SAFETY DATA SHEET

According to 29 CFR 1910.1200

FERROUS SULFATE HEPTAHYDRATE

Date of issue: August 25, 2009 **Revision date:** May 28, 2018 **Version.** 4.1

SECTION 1.- IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product form Bulk granules

Substance name Ferrous Sulfate Heptahydrate

CAS No. 7782-63-0

Formula $FeSO_4 \cdot 7H_2O$

Synonyms Green vitriol

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

Use of the substance/mixture According to the technical sheet of the product.

1.3 Details of the supplier of the safety data sheet

Pima Chemicals & Fertilizers, LLC
1370 Nogales, Az.
Tel. 011 52 (662) 182-0559
rgutierrez@quimicapima.com
www.quimicapima.com

Química Pima, S.A. de C.V.
Del Cobre 20, Parque Industrial Hermosillo.
Hermosillo, Sonora, México. C.P. 83297
Tel. 011 (662) 251-0010 ventas@quimicapima.com

1.4 Emergency telephone number

Emergency number CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

SECTION 2.- HAZARD IDENTIFICATION

2.1. GHS-US classification

Acute toxicity, oral 4 H302

Skin corrosion/irritation 2 H315

Serious eye damage/irritation 2A H319

Specific target organ toxicity (single exposure); respiratory tract irritation 2 H335

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US)

Signal word (GHS-US): Danger

Hazard statement (GHS-US):

H302 Harmful if swallowed.

H315 Causes severe skin burns and eye damage.

H319 Causes serious eye damage.

H335 May cause respiratory irritation.

Precautionary statements (GHS-US): P260 Do not breathe dusts or mists.

P261 Avoid breathing dust, fume, gas, mist, vapours or spray.
P264 Wash exposed skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water.
P332+P313 In case of skin irritation: consult a doctor.
P362+P364 Remove contaminated clothing and wash it before reuse.
P304 + P340 IN CASE OF INHALATION: Transport the person outdoors and keep him in a position that facilitates breathing.
P312 Call a doctor if the person is unwell.
P305+P351+P338 IF IN EYES: Rinse thoroughly with water for several minutes. Remove contact lenses, when present and can be done easily. Continue washing.
P337+P313 If eye irritation persists, see a doctor

P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P501 Dispose of contents/container in accordance with local/regional/national/ international regulations.

2.3. Other hazards Toxic to aquatic organisms and plants.

2.4 Unknown acute toxicity (GHS-US) Not applicable.

SECTION 3.- COMPOSICION / INFORMATION OF INGREDIENTS

3.1 Mixture Not applicable

3.2 Substance Substance

Name	*Product identifier*	*%*	*GHS-US classification*
Ferrous Sulfate Heptahydrate	(CAS No.) 7782-63-0	>97.0%	Acute Tox. oral 4; H302 Skin Irrit. 2; H314 Eye Damage 2A; H318 STOT-SE 2; H335

SECTION 4.- FIRST AID MEASURE

4.1. Description of first air measure

First-aid measures general Check vital functions. Unconscious: keeping the airways clear and breathing. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Conscious victim with respiratory distress: half sitting. Victim in shock: back with legs slightly raised. Vomiting: prevent suffocation or bronchial aspiration. Avoid cooling by covering the victim (without heating). Keep looking at the victim. Give psychological help. Keep calm of the victim, avoid physical tension. Depending on the victim's condition: doctor / hospital. Never give anything by mouth to an unconscious person. In case of discomfort, see a doctor (show the label if possible).

First-aid measures after eye contact Immediately flush eyes with plenty of running water for less than 30 minutes. Keep your eyes open during washing. Get specialized medical attention right away.

First-aid measures after skin contact Quickly remove contaminated clothing and accessories. Immediately wash the affected area with plenty of running water. Get medical attention right away if symptoms continue after washing.

