

SAFETY DATA SHEET

Product: ENXOFRE LÍQUIDO

Revision: 01

Date: 06/13/2024

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1 - IDENTIFICATION

GHS Product identifier:	ENXOFRE LÍQUIDO
Other means of identification:	ENX990
Recommended use of the chemical:	Used in the chemical industry in the production of phosphate, ammonium sulfate and various chemical products.
Specific restrictions on use:	There are not known restrictions on use.
Supplier's details:	<p>Acelen</p> <p>Address: ROD BA 523, KM 4, MATARIPE, CEP: 43900-000 - BA - Brasil.</p> <p>Phone number: (71) 3511-8000 / (11) 5225-8900</p>
Emergency phone number:	EMERGENCIall: 0800 729 2756 / (11) 94759-7282 (Whatsapp) (24h)

2 - HAZARD IDENTIFICATION

Classification of the substance or mixture:	Skin Corrosion/Irritation - Category 2.
Classification system adopted:	Globally Harmonized System of Classification and Labeling of Chemicals (GHS), United Nations.

GHS label elements, including precautionary statements

Pictograms:



Signal word:	WARNING
Hazard statement(s):	H315 Causes skin irritation.
Precautionary statement(s):	<p>PREVENTION:</p> <p>P264 Wash hands thoroughly after handling.</p> <p>P280 Wear protective gloves, protective clothing, eye protection, face protection and hearing protection.</p> <p>RESPONSE TO EMERGENCY:</p> <p>P302 + P352 IF ON SKIN: Wash with plenty of water.</p> <p>P321 Specific treatment.</p> <p>P332 + P317 If skin irritation occurs: Get medical help.</p> <p>P362 + P364 Take off contaminated clothing and wash it before reuse.</p>
Other hazards which do not result in classification:	Product at high temperature, contact with molten material can cause skin and eye burns. Ingestion may cause gastrointestinal disturbances with nausea, vomiting and diarrhea.

3 - COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE

Common chemical name:	Sulfur.
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Common name(s), synonym(s) of the substance:	Precipitated sulfur; elemental sulfur; sulfur meal.
CAS:	7704-34-9
Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance:	Does not contain components that contribute to the hazard.

4 - FIRST-AID MEASURES

Description of necessary first-aid measures

Inhalation:	Remove the victim to a well-ventilated area and keep at rest in a position that does not impede breathing. If you feel unwell, contact a TOXICOLOGICAL INFORMATION CENTER or a doctor. Take this MSDS.
Skin:	Wash exposed skin with sufficient amount of water to remove material. Remove and isolate contaminated clothing and shoes. In case of skin irritation: Consult a doctor. Take this MSDS.
Eye:	Rinse carefully with water for several minutes. If you wear contact lenses, remove them if that's easy. Keep rinsing. If eye irritation persists: consult a physician. Take this MSDS.
Ingestion:	Do not induce vomiting. Never give anything by mouth to an unconscious person. Wash the victim's mouth with plenty of water. If you feel unwell, contact a TOXICOLOGICAL INFORMATION CENTER or a doctor. Take this MSDS.
Most important symptoms/effects, acute and delayed:	Causes skin irritation with redness and pain.
Indication of immediate medical attention and special treatment needed, if necessary:	Avoid contact with the product when helping the victim. If necessary, symptomatic treatment should include, above all, support measures such as correction of hydroelectrolytic and metabolic disturbances, in addition to respiratory assistance. In case of contact with the skin, do not rub the affected area.

5 - FIRE-FIGHTING MEASURES

Extinguishing media:	Appropriate: carbon dioxide (CO ₂), foam, water mist and powder. Inappropriate: water directly onto the burning material.
Specific hazards arising from the chemical:	Combustion of the chemical or its packaging can form irritating and toxic gases such as carbon oxides and sulfur dioxide. Very dangerous when exposed to excessive heat or other ignition sources such as: sparks, open flames or match and cigarette flames, welding operations, pilot lights and electric motors. May build up static charge from flow or agitation. Vapors from heated liquid can ignite due to static discharge. Vapors are denser than air and tend to collect in low or confined areas such as sewers and basements. They can travel over long distances, causing flashback or new fires in both open and confined environments. Containers can explode if heated.
Special protective actions for fire-fighters:	If the load is involved in fire, isolate and evacuate the area within a minimum radius of 800 meters. Use self-contained breathing apparatus (SCBA) operated in positive pressure mode and complete protective clothing. Containers and tanks involved in the fire should be cooled with water mist.

6 - ACCIDENTAL RELEASE MEASURES

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Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:	Isolate leak from ignition sources. Prevent sparks or flames. Do not smoke. Do not touch damaged containers or spilled material unless wearing appropriate clothing. Use personal protective equipment as described in section 8.
For emergency responders:	Use complete PPE, with protective eyewear, protective gloves, safety shoes and suitable protective clothing.
Environmental precautions:	Prevent spilled product from reaching waterways and sewers.
Methods and materials for containment and cleaning up:	Collect the product with a clean shovel or other instrument that will not disperse the product. Place material in appropriate containers and remove to a safe location. For final disposal, proceed according to Section 13 of this MSDS. Large leaks: Wet the product with water and confine it in a dike for later and appropriate disposal.

7 - HANDLING AND STORAGE

Precautions for safe handling

Precautions for safe handling:	Handle in a ventilated area or with a general local exhaust/ventilation system. Avoid dust formation. Avoid exposure to product as effects may not be felt immediately. Use personal protective equipment as described in section 8. Avoid contact with incompatible materials.
General hygiene:	Wash hands and face thoroughly after handling and before eating, drinking, smoking or going to the bathroom. Contaminated clothing must be changed and laundered before reuse. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including any incompatibilities

Technical measures for prevention of fire and explosion:	Keep away from heat, sparks, open flames and hot surfaces. - Do not smoke. Keep container tightly closed. Ground the container vessel and product receiver during transfers. Use only non-sparking tools. Avoid the build-up of electrostatic charges. Use explosion-proof electrical, ventilation and lighting equipment.
Conditions for safe storage, including any incompatibilities:	Store in a well ventilated place away from sunlight. Keep container closed. Keep away from high temperatures. It is not necessary addition of stabilizers and antioxidants to ensure the durability. This material may react dangerously with some incompatible materials as outlined in Section 10. Keep away from incompatible materials.
Packaging compatibilities:	Similar to the original packaging.
Inadequate packaging materials:	There are not known unsuitable material.

8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Occupational exposure limit:	Not established.
Biological limit:	Not established.
Other limits and values:	Not established.
Appropriate engineering controls:	Promote mechanical ventilation and direct exhaust system to the outside environment. It is recommended to make emergency showers and eye wash facilities available in the work area. Engineering control measures are the most effective in reducing exposure to the product.

Individual protection measures, such as personal protective equipment (PPE)

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Eye/face protection:	Wide-view glasses with splash protection.
Skin protection:	Safety shoes and safety clothing to protect the whole body from chemical splashes. Protective gloves against chemicals such as PVC.
Respiratory protection:	Use of respirator with filter against vapors and organic mists is recommended for average exposures above half the TLV-TWA. In cases where exposure exceeds 3 times the TLV-TWA value, use a self-contained, full facepiece, air-supplied respirator (SCBA) operated in positive pressure mode. Follow guidance from the Respiratory Protection Program (PPR), 4th ed. São Paulo: Fundacentro, 2016.
Thermal hazards:	It does not present thermal hazards.

9 - PHYSICAL AND CHEMICAL PROPERTIES

Aspect:	Liquid.
Color:	Yellow.
Odour:	Rotten egg, characteristic.
Melting point/freezing point:	115.2 °C (239.36 °F).
Boiling point or initial boiling point and boiling range:	444.6 °C (832.28 °F).
Flammability:	Not flammable.
Lower and upper explosion limit/flammability limit:	Upper: 1400 g/m ³ and Lower: 35 g/m ³ .
Flash point:	207 °C (404.6 °F) - Closed cup.
Auto-ignition temperature:	232 °C (449.6 °F).
Decomposition temperature:	Not available.
pH:	Not applicable.
Kinematic viscosity:	Not available.
Solubility(ies):	Immiscible in water (< 0.005 mg/L (< 5 mg/m ³) at 22 °C (71.6 °F)). Soluble in benzene, toluene, carbon tetrachloride and carbon disulfide.
Partition coefficient n-octanol/water (log value):	log K _{ow} : 0.23 (calculated).
Vapour pressure:	3.95 x10 ⁻⁶ mmHg (526.6219 x10 ⁻⁶ Pa) at 30.4 °C (86.72 °F).
Relative vapour density:	7.837 (air = 1).
Density and/or relative density:	Not available.
Particle characteristics:	Not applicable.
Other information:	Dynamic viscosity: 0.17 Pa.s at 120 °C (248 °F). Surface tension: 58.1 mN/m at 125°C. Refractive index: 1,947.

