat. In addition, small amounts of the product (dust) can cause mechanical irritation of the eyes. There are no antecedents that show danger to the respiratory tract. Caution with decomposition products due to thermal degradation (SO<sub>2</sub>).
- Delayed effects expected** : Prolonged contact with the skin (depending on the skin sensitivity of the operator or exposed person), causes chemical dermatitis.
- Most important symptoms/effects** : By contact with the skin, adverse symptoms may include redness of the area and irritation, pain, itching and possible formation of blisters as a result of a direct action of the product in the event of a wound or exposure of the inner layers of the skin.
- Protection of those who provide first aid** : It is recommended to people who deliver first aid the use of personal protective equipment. Wear protective clothing, safety glasses and a mask with a filter for dust particles.
- Special notes to the treating physician** : Inform the doctor about the characteristics of the product and type of contact. Present this Material Safety Data Sheet at the time of the attention.

### Section 5: Fire Fighting Measures

- Extinguishing agents** : Use water fog, foam, dry chemical powder. Small fires can be put out with sand.
- Inappropriate extinguishing agents** : Do not use direct high pressure water jets if the product is on fire, due to the risk of spreading the burning material.
- Products formed in combustion and thermal degradation** : Combustion products include sulfur oxides (SO<sub>2</sub> and SO<sub>3</sub>) and hydrogen sulfide.
- Special hazards associated** : This product is not flammable, but it is combustible. May form combustible dust concentrations in confined spaces. The vapors generated by thermal decomposition products (SO<sub>2</sub>) can be dangerous, being a colorless gas with a pungent odor that destroys the mucous membranes of the upper respiratory system. It can become fatal if there are spasms of the larynx and bronchi.
- Specific methods of extinction** : In case of fire, quickly isolate the area, evacuating all people from the vicinity of the place of the incident. No action shall be taken involving any personal risk or without adequate training. Move containers away from fire if it can be done safely. Use water spray to cool containers exposed to fire.
- Precautions for emergency personnel and / or firefighters** : Wear full protective clothing including helmet, positive pressure self-contained breathing apparatus.

### Section 6: Measures to be taken in case of accidental spillage

- Personal precautions** : Avoid inhalation of dust and contact with the product. Isolate and ventilate the area. Avoid dust dispersion. Deposit waste in closed and labeled containers.
- Protection equipment** : Wear appropriate personal protective equipment (see section 8).
- Emergency procedures** : Control the source of the spill safely, if there is no risk to people. Restrict access to area until cleanup is complete. Turn off every ignition source. Act according to internal procedures in emergencies.
- Environmental precautions** : Avoid runoff into sewers and other watercourses, land, vegetation.
- Methods and materials for containment, confinement and / or abatement** : Collect mechanically or manually (when the spill is minor) the dispersed solid. During this operation, use the personal protection equipment indicated in section 8 at all times and deposit waste in an appropriate container and identify it for final disposal.
- Methods and cleaning materials** :
- Recovery** : Use non-sparking material to sweep and accumulate the scattered product on the floor. Remove containers from spill area. Under no circumstances dilute with water. To dry-clean. Absorb with an inert dry material and place in a suitable waste container.
- Neutralization** : Not available.
- Final disposal** : Dispose of according to national regulations.
- Additional measures to prevent disaster** : Isolate from any source of extreme heat or combustion.

**Section 7: Handling and Storage**

**Handling**

- Precautions for safe handling** : Have good ventilation when handling the product. Avoid inhalation and direct or prolonged contact with skin and eyes by using personal protective equipment (see section 8).
- Operational measures and appropriate techniques** : It must only be used by competent personnel for the handling of chemical substances, who must be aware of all the dangers related to it. Do not smoke, eat or drink when handling the product. Wash hands and face before breaks and immediately after handling the product. Remove and wash contaminated clothing before reuse.
- Other appropriate precautions** : Do not expose to high temperatures and humidity.
- contact prevention** : Avoid contact with incompatible materials.

