



CHIN CHA-ROEN INTERCHEM CO.,LTD.

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MATERIAL SAFETY DATA SHEET

1. PRODUCT DATA	
1.1 TRADE NAME	Ferrous Sulphate
1.2 CHEMICAL NAME	Ferrous Sulphate Heptahydrate , Ferrous Sulphate Monohydrate
1.3 CHEMICAL FORMULA	1) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ 2) $\text{FeSO}_4 \cdot \text{H}_2\text{O}$
MOLECULAR WEIGHT	1) 278.02 2) 169.93

2. CHEMICAL CLASSIFICATION	
2.1 USES	Waste water treatment , Feed additive , Agriculture etc.

3. CHEMICAL CLASSIFICATION	
3.1 UN No.	
3.2 CAS No.	1) 7782-63-0 , 2) 7720-78-7
3.3 DANGEROUS GOODS CLASS	

4. PHYSICAL AND CHEMICAL DATA	
4.1 BOILING POINT	decomposition at $> 300^\circ \text{C}$
4.2 MELTING POINT	$57 - 65^\circ \text{C}$
4.3 VAPOUR PRESSURE	Negligible at 20°C
4.4 WATER SOLUBILITY	1) 485.0 g/L , 2) 296.5 g/L at 20°C
4.5 SPECIFIC GRAVITY	1) 1.898 , 2) 2.970 at 20°C
4.6 EVAPORATION RATE	Not applicable
4.7 APPEARANCE	1) Blue - green crystals 2) Yellow - gray powder
4.8 pH	pH 50 g/l water ~ 3 - 5

5. FIRE AND EXPLOSION HAZARD DATA	
5.1 FLASH POINT	N/A
5.2 FLAMMABILITY LIMIT (LEL)%	Non - flammable
5.3 AUTOIGNITION TEMPERATURE	Not applicable

6. STABILITY AND REACTIVITY	
6.1 REACTIVITY	Stable and not considered reactive under normal temperature and pressures. This material oxidizes slowly in moist air to form a yellow-brown coating of basic ferric sulphate.
6.2 CONDITIONS TO AVOID	Alkalis , soluble carbonates , oxidizing agent , gold and silver salts , lead acetate , potassium iodide , sodium borate , sodium tartrate , tannin , high temperature and will generate No _x when in contact with ammonium nitrate.
6.3 HAZARDOUS DECOMPOSITION PRODUCTS	Excessive heat may liberate sulphur dioxide i.e., SO ₂ and SO ₃

7. HEALTH HAZARD DATA	
7.1 HAZARD	Harmful if swallowed , may be irritating to eyes and skin.
7.2 INHALED	Inhalation may irritate the nose , throat , and respiratory tract.
7.3 SKIN	Irritation to skin.
7.4 EYE	Irritation to eyes.
7.5 SWALLOWED	Relatively non-toxic by ingestion but ingestion of large quantities can product GI tract disturbances , severe shock , vomiting , liver damage , tachycardia and death.

8. FIRST AID	
8.1 SKIN	In case of contact , immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.
8.2 EYE	Check for and remove any contact lenses. In case of contact with eyes , rinse immediately with plenty of water. Get medical attention.
8.3 INHALED	If inhaled , remove to fresh air. If not breathing , give artificial respiration. Get medical attention.
8.4 SWALLOWED	Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.

9. PERSONAL PROTECTION	
9.1 PERSONAL RESPIRATORS	Dust respirator.
9.2 SKIN PROTECTION	Protective clothing , gloves.
9.3 EYE PROTECTION	Safety Goggles
9.4 OTHER PROTECTION	Wash hands , forearms and face thoroughly after handling compounds.
9.5 ACGIH THRESHOLD LIMIT VALUE	TWA : 1 mg/m ³ 8 hour(s).

10. SPECIAL PROTECTION INFORMATION

10.1 FIRE/EXPLOSION HAZARD	If heated to decomposition emits toxic fumes of sulphur di-oxides.
10.2 VENTILATION SYSTEM	Use adequate local general ventilation to maintain the concentration of ferrous sulphate dust in the working environment well below recommended occupational exposure limits.

11. HANDLING AND STORAGE

11.1 DIRECTION FOR SAFE HANDLING	Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling.
11.2 STORAGE	Keep container tightly closed. Keep container in a cool, well-ventilated area.

12. ACCIDENTAL RELEASE MEASURES

12.1 PROCEDURE(S) OF PERSONAL PRECAUTION(S)	Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.
12.2 DISPOSAL CONSIDERATIONS	If material cannot be returned to process or salvaged, dispose of in accordance with applicable regulations. Empty and thoroughly clean all residues from containers before reuse or disposal.

13. FIRE FIGHTING MEASURES

13.1 FIRE EXTINGUISHING MEDIA	Use any means of extinction appropriate for surrounding fire condition.
13.2 SPECIAL RISKS	If heated to decomposition emits toxic fumes of sulphur di-oxides.
13.3 SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS	Wear approved self-contained breathing apparatus. Wear appropriate protective clothing to prevent contact with skin and eyes.

14. TRANSPORT INFORMATION

14.1 RID / ADR	Non-hazardous for road transport.
14.2 IMDG NO.	Non-hazardous for sea transport.
14.3 IATA	Non-hazardous for air transport.

15. TOXIC DATA	
15.1 TOXICITY DATA	1) LD ₅₀ oral / rat 1480 mg/kg.
	2) LD ₅₀ oral / rat 319 mg/kg.
	LD ₅₀ oral / mouse 680 mg/kg.
	LD ₅₀ oral / guinea pig 1200 mg/kg.
15.2 ENVIROMENTAL TOXICITY	No known significant effects or critical hazards.

16. ECOLOYGY DATA	
16.1 ECOLOGY	This product is highly soluble and is directly acidity whith can result in toxic impacts.
	1) Rainbow Trout toxic : 82.3 mg / L. 96 hour.
	2)Daphnia magna : 7.2 mg / L. 48 hour.
16.2 OTHER	NFPA ratings : Health : 1 Flammability : 0 Reactivty : 0 Specific Hazard : -