Safety Data Sheet

(according to the last version of the Reg. (EC) 1907/2006 – art. 31)

OLEUM, FUMING SULFURIC ACID

Safety Data Sheet dated 11/3/2024, version 1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Mixture identification: Fuming Sulfuric Acid

Trade name: OLEUM, FUMING SULFURIC ACID

UFI: QP00-0077-700H-Y5DC

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use:

Substance production

Oleum formulation

Use as an intermediate

Use as a nitration agent

1.3. Details of the supplier of the safety data sheet

Company:

Essemar Spa – Via San Cassiano, 99 – 20069 Trecate (NO)

Tel +39 0321 7901, fax +39 0321 779646

Competent person responsible for the safety data sheet:

E-mail: essemar@essemar.it

1.4. Emergency telephone number

EUROPEAN EMERGENCY NUMBER h 24/24: 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

EC regulation criteria 1272/2008 (CLP)

 Danger, Skin Corr. 1A, Causes severe skin burns and eye damage.

 Danger, Eye Dam. 1, Causes serious eye damage.

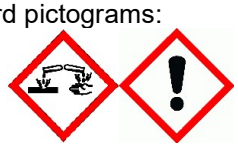
 Warning, STOT SE 3, May cause respiratory irritation.

EUH014 Reacts violently with water.

Adverse physicochemical, human health and environmental effects: No other hazards

2.2. Label elements

Hazard pictograms:



Danger

Hazard statements:

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

Precautionary statements:

P260 Do not breathe fume.

P280 Wear protective gloves/clothing and eye/face protection.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a doctor if you feel unwell.

Special Provisions:
EUH014 Reacts violently with water.

Contains
sulfur trioxide
sulphuric acid

Special provisions according to Annex XVII of REACH and subsequent amendments: None

2.3. Other hazards
No PBT, vPvB or endocrine disruptor substances present in concentration ≥ 0.1%

Other Hazards: No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances: N.A.

3.2. Mixtures

Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Number	Classification
> 70% - < 80%	sulphuric acid	Index number: 016-020-00-8 CAS: 7664-93-9 EC: 231-639-5 REACH No.: 01-2119458838-20-0088	3.2/1A Skin Corr. 1A H314 Specific Concentration Limits: C ≥ 15%: Skin Corr. 1A H314 5% ≤ C < 15%: Skin Irrit. 2 H315 5% ≤ C < 15%: Eye Irrit. 2 H319
> 20% - < 30%	sulfur trioxide	Index number: 231-197-3 CAS: 7446-11-9 EC: 231-197-3 REACH No.: 01-2119458835-26-0027	3.2/1A Skin Corr. 1A H314 3.8/3 STOT SE 3 H335 EUH014

All the constituents of the mixture are in compliance with EC Regulation 1907/2006 and have been registered by the manufacturers / importers / only representatives when mandatory: the registration numbers will be available to the Authority within seven days of their request.
Other substances may be present exempt from registration as required by article 2 or because they are produced / imported in quantities less than one ton per year.

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:
Immediately take off all contaminated clothing.
OBTAIN IMMEDIATE MEDICAL ATTENTION.
Remove contaminated clothing immediatley and dispose off safely.
After contact with skin, wash immediately with soap and plenty of water.

In case of eyes contact:
After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an opthalmologist immediately.
Protect uninjured eye.

In case of Ingestion: Do NOT induce vomiting.

In case of Inhalation:

In case of inhalation, consult a doctor immediately and show the packing or label.

4.2. Most important symptoms and effects, both acute and delayed: None

4.3. Indication of any immediate medical attention and special treatment needed

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Treatment: None

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: CO2 or Dry chemical fire extinguisher.

Extinguishing media which must not be used for safety reasons: Water.

5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

5.3. Advice for firefighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non emergency personnel:

Wear personal protection equipment.

Wear breathing apparatus if exposed to vapours/dusts/aerosols.

Provide adequate ventilation.

Use appropriate respiratory protection.