**Storage**

- Conditions to a safe storage** : Store in a safe, cool, dry place with good ventilation at all times. Do not expose to high temperatures and humidity, keep away from direct sunlight.
- Appropriate technical measures** : Avoid storage at high temperatures, as harmful concentrations of sulfur dioxide (SO<sub>2</sub>) and hydrogen sulfide (H<sub>2</sub>S) may be generated. If they are stored in containers, these must be designed in such a way that they prevent the loss of the content; They must be suitable for conservation, be made of a material that is chemically compatible with the substance, difficult to break and that minimizes possible accidents. In the place where the containers are stored, there must be a manual fire extinguishing system, based on fire extinguishers, compatible with the stored products, in which the quantities, distribution, extinction potential and maintenance, among other aspects, must be in agreement. according to the provisions of Decree No. 594 of 1999.
- Incompatible substances and mixtures** : Incompatible with explosives, oxidants and oxidants, pulverized metals (Zinc, Tin), alkali metals (Lithium, Sodium, Potassium), ammonia and carbon.
- Packaging material or recommended materials** : Recommended materials: Use original containers, which allow the product to be isolated from the environment and humidity. Materials not recommended: Some synthetic materials may not be suitable for containers or container liners depending on the material specification and intended use.

## Section 8: Exposure Controls/Personal Protection

### Maximum allowable concentration

Limit values (national regulation DS 594)			
Components	LPP value	LPT value	LPA value
Sulfur	not established	not established	not established

Components	Limit values (international regulations)		
Sulfur	ACGIH (TLV-TWA)	:Not established.	
	NIOSH (REL-TWA)	:Not established.	
	OSHA (PEL-TWA)	:Not established.	

### Personal protection items

- Respiratory protection** : Respiratory protection is not required, in case of dust formation use a mask that complies with NIOSH/EN95 specifications.
- Hand protection** : Use nitrile, neoprene or natural rubber gloves.
- Eye Protection** : Use safety glasses against projection of particles or face shield. If there is a risk of inhalation (from ventilation conditions), a full facepiece respirator or dust filter masks may need to be used instead.
- Protecting Skin** : Wear protective clothing eg overalls or apron.
- Engineering measures** : Have a shower and eye wash in work areas in easily accessible places.

## Section 9: Physical and Chemical Properties

<b>Physical state</b>	: Solid.
<b>Appearance</b>	: Micro granules.
<b>Color</b>	: Light brown to dark brown.
<b>Odor</b>	: Characteristic.
<b>pH (concentration y t°)</b>	: 8 - 9.5 to 10% w/v.
<b>Melting point / freezing point</b>	: 114.5 - 119.3 °C, as pure Sulfur.
<b>Initial boiling point and boiling range and boiling range</b>	: Not available.
<b>Flashpoint</b>	: Between 178 to 188 °C Analysis performed by Modified Method EPA 1010/ASTM D1310-01. Flash Point Method (Pensky Martens Closed Cup and Cleveland Open Cup).
<b>Explosive or flammability limits</b>	: Not available.
<b>Vapour pressure</b>	: Not available.
<b>Relative vapor density (air = 1)</b>	: Not available.
<b>Density</b>	: 0.8 to 0.9 g/mL
<b>Solubility</b>	: Dispersible in water, slightly soluble in carbon disulfide. Soluble in benzene, toluene, chloroform.
<b>Partition Coefficient Octanol/Water</b>	: Not available.
<b>Autoignition temperature</b>	: 232 °C, as pure molten sulfur.
<b>Decomposition temperature</b>	: Not available.
<b>Odour threshold</b>	: Not available.
<b>Evaporation rate</b>	: Not available.
<b>Flammability (solid, gas)</b>	: Not available.
<b>Viscosity</b>	: Does not apply.

## Section 10: Stability and Reactivity

- Chemical stability** : Stable under recommended storage conditions.
- Dangerous reactions** : Dangerous type reactions are not to be expected.
- Conditions to Avoid** : Avoid heat, ignition sources and flames.
- Incompatible materials** : Incompatible with explosives, oxidants and oxidants, pulverized metals (Zinc, Tin), alkali metals (Lithium, Sodium, Potassium), ammonia and carbon.
- Hazardous decomposition products** : Sulfur dioxide and hydrogen sulfide can be generated.

## Section 11: Toxicological Information

- Acute toxicity (LD50 and LC50)** : Toxicological data:

Product	ATE Oral	ATE dermal	LC50 Inhalation
Sulfur 80% WG	>8437 mg/kg (Rat)	>2000 mg/kg (Rabbit)	5.08 mg/L (4h-rat)

