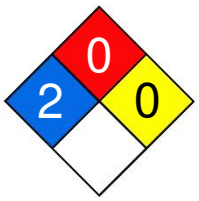

Material Safety Data Sheets

Revision 2

1. IDENTIFICATION

Product Name	**Iron (II) sulfate hydrate**
Other Names	Ferrous sulfate hydrate
Uses	Colcothar; Deodorizer; Soil conditioner; Forage; Fertilizer.
Chemical Family	No Data Available
Chemical Formula	$FeSO_4$. x H2O
Chemical Name	
Product Description	No Data Available

Company	**Arman sina.co**
Contact Information	info@armansina.com **www.armansina.com**

2. HAZARD IDENTIFICATION

Hazard Classification

Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Hazard Categories

Acute Toxicity (Oral) - Category 4

Skin Corrosion/Irritation - Category 2

Serious Eye Damage/Irritation - Category 2A

Acute Hazard To The Aquatic Environment - Category 2

Signal Word

Warning

Hazard Statements

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H401	Toxic to aquatic life.

Precautionary Statements

Prevention	P280	Wear protective gloves/eye protection/face protection.
	P273	Avoid release to the environment.
	P270	Do not eat, drink or smoke when using this product.
Response	P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
	P337 + P313	If eye irritation persists: Get medical advice.
	P391	Collect spillage.
	P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
	P330	Rinse mouth.
	P332 + P313	If skin irritation occurs: Get medical advice.
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P362 + P364	Take off contaminated clothing and wash it before reuse.
Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

Symbol

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Iron (II) sulfate hydrate	FeSO4.x H2O	17375-41-6	86.0 – 89.0 %
Contains: Manganese sulfate (as Mn)	H2O4S.Mn	7785-87-7	<1 %
Contains: Sulfuric acid	H2O4S	7664-93-9	<1 %
Other impurities and stabilising additives	Unspecified	Unspecified	Balance %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth, then drink plenty of water. Do not induce vomiting. Call a Poison Centre or doctor/physician if you feel unwell. Never give anything by mouth to an unconscious person.

Eye IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.

Skin IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.

Inhaled IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Apply resuscitation if victim is not breathing. Administer oxygen if breathing is difficult.

Advice to Doctor Treat symptomatically and supportively. Symptoms may be delayed.

Medical Conditions Aggravated by Exposure No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
Flammability Conditions	Non-combustible. This product does not burn or support combustion.
Extinguishing Media	If material is involved in a fire, use extinguishing media appropriate to surrounding conditions.
Fire and Explosion Hazard	Decomposes on heating, emitting toxic fumes.
Hazardous Products of Combustion	Fire or heat will produce irritating and/or toxic gases, including Sulphur oxides, oxides of Iron.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. Do not touch or walk through spilled material. Avoid dust formation. Avoid breathing dust and contact with eyes, skin and clothing.
Clean Up Procedures	Carefully shovel or sweep up spilled material and place in suitable container (see SECTION 13). Avoid dispersal of dust in the air.
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas.
Decontamination	After cleaning, flush away traces with water.
Environmental Precautionary Measures	Prevent entry into drains and waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.

Personal Precautionary Measures Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Minimise dust generation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Take precautionary measures against static discharge. Avoid release to the environment.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Avoid storing in hot and humid conditions. Keep container tightly closed when not in use. Protect from moisture. Keep away from incompatible materials (see SECTION 10).
Container	Materials for containers/packaging: Acid-resistant materials are appropriate. Non-acid resistant metals are unsuitable (Iron, aluminium, etc).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No value assigned for this specific material by Safe Work Australia. For Iron salts, soluble (as Fe): - Safe Work Australia Exposure Standard: TWA = 1 mg/m3 - New Zealand Workplace Exposure Standard: TWA = 1 mg/m3
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	- Respiratory protection: Wear respiratory protection when dust is generated. Recommended: Dust mask/particulate respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Chemical goggles. - Hand protection: Wear protective gloves. Recommended: Impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Protective apron; Boots; Overalls.
Special Hazards Precaustions	Do not use this product if coated with brownish-yellow basic ferric sulphate!
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Take off contaminated clothing and wash before storage or reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Powder or granules
Odour	Odourless
Colour	Greyish white
pH	3.0 - 5.0 (10% solution)
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	Decomposes
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Soluble in water (29.7 g/100 mL) 20° C
Specific Gravity	2.97
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	>=300 ° C
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available

Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	Hygroscopic.
Potential for Dust Explosion	No information available.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible. This product does not burn or support combustion.
Reactions That Release Gases or Vapours	Decomposes on heating emitting toxic fumes, including Sulphur oxides, oxides of Iron.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	Gradual oxidation occurs in wet air, resulting in production of ferric sulfate, Fe(OH)SO4.
Chemical Stability	Material is stable under normal conditions.
Conditions to Avoid	Avoid dust formation. Avoid exposure to air. Protect from moisture/humidity.
Materials to Avoid	Incompatible/reactive with alkalis, oxidising agents, fine metal powder, soluble carbonates.
Hazardous Decomposition Products	Decomposes on heating emitting toxic fumes, including Sulphur oxides, oxides of Iron.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Symptoms of swallowing large amounts of soluble iron compounds maybe delayed several hours and can include epigastric pain, vomiting blood and circulatory failure.
- Skin corrosion/irritation: Causes skin irritation due to strong acidity. Symptoms include redness.
- Eye damage/irritation: Causes serious eye irritation due to strong acidity. Symptoms include redness, pain, weeping.
- Respiratory/skin sensitisation: No sensitizing effects known.
- Germ cell mutagenicity: No biologically relevant genotoxic activity.
- Carcinogenicity: Not listed as a suspected/confirmed carcinogen by IARC, NTP.
- Reproductive toxicity: No information available.
- STOT (single exposure): Dust may cause respiratory irritation, coughing and shortness of breath.
- STOT (repeated exposure): Gastrointestinal disturbances, including colic, constipation and diarrhoea may occur in humans following the ingestion of iron sulfate. In children, ingestion of large quantities can cause vomiting (the vomit may contain blood), liver damage, rapid heart beat and peripheral vascular collapse.
- Aspiration toxicity: No information available.

Acute

Ingestion

Acute toxicity (Oral):
- LD50, Rat: 319 mg/kg (Ferrous sulfate).

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (various species): >0.41 - 28 mg/L (96 h) [Ferrous sulfate]. - EC50, Crustacea (Daphnia magna): 1 - 10 mg/L (48 h) [Ferrous sulfate].
Persistence/Degradability	Not applicable for an inorganic compound.
Mobility	No information available.
Environmental Fate	Toxic to aquatic life - Prevent entry into drains and waterways.
Bioaccumulation Potential	Bioconcentration of iron to species is relatively low. Iron is an essential element for most living species and may be actively regulated in organisms.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Recycle containers after cleaning, or dispose properly under relevant regulations and local government standards. Remove residual content completely before disposing of empty containers.

14. TRANSPORT INFORMATION

Land Transport

Proper Shipping Name	Ferrous sulphate, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

Proper Shipping Name	Ferrous sulphate, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

Proper Shipping Name	Ferrous sulphate, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

15. OTHER INFORMATION

Revision 3

Key/Legend

< Less Than
> Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO2 Carbon Dioxide
COD Chemical Oxygen Demand
deg C (° C) Degrees Celcius

deg F (° F) Degrees Farenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH2O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or L Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight