



Ferrous Sulfate Monohydrate

Date reviewed: Dec. 2022
Version 04

Use of the substance/ preparation

Agribusiness | Other industrial uses

Company name

Industrias emu s.a.s.

1. **Product and company identification** **Synonyms:** ferrous sulfate, iron sulfate.
N° CAS: 13463-43-9
Chemical formula: $\text{FeSO}_4 \cdot \text{H}_2\text{O}$

Company name

Company: Industrias emu s.a.s.

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2. **Hazard identification** **Classification of the substance or mixture**

Acute toxicity, category 4, oral, H302

Skin irritation, Category 2, H315

Eye irritation, Category 2, H319

Label elements

Hazard pictograms



Word of warning

Attention

Danger indications

H302 Harmful if swallowed.

H315 Causes skin irritation.

H319 Causes severe eye irritation.

Precautionary statements

Preventing

P264 Wash carefully after handling.

P270 Do not eat, drink or smoke while handling this product. P280 wear gloves, eye/face protection equipment.



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Intervention P301 + P312 IN CASE OF INGESTION: call a poison information center or a doctor in case of discomfort.
P302 + P352 IN CASE OF SKIN CONTACT: wash with plenty of water.
P305 + P351 + P338 IN CASE OF EYE CONTACT: rinse carefully with water for several minutes. Remove contact lenses when they are present and can be done easily. Continue with the washing.

Other dangers

None known.

3. Composition/ information on the components

Substance

| | |
|---------------|-------------------------------------|
| Formula | FeSO ₄ .H ₂ O |
| No. CE | 231-753-5 |
| Concentration | 30% Fe |
| Molar mass | 169,92 g/mol |

Mixture

Does not apply.

4. First aid measures

Description of the first aid

Inhalation of material can be harmful
After inhalation: fresh air.

Contact can cause skin and eye burns

In case of skin contact: remove immediately all contaminated garments.
Rinse with water, shower for at least 20 minutes.

After eye contact: Rinse the affected eye for 10 minutes with running water. Then immediately transport the patient to the ophthalmologist, continue rinsing during transport with water.

After ingestion: If the patient is conscious, ask him to drink 1 glass of water (approximately 200 ml).

Do not induce vomiting.

In case of spontaneous vomiting, keep the patient face down to prevent the vomit penetrate the airways.

Consult with a doctor.

Main symptoms and effects, acute and delayed

Irritating effects, conjunctivitis, stomach pains, diarrhea, vomiting, collapse and death. Risk of corneal turbidity.

Indication of medical care and special treatment to be provided immediately



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Make sure medical personnel are aware of the materials involved and take precautions to protect yourself.

5. Fire Means of extinction

measures The substance is non-combustible. Select fire extinguishing measures from according to the surrounding conditions.
In case of environmental fire: cool the surrounding containers with powdered water. If possible, remove the container from the danger zone.

Small fire:

Dry chemical powder, CO2, water spray or AFFF foam.

Big fire:

Use water spray, fog or regular foam.
Do not disperse spilled material with high pressure water jets.
Move containers from the fire area if you can safely do so.
Make a containment dam for water controlling fire for its waste posterior.

Specific hazards arising from the substance or mixture

Non-fuel: non-combustible substances do not ignite themselves, but can react by heating and producing toxic fumes.

Possibility of formation of dangerous vapors by fire in the environment.
Fire can cause fumes of: sulfur oxides.

Recommendations for fire fighting personnel.

Special protective equipment for fire-fighting personnel.

Use self-contained positive pressure air (SCBA) equipment.
The suit for professional firefighters will provide only limited protection, use Special suit hermetically sealed.
Stay in the risk area only with artificial respiration systems and independent of the environment.

Other information

Repress gases/vapours/mists with powdered water. Prevent pollution surface water or groundwater with water that has served the extinction of fires.

6. Accidental dumping Personal precautions

measures Do not touch or walk on spilled material.

Stop the spill, if you can safely do so.