- Skin irritation/corrosion** : The product is classified as skin irritant (Category 2, H315), according to GHS criteria. In addition, according to tests carried out on rabbits (OECD Guideline 404), the period of dermal exposure was 4 hours in semi-occlusive conditions, concluding that sulfur is irritating to rabbit skin.
- Serious eye damage/eye irritation** : The product is not classified as causing serious eye damage or eye irritation, according to GHS criteria. In addition, in a study under OECD Guideline 405 and under GLP, eye irritation study (Rallis Research Center, 2005), discharge (score 1 to 2) was observed 1, 24 and 48 hours after instillation. There was no corneal or iris reaction. The findings demonstrate that sulfur does not require classification as eye irritant.
- Respiratory or skin sensitization** : The product is not classified as a respiratory or skin sensitizer, according to GHS criteria.
- Mutagenicity of reproductive cells /in vitro** : The product is not classified as mutagenic, according to GHS criteria.
- Carcinogenicity** : The product is not classified as carcinogenic, according to GHS criteria and the List of carcinogenic substances (IARC, 2021).
- Reproductive toxicity** : The product is not classified as reproductive toxic, according to GHS criteria.
- Specific target organ toxicity single exposure** : The product is not classified as specific target organ toxicant (single exposure), according to GHS criteria.
- Specific target organ toxicity repeated exposure** : The product is not classified as specific target organ toxicant (repeated exposure), according to GHS criteria.
- Inhalation hazard** : The product is not classified as an inhalation hazard, according to GHS criteria.
- Toxicokinetics** : Not available.
- Metabolism** : Not available.
- Distribution** : Not available.
- Pathogenicity and infectivity acute (oral, dermal and inhalation)** : Does not apply.
- Endocrine disruption** : Not available.
- Neurotoxicity** : Not available.

<b>Immunotoxicity</b>	:	Not available.
<b>Symptoms related</b>	:	Not available.
<b>Limit immediately dangerous to life and health (IDLH)</b>	:	Not established.
<b>Exposure Routes</b>		
<b>Inhalation</b>	:	There are no antecedents that show irritation to the respiratory tract. Caution with decomposition products due to thermal degradation (SO <sub>2</sub> ).
<b>Skin contact</b>	:	May cause skin irritation. Prolonged skin contact (depending on the skin sensitivity of the operator or exposed person) may cause dermatitis.
<b>Eye contact</b>	:	Contact of small portions of the product (powders) can cause mechanical irritation.
<b>Ingestion</b>	:	It is not intended for normal use.

## Section 12: Ecological Information

<b>Ecotoxicity (EC, IC and LC)</b>	:	<p><u>Acute ecotoxicity</u>: Sulfur.</p> <p><i>Fish, Oncorhynchus mykiss</i>, LC<sub>50</sub>: 4000mg/L (96h).  <i>Fish, Danio rerio</i>, LC<sub>50</sub>: 866mg/L (96h).  <i>Invertebrates, Daphnia magna</i>, EC<sub>50</sub>: 10000mg/L (24h).  <i>Algae, Ankistrodesmus bibrainus</i>, EC<sub>50</sub>: &gt;232mg/L (72h).  <i>Birds (quail)</i>, LC<sub>50</sub> &gt; 5000ppm  <i>Earthworm, (Eisena fetida)</i>, LD<sub>50</sub>: &gt; 1600 mg/kg soil (14 days).</p> <p><u>Chronic ecotoxicity</u>: Sulfur.</p> <p><i>Invertebrates, Daphnia magna</i>, NOEC: &gt; 1000 mg/L (21 days).</p>
<b>Persistence and degradability</b>	:	Elemental sulfur is converted into sulfate in soils by the action of autotrophic bacteria, in vegetation it is slowly oxidizable in the air, and participates in microbial reduction reactions.
<b>Bioaccumulation potential</b>	:	Elemental sulfur is insoluble in water. Bioaccumulation tests are not applicable to sulfur as it is a non-organic substance.
<b>Mobility in soil</b>	:	Sulfur has a mobility and a biological life cycle characteristic of essential nutrients for the cellular life of organisms.
<b>Other adverse effects</b>	:	The product is not classified as dangerous for aquatic organisms, according to GHS criteria. However, sulfur in high concentrations can produce phytotoxicity, contamination of soils, bodies of water and atmospheres, or toxicity in animals. Acute toxicity studies in fish, daphnids and algae determined LC <sub>50</sub> /EC <sub>50</sub> values greater than >5 µg/l (maximum solubility in water).