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Heat of combustion: -4,741 btu/lb.

10 - STABILITY AND REACTIVITY

Reactivity:	Reactivity is not to be expected under normal conditions of temperature and pressure.
Chemical stability:	Stable product under normal conditions of temperature and pressure.
Possibility of hazardous reactions:	Reacts with oxidizing agents with risk of explosion. Molten sulfur reacts with hydrocarbons forming toxic and flammable gases such as carbon disulfide and hydrogen sulfide.
Conditions to avoid:	Elevated temperatures. Ignition sources. Contact with incompatible materials.
Incompatible material:	Ammonia, carbon, hydrocarbons, hydrogen, metals, oxidizing agents and phosphorus.
Hazardous decomposition products:	Thermal decomposition can release sulfur oxides.

11 - TOXICOLOGICAL INFORMATION

Acute toxicity:	Product not classified as acute toxic. LC ₅₀ Dusts and mists (rats, 4h): 5.43 mg/L. LD ₅₀ Oral (rats): >2000 mg/kg. LD ₅₀ Dermal (rats): > 2000 mg/kg.
Skin corrosion/irritation:	Causes skin irritation with redness and pain.
Serious eye damage/irritation:	It is not expected to cause eye irritation.
Respiratory or skin sensitization:	It is not expected to present respiratory or skin sensitization.
Germ cell mutagenicity:	It is not expected to show mutagenicity in germ cells.
Carcinogenicity:	It is not expected to be carcinogenic.
Reproductive toxicity:	It is not expected to be reproductively toxic.
STOT - Single exposure:	It is not expected to exhibit specific target organ toxicity by single exposure.
STOT - Repeated exposure:	It is not expected to exhibit specific target organ toxicity on repeated exposure.
Aspiration hazard:	It is not expected to present an aspiration hazard.

12 - ECOLOGICAL INFORMATION

Toxicity:	It is not expected to be ecotoxic.
Persistence and degradability:	Due to the lack of data, it is expected to be persistent and not rapidly degraded.
Bioaccumulative potential:	Presents low bioaccumulative potencial in aquatic organisms. log K _{ow} : 0.23 (calculated).
Mobility in soil:	Not determined.
Other adverse effects:	No other environmental effects known.

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13 - DISPOSAL CONSIDERATIONS

Disposal methods

Must be disposed of as hazardous waste in compliance with local regulations. The treatment and disposal should be evaluated for each specific product.

Keep the product remains in its original and properly closed containers. Disposal should be performed as established for the product.

14 - TRANSPORT INFORMATION

Road: UN - United Nations: Model Regulations:
• Recommendations on the Transport of Dangerous Goods.

UN number: 2448

Proper shipping name: SULPHUR, MOLTEN

Primary risk class or division: 4.1

Subsidiary risk class or division: NA

Packing group: III

Environmental hazards: The product is not considered dangerous for the environment for land transport.

Railway regulations: COTIF - Convention concerning International Carriage by Rail:
• Appendix C: RID - Regulations concerning the International Carriage of Dangerous Goods by Rail.

UN number: 2448

Proper shipping name: SULPHUR, MOLTEN

Primary risk class or division: 4.1

Subsidiary risk class or division: NA

Packing group: III

Environmental hazards: The product is not considered dangerous for the environment in rail transport.

Sea: IMO - International Maritime Organization:
• IMDG Code - International Maritime Dangerous Goods Code.

UN number: 2448

Proper shipping name: SULPHUR, MOLTEN

Primary risk class or division: 4.1

Subsidiary risk class or division: NA

Packing group: III

Environmental hazards: It's not considered a marine pollutant for transportation.

EmS: F-A,S-H

Air: IATA - International Air Transport Association:

In accordance with Globally Harmonized System of Classification and Labelling of Chemicals (GHS)- Chapter 1.5 and Annex 4

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• DGR - Dangerous Goods Regulation.	
UN number:	FORBIDDEN FOR AIR TRANSPORT
Special precautions for user:	Not applicable.
Maritime transport in bulk according to IMO instruments:	Consult regulations: <ul style="list-style-type: none"> • International Maritime Organization: MARPOL: Articles, protocols, annexes, unified interpretations of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, consolidated edition. IMO, London, 2006; • International Maritime Organization: IBC code: International code for the construction and equipment of shipping carrying dangerous chemicals in bulk: With Standards and guidelines relevant to the code. IMO, London, 2007.

15 - REGULATORY INFORMATION

Convention concerning Safety in the use of Chemicals at Work (Convention 170) - International Labour Organization, 1990.

16 - OTHER INFORMATION

This SDS was prepared based on current knowledge about the proper product handling and under normal conditions of use, in accordance with the application specified on the packaging. Any other use of the product involving their combination with other materials, and use various forms of those indicated, are the responsibility of the user. Warns that the handling of any chemical substance requires the prior knowledge of its hazards for the user. In the workplace it is for the user company's product promotes training of its collaborators about the possible risks arising from exposure to the chemical.

Change control:

Version	Manufacture date	Changes
01	03/24/2023	Elaboration

Abbreviations:

ACGIH - American Conference of Governmental Industrial Hygienists;
 CAS - Chemical Abstracts Service;
 EC - European Community;
 EEC - European Economic Community;
 IARC - International Agency for Research on Cancer;
 K_{ow} - Octanol-water partition coefficient;
 LC_{50} - Lethal Concentration 50%;
 LD_{50} - Lethal Dose 50%;
 NIOSH - National Institute for Occupational Safety and Health;
 TLV - Threshold Limit Value;
 TWA - Time Weighted Average;
 UN - United Nations.

Bibliographic references:

ACGIH - AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIALS HYGIENISTS. TLVs® and BEIs®: Based on the Documentation of the Threshold Limit Values (TLVs®) for Chemical Substances and Physical Agents & Biological Exposure Indices (BEIs®). Cincinnati-USA, 2023.

In accordance with Globally Harmonized System of Classification and Labelling of Chemicals (GHS)- Chapter 1.5 and Annex 4

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ECHA - EUROPEAN CHEMICAL AGENCY. Available at: < <http://echa.europa.eu/web/guest> >. Access in: Mar. 2023.

GESTIS - SUBSTANCE DATABASE. Available at: < [http://gestis-en.itrust.de/nxt/gateway.dll/gestis_en/000000.xml?f=templates\\$fn=default.htm\\$3.0](http://gestis-en.itrust.de/nxt/gateway.dll/gestis_en/000000.xml?f=templates$fn=default.htm$3.0) >. Access in: Mar. 2023.

GHS - GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS. 10th rev. ed. New York and Geneva: United Nations, 2023.

HSDB - HAZARDOUS SUBSTANCES DATA BANK. Available at: <http://pubchem.ncbi.nlm.nih.gov/>. Access in: Mar. 2023.

IARC - INTERNATIONAL AGENCY FOR RESEARCH ON CANCER. Available at: <http://monographs.iarc.fr/ENG/Classification/index.php>. Access in: Mar. 2023.

IPCS - INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY - INCHEM. Available at: <http://www.inchem.org/>. Access in: Mar. 2023.

IUCLID - INTERNATIONAL UNIFORM CHEMICAL INFORMATION DATABASE. [S.1.]: European chemical Bureau. Available at: <http://ecb.jrc.ec.europa.eu>. Access in: Mar. 2023.

NIOSH - NATIONAL INSTITUTE OF OCCUPATIONAL AND SAFETY. International Chemical Safety Cards. Available at: <http://www.cdc.gov/niosh/>. Access in: Mar. 2023.

REACH - REGISTRATION, EVALUATION, AUTHORIZATION AND RESTRICTION OF CHEMICALS. Commission Regulation (EC) No 1272/2008 of December 2008 amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals. Available at: < <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:353:0001:1355:en:PDF> >. Access in: Mar. 2023.

TOXNET - TOXICOLOGY DATA NETWORKING. ChemIDplus Lite. Available at: <http://chem.sis.nlm.nih.gov/>. Access in: Mar. 2023.