First-aid measures after inhalation	Remove the victim from the place of exposure to fresh air, ensuring that the victim makes the least physical effort possible. If breathing has stopped, start rescue breathing (using universal precautions) and if cardiac action has stopped, start cardiopulmonary resuscitation. Get medical attention immediately.
First-aid measures after ingestion	Do not induce vomiting. Wash your mouth taking care not to swallow the washing water, immediately after drinking plenty of water or milk. If the person is unconscious do not give anything by mouth. If you are not breathing, apply artificial respiration (NOT mouth to mouth, wear a pocket mask), if breathing is difficult, administer oxygen. Get immediate medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	Irritation of the nose and throat, bronchitis, pneumonia, abundant nasal discharge and bloody sputum.
Symptoms/injuries after skin contact	Causes skin irritation
Symptoms/injuries after eye contact	Causes eye irritation.
Symptoms/injuries after ingestion	Harmful if swallowed
Chronic symptoms	ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Respiratory difficulties.

4.3. Indications of any immediate medical attention and special treatment needed Treat symptomatically.

SECTION 5.- FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media	Adapt extinguishing media to the environment.
Unsuitable extinguishing media	Do not use water under pressure.

5.2. Special hazard arising from the substance or mixture

Fire hazard	DIRECT FIRE HAZARD. Non combustible. INDIRECT FIRE HAZARD. Promotes combustion. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard	DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.
Reactivity	Under fire conditions this material can produce: flammable and toxic sulfur oxides and / or hydrogen sulfide. Keep unnecessary people away.

5.3. Advice for firefighters

Precautionary measures fire	Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighborhood close doors and windows.
Firefighting instructions	Spray the packages with water to avoid ignition if they were affected by excessive heat or fire. Remove the packaging if it has not yet been reached by the flames, and you can do it without risk. Cool the packaging with water until long after the fire is out, removing debris to remove embers. Prevent water used for fire control or dilution from entering water courses, drains or springs
Protection during firefighting	In major spills, wear chemical protective clothing, which is specifically recommended by the manufacturer. This can provide little or no thermal protection.

SECTION 6. - ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	Gloves. Protective clothing. Vapor or spray cloud production: compressed air/oxygen apparatus. Reactivity hazard: compressed air/oxygen apparatus. Reactivity hazard: gas-tight suit.
Emergency procedures	Mark the danger area. Prevent vapor or spray formation, e.g. by wetting. No naked flames. Wash contaminated clothes. In case of hazardous reactions: keep upwind. In case of reactivity hazard: consider evacuation.
Measures in case of dust release	In case of vapor or spray production: keep upwind. Vapor or spray production: have neighborhood close doors and windows.

6.1.2. For emergency responders

Protective equipment	Do not attempt to take action without suitable protective equipment. For further information refer to section 8 Exposure controls/personal protection"
Emergency procedures	Ventilate area.

6.2. Environmental precautions

Stop leaks if possible. Contain spills by all available means. Cover the drains. Do not allow it to enter the ground / subsoil. Do not pour into the drain or into the environment.

6.3. Methods and material for containment and cleaning up.

Method for containment	Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Knock down/dilute vapor cloud with water spray. If reacting: dilute toxic gas/vapor with water spray. Take account of toxic/corrosive precipitation water.
Methods for cleaning up	Prevent dispersion by covering with dry sand/earth. Scoop solid spill into closing containers. See "Material-handling" for suitable container materials. Spill must not return in its original container. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.
Other information	Dispose of materials or solid residues at an authorized site.

6.4 Reference to other sections

For further information refer to section 8: Exposure-controls/personal protection.