## Section 13: Information on final disposal

<b>Disposal methods for waste, packaging and contaminated packaging and any contaminated material, according to current national regulations.</b>	:	The substance/waste is not specified as "hazardous" waste in Supreme Decree 148 Sanitary Regulation on the management of hazardous waste, (Articles 18, 88, 89 and 90). It is the responsibility of the waste generator to identify its level of danger, handle it and dispose of it properly in compliance with current national legislation.
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### Section 14: Information about transportation

	Modality of transport		
	Terrestrial	Maritime	Air
<b>Regulations</b>	DS 298	IMDG	IATA
<b>Number UN</b>	Does not apply	Does not apply	Does not apply
<b>Official transportation designation</b>	non-hazardous substance	non-hazardous substance	non-hazardous substance
<b>UN primary hazard classification</b>	Does not apply	Does not apply	Does not apply
<b>Secondary hazard classification UN</b>	Does not apply	Does not apply	Does not apply
<b>Packing group/packaging</b>	Does not apply	Does not apply	Does not apply
<b>Environmental Hazard</b>	See section 12	See section 12: the product is not a marine pollutant	See section 12
<b>Special precautions</b>	None	None	None

<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code</b>	:	The product is not listed in annex II to the Marpol Convention 73/78 and the IBC code.
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### Section 15: Regulatory Information

- National regulations** :
- NCh2245 in force.** Safety Data Sheet for chemical product - contents and order of the sections.
  - NCh1411/4 in force.** Risk Prevention - Part 4: Identification of material hazards.
  - DS N°40 in force** Regulations on the prevention of occupational hazards.
  - DS N°594 in force** Regulation on basic sanitary and environmental conditions at workplaces.
  - RES. EX. N° 408, 2016 MIN. SALUD** List of Hazardous Substances for Health.
  - DS N°57/2021** Regulation of Classification, Labeling and Notification of Chemical Substances and Dangerous Mixtures.
- International Regulations** :
- NFPA704, 2017.** Normative system for the identification of the risks of materials for emergency response.
  - USA:** Substances not listed as hazardous substance (DOT).
  - OSHA.** Occupational Safety and Health Administration.
  - NIOSH.** The National Institute for Occupational Safety and Health.
  - ACGIH.** American Conference of Governmental Industrial Hygienist
  - GHS.** Globally Harmonized System of Classification and Labeling of Chemical Products.
  - REACH.** Regulation (CE) N°1907/2006 of the European Parliament and of the Council regarding the registration, evaluation, authorization and restriction of chemical substances and preparations.
  - CLP.** Regulation (CE) 1272/2008 of the European Parliament and of the Council on classification, labeling and packaging of substances and mixtures.
  - ANNEX V TO THE MARPOL CONVENTION 73/78** International convention to prevent pollution from ships.
  - IMSBC CODE.** International Maritime Solid Bulk cargoes Code.
  - IMDG CODE.** International Maritime Dangerous goods.
  - IATA CODE.** International Air Transport Association.

**The receiver should verify the possible existence of applicable local regulations for chemical products.**



## Section 16: Other information

- Control of changes** : First version.
- Abbreviations and acronyms** :
- LC<sub>50</sub>** : Median Lethal Concentration.
  - LD<sub>50</sub>** : Median Lethal Dose.
  - EC<sub>50</sub>** : Average Effective Concentration.
  - Log Pow** : Octanol/water partition coefficient.
  - LPP** : Weighted allowable limit.
  - LPT** : Temporary permissible limit.
  - TWA** : Time-weighted average.
  - IDLH** : Limit immediately dangerous to life and health.
  - CAS** : Chemical Abstracts Service.
  - ACGIH** : American Conference of Governmental Industrial Hygienists. (American Conference of Hygienists Government Industrial).
  - NIOSH** : National Institute of Occupational Safety and Health(National Institute for Occupational Safety and Health).
  - OSHA** : Occupational Safety and Health Administration (Occupational Safety and Health Administration).
  - GHS** : Globally Harmonized System of Classification and Labeling of Chemical Products.
  - IMDG** : International Maritime Dangerous Goods.
  - IATA** : International Air Transport Association.
- Bibliographic references** :
- Seen for the last time: July-2021.
  - <http://www.ourstolenfuture.org/Basics/chemlist.htm>
  - [http://risctox.istas.net/dn\\_risctox\\_buscador.asp](http://risctox.istas.net/dn_risctox_buscador.asp)
  - <http://echa.europa.eu/information-on-chemicals>
  - <https://www.osha.gov/dsg/annotated-pels/tablez-3.html>
- Guidelines** :
- This Material Safety Data Sheet (MSDS) was updated according to the requirements and formats required by the NCh2245. This document gives basic information, necessary to prevent risks or to respond to situations that may arise during exposure to this product (obligation to inform-DS 40). The information contained in this MSDS is for public use.
- Technical translation in English according to the NCh2245 valid** :
- Elaborated: Cristina Diaz V.
  - Revised: M. Ximena Saavedra P.
  - Approved: Alexandra Vergara C.

Date of last update: July 2021.

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