**FERRIC SULFATE, HEPTAHYDRATE**
**FERRIC SULFATE, HEPTAHYDRATE**
MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC

EMERGENCY NUMBER: (201) 796-7100

CHEMICAL DIVISION

CHEMTREC ASSISTANCE: (800) 424-9300

1 REAGENT LANE

FAIR LAWN NJ 07410

(201) 796-7100

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**SUBSTANCE IDENTIFICATION**

CAS- NUMBER 7782-63-0

**SUBSTANCE:** FERRIC SULFATE, HEPTAHYDRATE

**TRADE NAMES/SYNONYMS:**

IRON(III) SULFATE, FERRIC SULFATE HEPTAHYDRATE,
IRON(III) SULFATE HEPTAHYDRATE: IRON(II) SULFATE (1:1), HEPTAHYDRATE;
FERRIC SULFATE, SULFURIC ACID, IRON(II) SALT (1:1) HEPTAHYDRATE;
IRON SULFATE, COPPER, GREEN VITRIOL, L:146, L:149, L:151, STCC 4863841;
UN 9125; FE70011S; ACC08670

**CHEMICAL FAMILY:** INORGANIC SALT

**MOLECULAR FORMULA:** FE S2 O47 H2 O

**MOLECULAR WEIGHT:** 278.01

**CERCLA RATINGS (SCALE 0-3):** HEALTH-3 FIRE-0 REACTIVITY-0 PERSISTENCE-0

**NFPA RATINGS (SCALE 0-4):** HEALTH-3 FIRE-0 REACTIVITY-0

**COMPONENTS AND CONTAMINANTS**

**COMPONENT:** FERRIC SULFATE, HEPTAHYDRATE

CASP 7782-63-0

**PERCENT: 100**

**EXPOSURE LIMITS:**

IRON SALTS, SOLUBLE, AS FE:
1 MG/M3 OSHA TWA
1 MG/M3 ACGIH TWA
1 MG/M3 NIOSH RECOMMENDED TWA

FERRIC SULFATE

1000 PPM CERCLA SECTION 103 REPORTABLE QUANTITY


**PHYSICAL DATA**

**DESCRIPTION:** ODORLESS, HYPOOCRIPIC, BLUE-GREEN, MONOCRISTAL CRYSTALS

**MELTING POINT:** DECOMPOSES SPECIFIC GRAVITY: 1.898 PH: 3.7 @ 10% SOLUTION

**SOLUBILITY IN WATER:** 15.00% @ 20 C

**SOLVENT SOLUBILITY:** SOLUBLE IN ABSOLUTE METHANOL: SLIGHTLY SOLUBLE IN ETHANOL.

**LOSES WATER OF HYDRATION TO FORM MONOHYDRATE ABOVE 147 F (64 C) AND ANHYDROUS SALT ABOVE 572 F (306 C).

**FIRE AND EXPLOSION HAZARD**

NEGLEGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

**FIREFIGHTING MEDIA:**

DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM

(D19900 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5600.5).

FOR LARGER FIRES, USE WATER SPRAY, FOAM OR REGULAR FOAM

(D19900 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5600.5).

**TOXICITY**

**FERROUS SULFATE, TOXICITY DATA:**

ANIMALS:
30 MG/KG ORAL-CHILDLBD; 20 MG/KG ORAL-CHILDFBD; 150 MG/KG ORAL-CHILDTDO; 10,560UG/KG ORAL-WOMAN, TDO; 800 MG/KG ORAL- WOMAN, TDO; 30 MG/KG ORAL- RAY LD50 1800 MG/KG ORAL-MOUSE LD50 1250 MG/KG ORAL-QUINE PIG LD50 155 MG/KG SUBCUTANEOUS-RAT LD50 80,000 MG/KG SUBCUTANEOUS-MOUSE LD50 172 MG/KG INTRAVENOUS-MOUSE LD50 79 MG/KG INTRAVENOUS-RAT LD50 73 MG/KG INTRAVENOUS-RABBIT LD50 441 MG/KG UNREPORTED-MAN, LD50 MUTAGENIC DATA
WATER: NO TOXICITY DATA
HEPTAHYDRATE: 1380 MG/KG ORAL- RAY LD50 1520 MG/KG ORAL-MOUSE LD50 2775 MG/KG ORAL-RABBIT LD50 279 MG/KG SUBCUTANEOUS-RABBIT LD50 51 MG/KG INTRAVENOUS-MOUSE LD50 65 MG/KG INTRAVENOUS-RABBIT LD50 345 MG/KG INTRAVENOUS-MOUSE LD50 697 MG/KG RECTAL-RAT LD50 MUTAGENIC DATA (RETS)

**CARCINOGEN STATUS:** NONE

**ACUTE TOXICITY LEVEL:** TOXIC BY INGESTION (ANHYDROUS); MODERATELY TOXIC BY INGESTION (HEPTAHYDRATE)

**TARGET EFFECTS:** POISONING MAY AFFECT THE LIVER, KIDNEYS, CIRCULATORY, CARDIOVASCULAR CENTRAL NERVOUS SYSTEM

**ADDITIONAL DATA:** INTERACTIONS WITH MEDICATIONS HAVE BEEN REPORTED.

**HEALTH EFFECTS AND FIRST AID**

**INHALATION:**

FERROUS SULFATE, IRITANT

ACUTE EXPOSURE - MAY CAUSE IRRITATION OF THE RESPIRATORY TRACT.

CHRONIC EXPOSURE - NO DATA AVAILABLE.

FIRST AID: REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY IF BREATHING HAS STOPPED. PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

**SKIN CONTACT:**

FERROUS SULFATE, IRITANT

ACUTE EXPOSURE - MAY CAUSE IRRITATION.

CHRONIC EXPOSURE - REPEATED OR PROLONGED EXPOSURE TO IRRITANT'S MAY CAUSE DERMATITIS.

FIRST AID: REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREAS WITH SOAP AND WATER. AVOID LIFTING UPPER AND LOWER LIDS UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

**EYE CONTACT:**

FERROUS SULFATE, CORROSIVE

ACUTE EXPOSURE - CONTACT WITH THE EYE MAY CAUSE SEVERE IRRITATION AND CHRONIC EXPOSURE - EFFECTS DEPEND ON CONCENTRATION AND DURATION OF EXPOSURE.

FIRST AID: WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER. OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE WASHING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (20-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

**INGESTION:**

FERROUS SULFATE, CORROSIVE/TOXIC

ACUTE EXPOSURE - SIDE EFFECTS OF INGESTION OF ION SALTS MAY INCLUDE HEARTBURN, METALLIC TASTE IN THE MOUTH, NAUSEA, VOMITING. CONSTITUTION OR DIARRHEA. SYMPTOMS OF SEVERE POISONING MAY OCCUR IN DELAYED IRRITATION OR INFECTION.

FIRST AID: WASH MOUTH WITH WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE WASHING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (20-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

**FIREFIGHTING**

MOVEMENT CONTAINERS FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT SCATTER SPILLED MATERIAL WITH HIGH-PRESSURE WATER STREAMS. DIKE FIRE CONTROL WATER FOR LATER DISPOSAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5600.5, GUIDE PAGE 31).

**USE AGENTS SUITABLE FOR TYPE OF SURROUNDING FIRE. AVOID BREATHING HAZARDOUS VAPORS, KEEP UPWIND.**
TACHYCARDIA, LETHARGY, DROWSINESS, MENTAL CONFUSION, HYPOTONIA AND HYPERTONIA. IF POISONING IS NOT IMMEDIATELY FATAL, THE PATIENT MAY BE ASYMTOMATIC AND APPEAR TO BE RECOVERING, BUT MAY RETURN WITH CYANOSIS, CONVULSIONS, CIRCULATORY COLLAPSE. MAJOR HEPATIC FAILURE WITH JAUNDICE, SEVERE RENAL IMPAIRMENT OR FAILURE, DIFFUSE VASCULAR CONGESTION, PULMONARY EDEMA AND PULMONARY HEMORRHAGE, ACIDOSIS, ANURIA, HYPERTENSION, COMA AND DEATH WITHIN 24-48 HOURS. DEATH IS ALWAYS PROCEDED BY SHOCK IF THE VICTIM SURVIVES, LATE COMPLICATIONS DUE TO PYELIC, ANTRAL OR INTESTINAL OBSTRUCTION. HEPATIC CIRRHOSIS WITH FINE DIFFUSE FIBRITIC CHANGES WITH FATTY DEGENERATION AND CENTRAL NERVOUS DAMAGE MAY OCCUR 2 TO 3 WEEKS AFTER INGESTION. DEGENERATIVE CHANGES OF THE PANCREAS, LYMPH NODES, AND HEART ARE ALSO POSSIBLE. THE AVERAGE HUMAN LETHAL DOSE OF IRON IS ABOUT 200 TO 250 MG PER KG OF BODY WEIGHT.