See protective measures under point 7 and 8.

For emergency responders: Wear personal protection equipment.

6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

6.3. Methods and material for containment and cleaning up

Keep away from water or from damp surroundings.

6.4. Reference to other sections: See also section 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.

Use localized ventilation system.

Don't use empty container before they have been cleaned.

Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.

See also section 8 for recommended protective equipment.

Advice on general occupational hygiene:

Contamined clothing should be changed before entering eating areas.

Do not eat or drink while working.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from food, drink and feed.

Conservare nel contenitore originale. Conservare il contenitore ermeticamente chiuso in un luogo fresco, asciutto e ben ventilato. Tenere il prodotto lontano da fonti di calore (<35°C), luce solare diretta, lontano da materiali incompatibili (alcali)

Materiali di imballaggio idonei: contenitori di plastica. Se si utilizzano contenitori metallici, assicurarsi che siano protetti all'interno dalla corrosione.

Incompatible materials: Alkalis and oxidants

Instructions as regards storage premises: Adequately ventilated premises.

7.3. Specific end use(s): None in particular

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

sulphuric acid - CAS: 7664-93-9

- OEL Type: EU - TWA(8h): 0.05 mg/m³ - Notes: thoracic fraction
- OEL Type: ACGIH - TWA(8h): 0.2 mg/m³ - Notes: (T), A2(M) - Pulm func

DNEL Exposure Limit Values

sulphuric acid - CAS: 7664-93-9

Worker Industry: 50 µg/m³ - Exposure: Inhalation - Frequency: Long Term, local effects

Worker Industry: 100 µg/m³ - Exposure: Inhalation - Frequency: Short Term, local effects

sulfur trioxide- CAS: 7446-11-9

Worker Industry: 50 µg/m³ - Frequency: Long Term, local effects - Endpoint: irritation of the respiratory tract

Worker Industry: 100 µg/m³ - Frequency: Short Term, local effects - Endpoint: irritation of the respiratory tract

PNEC Exposure Limit Values

sulphuric acid - CAS: 7664-93-9

Target: Fresh Water - Value: 2.5 µg/L

Target: STP - Value: 8.8 mg/l

Target: Freshwater sediments - Value: 2 µg/kg dw

Target: Marine water - Value: 250 ng/L

Target: Marine water sediments - Value: 2 µg/kg dw

8.2. Exposure controls

Eye protection: Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Use respiratory protection where ventilation is insufficient or exposure is prolonged.

Thermal Hazards: None

Environmental exposure controls: None

Appropriate engineering controls: None

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes

Physical state:	Liquid	--	--
Colour:	Colourless	--	--
Odour:	Typical	--	--
Melting point/freezing point:	16.8°C	--	--
Boiling point or initial boiling point and boiling range:	44.8°C a 1013 hPa	--	--
Flammability:	Non-flammable	--	--
Lower and upper explosion limit:	N.A.	--	--
Flash point:	N.A.	--	--
Auto-ignition temperature:	Not Relevant	--	--
Decomposition temperature:	Not Relevant	--	--
pH:	0,3	--	--
Kinematic viscosity:	N.A.	--	--
Solubility in water:	Hydrolyzes immediately to form sulfuric acid	--	--
Solubility in oil:	Not Relevant	--	--
Partition coefficient n-octanol/water (log value):	Not Relevant	--	--
Vapour pressure:	97.3 hPa (24.85°C)	--	--
Density and/or relative density:	~1922 kg/m³ (20°C) (conc. 100%)	--	--
Relative vapour density:	N.A.	--	--
Particle characteristics:			
Particle size:	N.A.	--	--

9.2. Other information: No other relevant information

SECTION 10: Stability and reactivity

10.1. Reactivity: Stable under normal conditions
10.2. Chemical stability: Reacts with strong oxidizing agents and alkaline substances (bases).
10.3. Possibility of hazardous reactions
The product reacts violently with water and alkalis. Produces fumes in contact with atmospheric humidity alone.
10.4. Conditions to avoid: Stable under normal conditions.
10.5. Incompatible materials: Metals, fuels, alkalis, chlorates, hydrochloric acid.
10.6. Hazardous decomposition products: Sulfur / hydrogen oxides