SECTION 7.- HANDLING AND STORAGE

7.1. Precautions for safe handling

Precautions for safe handling	Minimize the generation and accumulation of dust. Put on appropriate personal protective equipment. Avoid inhaling the dust. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Eating, drinking and smoking are prohibited while using the product. Use only with adequate ventilation. Wash your hands thoroughly after handling the product. See section 8 of the SDS on personal protective equipment

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Keep only in the original container in a cool, well ventilated place away from incompatible materials. Keep container closed when not in use.
Incompatible products	KEEP SUBSTANCE AWAY FROM: combustible materials. Reducing agents. Keep away from bases or alkalis and metals. Organic materials.
Heat-ignition	KEEP SUBSTANCE AWAY FROM: heat sources.
Storage area	Store in a dry area. Store at room temperature. Keep container in a well-ventilated place. Meet the legal requirements.

Special rules on packaging	SPECIAL REQUIREMENTS: closing. Dry. Correctly labelled. Meet the legal requirements. Secure fragile packaging in solid containers.
Packaging materials	Appropriate packing material: the one supplied by the manufacturer. Stainless steel, glass or HDPE.

7.3 Specific end use(s) No additional information available.

SECTION 8.- EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Name	*ACGIH TLV*	*OSHA PEL*	*Europa (WELS/EH40)*
Ferrous sulfate 7-hydrate 7782-63-0	TWA: 1.0 mg/m^3 STEL: 2.0 mg/m^3	1.0 mg/m^3	ND

8.2. Exposure controls

Appropriate engineering controls	There must be adequate general ventilation (typically 10 air changes per hour). The frequency of renewal of air should correspond to conditions. If possible, use fume hoods, local exhaust ventilation, or other technical measures to keep exposure levels below recommended exposure limits. If no exposure limits have been established, the level of airborne contaminants must be maintained at an acceptable level. There must be access to an eyewash and safety shower in the same workplace.
Personal protective equipment	Vapor production: vapor mask with 3M 6003 organic vapor/acid gas cartridge. Gloves. Safety glasses.
Material for protective clothing	GIVE GOOD RESISTANCE: nitrile, neoprene or PVC. GIVE POOR RESISTANCE: natural fibers.
Hand protection	Gloves. Recommended: nitrile, neoprene or PVC.
Eye protection	Safety glasses. In case of vapor production: protective goggles.
Skin and body protection	Protective clothing. Recommended: Tychem SL, Tychem F, Tychem ThermoPro, Tychem TK or equivalent.
Respiratory protection	Vapor production: vapor mask with 3M 6003 organic vapor/acid gas cartridge in case of inadequate ventilation.
Environmental exposure controls	Avoid release to the environment.

SECTION 9.- PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state:	Solid.	**Appearance:**	Solid.
Odor:	Odorless.	**Color:**	Green
Molecular mass		278.02 g/mol	
Odor threshold		No data available.	
pH		3 – 4	
pH solution		No data available.	
Relative evaporation rate (butyl acetate=1)		No data available.	
Melting point		64°C (147.2°F)	
Freezing point		No data available.	
Boiling point		> 300 °C (572°F)	
Flash point		Not applicable.	

Self ignition temperature	Not applicable.
Decomposition temperature	No data available.
Flammability (solid, gas)	No data available.
Vapor pressure	No data available.
Relative vapor density	No data available.
Relative density at 20°C	1898 Kg/m^3
Density/specific gravity	No data available.
Solubility	Soluble in water: 29.5 g/l
Log Pow	No data available.
Log Kow	No data available.
Viscosity, kinematic	No data available.
Viscosity, dynamic	No data available.
Explosive properties	No data available.
Oxidizing properties	No data available.
Explosive limits	No data available.

9.2 Other information No additional information available.

SECTION 10.- STABILITY AND REACTIVITY

10.1 Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2 Chemical stability	The chemical is stable under normal conditions.
10.3 Possibility of hazardous reactions	Under fire conditions, sulfur oxides, hydrogen sulfide, and other flammable and toxic gases can form. Keep unnecessary personnel away from fire.
10.4 Conditions to avoid	Excessive heat Avoid dusty conditions.
10.5 Incompatible materials	Strong oxidizing agents. Alkalis
10.6 Hazardous decomposition products	Sulfur oxides

SECTION 11.-TOXICOLOGICAL INFORMATION

11. 1. Information on toxicological effects

Likely routes of exposure	Skin and eyes contact; inhalation; ingestion.
Acute toxicity	Prolonged exposure of the eyes can cause discoloration. Repeated high exposure could cause excess iron to build up in the body. Symptoms of stomach upset, nausea, constipation, and diarrhea or black stools may occur. Chronic exposure can cause effects on the liver.

Name	LD_{50} oral	LD_{50} dermal	LC_{50} inhalation
Ferrous sulfate 7-hydrate	319 mg/kg (rat)	ND	ND

Skin corrosion/irritation	Causes skin irritation. Symptoms include redness, itching, and pain. May cause skin discoloration with irritation.
Serious eye damage/irritation	It causes irritation, redness and pain. Repeated or prolonged exposures can cause conjunctivitis.

Respiratory or skin sensitization	It causes irritation of the respiratory tract. Symptoms may include cough, shortness of breath.
Ingestión	Low toxicity in small amounts but large doses can cause nausea, vomiting, diarrhea, and black stools. Pink urine discoloration is a strong indicator of iron poisoning. Liver damage, coma and death from iron poisoning has been recorded. Severe gastritis with abdominal pain, vomiting comes after 10 to 60 min after ingestion. Diarrhea and dehydration. Fast and weak pulse, feeling of fatigue.
Carcinogenicity	Not classified.
Mutagenic effects	Mutagenic components have not been identified.
Reproductive toxicity	Not classified.
Specific target toxicity (single exposure)	May cause respiratory irritation.
Specific target toxicity (repeat exposure)	Not classified.
Aspiration hazard	Not classified.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

LC 50 (Brook trout (Salvelinus fontinalis), 96 h): 0.41 mg/l
EC50 (Water flea (Daphnia magna), 48 h): 6.15 mg/l

12.2 Persistence and degradability

Not inherently biodegradable.

12.3 Bioaccumulative potential

ND

12.4 Mobility in soil

The product is water soluble and can be dispersed in aquatic systems.

12.5 Other adverse effects

Other information Very toxic to aquatic organisms, with long-lasting harmful effects.

SECTION 13.- DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste treatment methods	Dispose of in accordance with relevant local regulations.
Waste disposal recommendations	Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Precipitate/make insoluble. Remove to an authorized dump (Class I). Do not discharge into surface water.

SECTION 14.- TRANSPORT INFORMATION

14.1.UN number Not regulated

14.2. UN proper shipping name Not regulated

14.3. Additional information

Other information	No supplementary information available.
Overland transport	No additional information available.
Transport by sea	No additional information available.
Air transport	No additional information available.

SECTION 15.- REGULATORY INFORMATION

15.1 US Federal regulations

Ferrous Sulfate	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	

15.2 International regulations

CANADA

Ferrous Sulfate	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class E – Corrosive material.

EU-Regulations

Ferrous Sulfate
No additional information available.

15.2.2. National regulations

Ferrous Sulfate
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.

SECTION 16.- OTHER INFORMATION

NFPA	NFPA health hazard	2	NFPA fire hazard	0	NFPA instability hazard	1	NFPA Special hazard	-
HMIS III	Health	2	Flammability	0	Physical	1	Personal Protection	G

G Splash goggles, Gloves, Synthetic apron, Vapor respirator



Made for:	Quimica Pima, S.A. de C.V. Del Cobre No. 20 Parque Industrial. Hermosillo, Sonora, México. 83297.
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IMPORTANT NOTE: Information in this SDS is from available published sources and is believed to be accurate, but is not exhaustive and will be used only as a guide, which is based on current knowledge of the chemical substance or mixture and apply to the appropriate product for safety precautions. No warranty, express or implied, is made and Pima Chemicals & Fertilizers, LLC and Quimica Pima, S.A. de C.V. assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.

End of Safety Data Sheet