Prevent the dust cloud.



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Small spill

With a clean shovel place the material in a clean and dry container and cover loosely; remove containers from the spill area.

Big spill

Cordon off the area with a signaling tape.
Cover the dust spill with a plastic sheet or tarp to minimize your spreading.
Prevent entry into waterways, sewers, basements or areas confined.

Reference to other sections

For details on waste treatment, see *Section 13*.

7. Handling and storage

Precautions for safe handling

Hygiene measures

Replace the contaminated clothing.
Wash hands after work.

Safe storage conditions, including possible incompatibilities

Storage conditions

Do not use any food containers.
Packaging must be clearly and permanently labelled.
Store in original packaging as much as possible.
Keep the container tightly closed.
Storage recommended at room temperature.
Store in a dry place.
The substance is sensitive to light, protect from exposure to light.
The substance is hygroscopic, protect from moisture.

The substance should not be stored with substances with which dangerous chemical reactions occur.

For possible incompatibilities refer to *section 10*.

8. Exposure controls and personal protection

Control parameters

- ACGIH Threshold limit value (TLV): 1 mg/m³ (TWA) for powders and mists.
- OSHA Permissible exposure limit (PEL): 1 mg/m³ (TWA) for powders and mists.
- NIOSH Recommended exposure limit: 1mg/m³ (TWA) for powders and mists.

Exposure controls

Ventilation system

A local and/or general exhaust aeration system is recommended to keep employee exposures below exposure limits. The ventilation



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Local exhaust is generally preferred because it can control emissions of the pollutant at its source, preventing its dispersion in the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Best Practice Manual, latest edition, for details.*

Personal Respirators (NIOSH Approved)

If the exposure limit is exceeded, a medium dust/fog mask particulate respirator may be used if exposed 10 times above the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or the respirator provider, Anything that is lower. A full dust/fog mask particle respirator can be used if it is exposed 50 times above the exposure limit or maximum use concentration specified by the appropriate regulatory agency or respirator provider, whichever is lower. For emergencies or cases where exposure levels are not known, use a full positive pressure mask, a self-contained respirator.

WARNING: Self-contained respirators do not protect workers in oxygen-deficient atmospheres.

Skin protection

Wear waterproof protective clothing, including boots, gloves (nitrile rubber), lab coat, apron, or overalls, which is appropriate to avoid skin contact.

Eye protection

Wear chemical goggles and/or full masks where exposure to dust or spray solutions is possible. Keep an eye wash fountain and emergency showers in the work area.

9. Physical and chemical properties

Information on properties

basic physical and chemical

| | |
|------------------|--|
| Aspect | White powder or slightly dyed yellow. |
| Smell | Characteristic. |
| Solubility | Soluble in water. |
| pH | 2,5 - 3,8 Aqueous solution at 50 g/l to 20°C |
| Melting point | 500 °C (932 °F) |
| Boiling point | Not applicable. |
| Density | 2,97 g/ml |
| Vapor density | No information was found. |
| Steam pressure | No information was found. |
| Evaporation rate | No information was found. |



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10. Stability and reactivity

Reactivity

See "*Possibility of dangerous reactions*"

Chemical stability

Sensitivity to light. Decomposes at temperature greater than 400°C.
Loses crystallization water at approximately 300°C

Possibility of dangerous reactions

Enhanced reaction capacity with bases, oxidants.

Conditions to be avoided

Exposure to moisture.

Incompatible materials

Strong oxidizing agents.

Dangerous decomposition products

In case of fire: see *Section 5*.

11. Toxicological information

Information on toxicological effects

Acute oral toxicity

LD50 rat: 319 mg/kg (anhydrous substance) (*Literature*)

Absorption

Acute toxicity by inhalation

Possible consequences: irritation of mucous membranes.

Acute skin toxicity

This information is not available.

Skin irritation

It causes skin irritation.

Eye irritation

It causes severe eye irritation.

Sensitization

In animal experimentation
Result: negative
(IUCLID)

Mutagenicity in germ cells

Ames test

Result: negative
(Literature)



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(National Toxicology Program)
In vitro genotoxicity
Ames Salmonella Typhimurium Test
Result: negative
(Literature)

Carcinogenicity
This information is not available.

Reproductive toxicity
This information is not available.

Teratogenicity
This information is not available.

Specific toxicity to certain organs - single exposure This information is not available.

Specific toxicity to certain organs - repeated exposures This information is not available.

Aspiration hazard
This information is not available.

Other information

Systemic effects
After ingestion of large amounts: bloody vomit, diarrhea, decreased blood pressure.

For soluble iron compounds
After ingestion: nausea and vomiting.
After absorption of large amounts: cardiovascular conditions. Toxic effect on the liver and kidneys.
Other hazardous properties cannot be excluded.
Handle the product with appropriate industrial hygiene precautions and respect safety practices.

12. Ecological information

Toxicity

Toxicity to fish
CL50 *Poecilia reticulata* (Guppi): 925 mg/l; 96 h (IUCLID)

Toxicity to Daphnias and other aquatic invertebrates
CE50 *Daphnia magna* (Big sea flea): 152 mg/l; 48 h (anhydrous substance) (IUCLID)

Toxicity to bacteria



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CEO Pseudomonas fluorescens: 100 mg/l; 24 h (anhydrous substance) (IUCLID)

Persistence and degradability

No information is available.

Bioaccumulation potential

No information is available.

Floor mobility

No information is available.

Results of the PBT and MPMB assessment

A PBT and MPMB assessment was not made due to the fact that a chemical hazard assessment is not necessary or does not exist.

Other adverse effects

Complementary environmental information

Discharge into the environment should be avoided.

13. Disposition considerations

According to Resolution 1704 of 2018, the final disposition of this packaging must be made with a hazardous waste manager.

Any amount that cannot be saved by recovery or recycling must be handled at an appropriate and approved waste disposal facility. The processing, use or contamination of this product can change waste management options. Departmental disposal regulations may differ from national disposal regulations. Dispose of the container and do not use the contents in accordance with federal, state, and local requirements.

14. Transport information

Trucking

Product not dangerous according to the criteria of the regulations for transport.

River transport

Not relevant.

Air transport (IATA)

Product not dangerous according to the criteria of transport regulation.

Maritime transport (IMDG)

Product not dangerous according to the criteria of transport regulation.

15. Regulatory information

Chemical Inventory Status - Part 1

| Ingredient | TSCA | EC | Japan | Australia |
|--|------|-----|-------|-----------|
| Ferrous Sulfate Monohydrate (17375-41-6) | Yes | Yes | Yes | Yes |



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Chemical Inventory Status - Part 2

| Ingrediente | Canada | | | |
|--|--------|-----|------|------|
| | Korea | DSL | NDSL | Phil |
| Ferrous Sulfate Monohydrate (17375-41-6) | Yes | Yes | Not | Yes |

Federal, State and International Regulations - Part 1

| Ingrediente | SARA 302 | | SARA 313 | |
|--|----------|-----|----------|-------------|
| | RQ | TPQ | List | Cat.Quimico |
| Ferrous Sulfate Monohydrate (17375-41-6) | No | Not | Not | Not |

Federal, State and International Regulations - Part 2

| Ingrediente | CERCLA | RCRA |
|--|--------|--------|
| | | 261.33 |
| Ferrous Sulfate Monohydrate (17375-41-6) | 1000 | Not |

Chemical Weapons Conversion: No | **TSCA 12 (b):** No | **CDTA:** No
SARA 311/312:Acute: Yes | **Chronic:** Yes | **Flammability:** No | **Pressure:** No |
Reactivity: No (Mix/ Solid)

Australian Hazchem Code: None assigned.

Poison phrase: None assigned.

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

16. Other information **Advice relating to training**

Workers must be provided with adequate information and practical training.

Transport labelling

Not subject to transport regulations.

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