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008
Toxicological information of the product:
OLEUM, FUMING SULFURIC ACID
a) acute toxicity
Not classified
Based on available data, the classification criteria are not met
b) skin corrosion/irritation
The product is classified: Skin Corr. 1A H314
c) serious eye damage/irritation
The product is classified: Eye Dam. 1 H318

d) respiratory or skin sensitisation
Not classified
Based on available data, the classification criteria are not met
e) germ cell mutagenicity
Not classified
Based on available data, the classification criteria are not met
f) carcinogenicity
Not classified
Based on available data, the classification criteria are not met
g) reproductive toxicity
Not classified
Based on available data, the classification criteria are not met
h) STOT-single exposure
The product is classified: STOT SE 3 H335
i) STOT-repeated exposure
Not classified
Based on available data, the classification criteria are not met
j) aspiration hazard
Not classified
Based on available data, the classification criteria are not met

Toxicological information of the main substances found in the product:
sulphuric acid - CAS: 7664-93-9
a) acute toxicity:
Test: LC50 - Route: Inhalation - Species: Rat = 0.375 mg/l - Duration: 4h
b) skin corrosion/irritation:
Skin Corrosive
c) serious eye damage/irritation:
Eye Irritant
j) aspiration hazard:
Respiratory Tract Irritant
sulfur trioxide - CAS: 7446-11-9
c) serious eye damage/irritation:
Eye Irritant

11.2. Information on other hazards
Endocrine disrupting properties:
No endocrine disruptor substances present in concentration ≥ 0.1%

SECTION 12: Ecological information

12.1. Toxicity
Adopt good working practices, so that the product is not released into the environment.
OLEUM, FUMING SULFURIC ACID
Not classified for environmental hazards
Based on available data, the classification criteria are not met
sulphuric acid - CAS: 7664-93-9
a) Aquatic acute toxicity:
Endpoint: LC50 - Species: Fish = 16 mg/l - Duration h: 96
Endpoint: EC50 - Species: Invertebrates > 100 mg/l - Duration h: 48
b) Aquatic chronic toxicity:
Endpoint: NOEC - Species: Fish = 25 µg/L

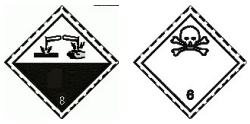
Endpoint: NOEC - Species: Invertebrates = 150 µg/L
c) Bacteria toxicity:
Endpoint: NOEC - Species: Microorganisms = 26 g/l
g) Toxicity to aquatic algae and cyanobacteria:
Endpoint: NOEC - Species: Algae = 100 mg/l - Duration h: 72
sulfur trioxide- CAS: 7446-11-9
c) Bacteria toxicity:
Endpoint: NOEC - Species: Microorganisms = 26 g/l
g) Toxicity to aquatic algae and cyanobacteria:
Endpoint: EC50 - Species: Freshwater algae = 100 mg/l - Duration h: 72
Endpoint: NOEC - Species: Freshwater algae = 100 mg/l - Duration h: 72

12.2. Persistence and degradability: N.A.
12.3. Bioaccumulative potential: N.A.
12.4. Mobility in soil: N.A.
12.5. Results of PBT and vPvB assessment
vPvB Substances: None - PBT Substances: None
12.6. Endocrine disrupting properties
No endocrine disruptor substances present in concentration ≥ 0.1%
12.7. Other adverse effects: None

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information



14.1. UN number or ID number

ADR-UN Number:	1831
IATA-UN Number:	1831
IMDG-UN Number:	1831

14.2. UN proper shipping name

ADR-Shipping Name:	SULPHURIC ACID, FUMING
RID-Shipping Name:	N.A.
ADN-Shipping Name:	N.A.
IATA-Shipping Name:	SULPHURIC ACID, FUMING
IMDG-Shipping Name:	SULPHURIC ACID, FUMING

14.3. Transport hazard class(es)

ADR-Class:	8
ADR - Hazard identification number:	X886
IATA-Class:	8
IATA-Label:	-
IMDG-Class:	8

14.4. Packing group

ADR-Packing Group: I
IATA-Packing group: I
IMDG-Packing group: I

14.5. Environmental hazards

ADR-Enviromental Pollutant: No
IMDG-Marine pollutant: No
IMDG-EmS: F-A , S-B

14.6. Special precautions for user

ADR-Subsidiary hazards: 6.1
ADR-S.P.: -
ADR-Transport category (Tunnel restriction code): 1 (C/D)
IATA-Passenger Aircraft: Forbidden
IATA-Subsidiary hazards: 6.1
IATA-Cargo Aircraft: Forbidden
IATA-S.P.: A2
IATA-ERG: 8P
IMDG-Subsidiary hazards: 6.1
IMDG-Stowage and handling: Category C SW2 SW15
IMDG-Segregation: SGG1a SG36 SG49

14.7. Maritime transport in bulk according to IMO instruments: N.A.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Dir. 98/24/EC (Risks related to chemical agents at work)
Dir. 2000/39/EC (Occupational exposure limit values)
Regulation (EC) n. 1907/2006 (REACH) consolidated
Regulation (EC) n. 1272/2008 (CLP) consolidated

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:
Restriction 3
Restrictions related to the substances contained:
Restriction 75

Reportable explosives precursors according to EU Reg. 2019/1148
Restricted explosives precursors according to EU Reg. 2019/1148
Sanitary checks.
Workers exposed to this hazardous chemical agent must be subjected to health surveillance carried out in accordance with the provisions of art. 41 of Legislative Decree 81 of 9 April 2008 unless the risk to the safety and health of the worker has been assessed as irrelevant, in accordance with the provisions of art. 224 paragraph 2.
Where applicable, refer to the following regulatory provisions :

Regulation (EU) 2019/1148 (explosives precursors)
Directive 2012/18/EU (Seveso III)
Regulation (EC) nr 648/2004 (detergents).
Dir. 2004/42/EC (VOC directive)

Provisions related to directive EU 2012/18 (Seveso III):

Seveso III category according to Annex 1, part 1: None

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture while those of the registered substances contained therein are available.

SECTION 16: Other information

Full text of phrases referred to in Section 3:

H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
EUH014 Reacts violently with water.

Hazard class and hazard category	Code	Description
Skin Corr. 1A	3.2/1A	Skin corrosion, Category 1A
Skin Irrit. 2	3.2/2	Skin irritation, Category 2
Eye Dam. 1	3.3/1	Serious eye damage, Category 1
Eye Irrit. 2	3.3/2	Eye irritation, Category 2
STOT SE 3	3.8/3	Specific target organ toxicity - single exposure, Category 3

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Reg. (EC) Nr. 1272/2008	Classification procedure
Skin Corr. 1A, H314	Calculation method
Eye Dam. 1, H318	Calculation method
STOT SE 3, H335	Calculation method

This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This MSDS cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE: Acute Toxicity Estimate
ATEmix: Acute toxicity Estimate (Mixtures)
CAS: Chemical Abstracts Service (division of the American Chemical Society).
CLP: Classification, Labeling, Packaging.

DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.
GefStoffVO:	Ordinance on Hazardous Substances, Germany.
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals.
IATA:	International Air Transport Association.
IATA-DGR:	Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO:	International Civil Aviation Organization.
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG:	International Maritime Code for Dangerous Goods.
INCI:	International Nomenclature of Cosmetic Ingredients.
KSt:	Explosion coefficient.
LC50:	Lethal concentration, for 50 percent of test population.
LD50:	Lethal dose, for 50 percent of test population.
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWA:	Time-weighted average
WGK:	German Water Hazard Class.