CHRONIC EXPOSURE - REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID - IN PATIENTS NOT IN SHOCK OR COMA, INDUCE EMESIS WITH SYRUP OF Ipecac if vomiting has not occurred. Follow with gastric lavage using DEXFER. Give 10 grams of DEXFER in 1 LITER OF WATER CONTAINING SODIUM BICARBONATE IN 20 GM/L. LEAVE 10 GRAMS OF DEXFER AIN 50 ML OF 5% SODIUM BICARBONATE IN 1 LITRE. MAINTAIN AIRWAY, BLOOD PRESSURE AND RESPIRATION. TREAT SYMPTOMS SUPPORTIVELY. (GIBBS, HANDBOOK OF POISONING, 11TH ED.) GET MEDICAL ATTENTION IMMEDIATELY. TREATMENT SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ANTIDOTE - THE FOLLOWING ANTIDOTE HAS BEEN RECOMMENDED. HOWEVER, THE DECISION AS TO WHETHER THE SEVERITY OF POISONING REQUIRES ADMINISTRATION OF ANY ANTIDOTE AND ACTUAL DOSE REQUIRED SHOULD BE MADE BY QUALIFIED MEDICAL PERSONNEL.

IRON SALT POISONING.
GIVE DEXFERAXIME, 15 MG/KG/HOUR BY CONTINUOUS INTRAVENOUS INFUSION TO A MAXIMUM OF 80 MG/KG IN EACH 12-HOUR PERIOD. MONITOR THE BLOOD PRESSURE DURING ADMINISTRATION OF DEXFERAXIME AND REDUCE THE RATE OF ADMINISTRATION IF THE BLOOD PRESSURE FALLS. SINGLE DOSES SHOULD NOT EXCEED 1 GRAM AND THE MAXIMUM IN 24 HOURS SHOULD NOT EXCEED 6 GRAMS. DEXFERAXIME IS HAZARDOUS IN PATIENTS WITH SEVERE RENAL DISEASE OR ANURIA, AND DIABETES IS NECESSARY DEXFERAXIME TO BE ADMINISTERED TO A HIGH RISK AND SHOULD BE RESERVED FOR SERIOUS POISONING. CONTINUE DEXFERAXIME THERAPY UNTIL THE PATIENT IS FREE OF SYMPTOMS AND ACTIVELY PROTECTIVE (GIBBS, HANDBOOK OF POISONING, 11TH ED.). ANTIDOTE SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
FERROUS SULFATE: INCOMPATIBLE
ALKALIS: INCOMPATIBLE
ARSENIC TRIOXIDE: SPONTANEOUSLY COMBUSTIBLE MIXTURE
CARBONATES (SOLUBLE): INCOMPATIBLE
COKE SALT: INCOMPATIBLE
LEAD ACETATE: INCOMPATIBLE
LIME WATER: INCOMPATIBLE
METHYLISOCYANATE: MAY DECOMPENSE EXPLOSIVELY AT 25 C.
OXIDIZERS: FIRE AND EXPLOSION HAZARD
POTASSIUM HYDROGEN: INCOMPATIBLE
POTASSIUM TARTRATE: INCOMPATIBLE
SODIUM BORATE: INCOMPATIBLE
SODIUM TARTRATE: INCOMPATIBLE

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF SULFUR.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL
OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

*STORAGE**
STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

CONDITIONS TO AVOID
PREVENT DISPERSION OF DUST IN AIR.

SPILL AND LEAK PROCEDURES
SOIL SPILL: