**ZINC SULFATE, HEPTAhydrate**
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MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC

EMERGENCY NUMBER: (201) 796-7100

CHEMICAL DIVISION

1 REAGENT LANE

CHEMTRAC ASSISTANCE: (800) 424-9300

FAIR LAWN NJ 07410

(201) 796-7100

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SUBSTANCE IDENTIFICATION

CAS NUMBER: 7466-20-0

SUBSTANCE: **ZINC SULFATE, HEPTAhydrate**

TRADE NAMES/SYNONYMS:

ZINC SULFATE HEPTAhydrate; WHITE VITROL; ZINC SULFATE; ZINC SULPHATE; ZINC SULFATE; SULFURIC ACID; ZINC SALT (1:1); HEPTAhydrate; ZINC SULFATE (2N504) HEPTAhydrate; SULFURIC ACID; ZINC SALT; SULFURIC ACID; ZINC SALT; HEPTAhydrate; STCC 4963788, H140552N, 268, 270, 276, 2BTF, ACC25589

CHEMICAL FAMILY:

INORGANIC SALT

MOLECULAR FORMULA: ZN-5-0.47H2-O

MOLECULAR WEIGHT: 287.54

CERCLA RATING (SCALE 0-4): HEALTH-3; FIRE-0; REACTIVITY-0; PERSISTENCE-3

NRA RATING (SCALE 0-4): HEALTH-3; FIRE-0; REACTIVITY-0

COMPONENTS AND CONTAMINANTS

COMPONENT: ZINC SULFATE, HEPTAhydrate

PERCENT: 100.0

CAS#: 7466-20-0

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

ZINC SULFATE:

NO OCCUPATIONAL EXPOSURE LIMITS ESTABLISHED BY OSHA, ACGIH, OR NIOSH.

100-POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: ODORLESS, COLORLESS EFFLORESCENT OR HYDROSCOPIC CRYSTALS.

GRANULES, OR POWDER WITH AN ASTRINGENT, METALLIC TASTE

BOILING POINT: 934 F (500 C) DECOMPOSES MELTING POINT: 212 F (100 C)

SPECIFIC GRAVITY: 1.967: PH: 4.5 IN SOLUTION

SOLUBILITY IN WATER: 96.5% AT 20 C

SOLVENT SOLUBILITY: SOLUBLE IN ETHER; SLIGHTLY SOLUBLE IN GLYCERIN, ALCOHOL

LOSES WATER OF HYDRATION ABOVE 280 C.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:

NEGligible FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREIGHTING MEDIA:

DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5)

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5)

TOXICITY

ZINC SULFATE:

IRRITATION DATA:

AIR-FLOW: 420 LUG EYE-RABBIT MODERATE

TOXICITY DATA:


DHYDRATE: 1710 MG/KG ORAL-RAT LD50: 826 MG/KG ORAL-MOUSE LD50: 200 MG/KG INTRAPERITONEAL-RAT LD50: 216 MG/KG INTRAPERITONEAL-MOUSE LD50:


CARCINOGENIC STATUS: NONE

LOCAL EFFECTS: CORROSIVE; INHALATION, SKIN, EYE, INGESTION

ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION

TARGET EFFECTS: POISONING MAY AFFECT THE LIVER AND KIDNEYS

HEALTH EFFECTS AND FIRST AID

INHALATION:

ZINC SULFATE:

ACUTE EXPOSURE - INHALATION OF DUST OR SOLUTION MAY CAUSE IRRITATION OF THE RESPIRATORY TRACT WITH SORE THROAT, COUGHING, SHORTNESS OF BREATH, LABORED BREATHING, PAIN IN THE NOSE, MOUTH, AND THROAT, AND BURNS OF THE MUOUS MEMBRANES. IF SUFFICIENT QUANTITIES ARE INHALED, PULMONARY EDEMA MAY DEVELOP, OFTEN WITH A LATENT PERIOD OF 5-72 HOURS. THE SYMPTOMS MAY INCLUDE TIGHTNESS IN THE CHEST, DYSPEA, FOYTHY SPERMUM DYSURIA, AND DIZZINESS. PHYSICAL FINDINGS MAY INCLUDE WEAK, RAPID HYPOTENSION, CONJUNCTIVITIS, AND MOIST RAILS.

CHRONIC EXPOSURE - DEPENDING ON THE CONCENTRATION AND DURATION OF EXPOSURE, RESPIRATORY, OR PROLONGED EXPOSURE TO CORROSIVE SUBSTANCES MAY CAUSE INFLAMMATORY AND ULCERATIVE CHANGES IN THE MOUTH AND POSSIBLY BRONCHIAL AND NEUTROKINAL DISTURBANCES.

FIRST AID - REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD FLOW. AND ADMINISTER OXYGEN IF AVAILABLE. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

ZINC SULFATE:

ACUTE EXPOSURE - DIRECT CONTACT WITH CORROSIVE SUBSTANCES MAY CAUSE SEVERE IRRITATION, REDNESS, PAIN, AND POSSIBLY BURNS.

CHRONIC EXPOSURE - EFFECTS DEPEND ON CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED CONTACT WITH METAL SALTS MAY RESULT IN PERNITIS WITH SUPPURATIVE, FIBROSUS, AND GRANULOMATOUS REACTIONS IN SUSCEPTIBLE INDIVIDUALS OR EFFECTS SIMILAR TO ACUTE EXPOSURE.
FIRST AID - REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER. IN CASE OF CHEMICAL BURNS, COVER AREAS WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
ZINC SULFATE / CORROSIVE
ACUTE EXPOSURE: DIRECT CONTACT MAY CAUSE SEVERE IRRITATION, REDNESS, PAIN, BLURRED VISION, AND BURNING. MAY BE SOSEFUL. THE DEGREE OF INJURY DEPENDS ON THE CONCENTRATION AND DURATION OF CONTACT. THE FULL EXTENT OF THE INJURY MAY NOT BE IMMEDIATELY APPARENT. APPLICATION OF A 20% ZINC SULFATE SOLUTION TO CORNEAL INJURIES INFECTED WITH HERPESVIRUS KERATITIS, ULCERS RESULTED IN EDEMA AND RESIDUAL SCARRING. MARCH 13, 2005, INHALED. CHRONIC EXPOSURE: EFFECTS DEPEND ON CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED CONTACT WITH CORROSIVE SUBSTANCES MAY RESULT IN CONJUNCTIVITIS OR EFFECTS AS IN ACUTE EXPOSURE.

FIRST AID - WASH IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASSIONALLY WITH ANTIACIDIC SOLUTION. CONTINUE IRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NEUTRAL (6.5-8.5 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
ZINC SULFATE / CORROSIVE
ACUTE EXPOSURE: INGESTION MAY CAUSE A BURNING PAIN IN THE MOUTH AND THROAT, FEVER, NAUSEA, VOMITING WITH SEVERE ABDOMINAL PAIN, WATERY OR BLOODY DIARRHEA, PROTRUSION, NECTUMUS, RETICULUS, HEPATOSplenomegaly, LIVER DAMAGE, KIDNEY DAMAGE WITH ALBUMINURIA, ACETONURIA, AND GLYCOSURIA. MARCH 15, 2005, INHALED. CHRONIC EXPOSURE: EFFECTS DEPEND ON THE CONCENTRATION, REPEATED INGESTION OF CORROSIVE SUBSTANCES MAY RESULT IN EFFECTS AS IN ACUTE INGESTION. PROLONGED INGESTION OF 25,000 MG/KG IN DRINKING WATER RESULTED IN SEVERE ANEMIA IN MAN. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS FROM THE ANIMALS AND THE HEPARDITIS.

FIRST AID - DILUTE THE POISON IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR MILK AND THEN CATTLE UNTIL THE PH OF THE CONCENRERED SOLUTION IS EQUAL TO 6.5-8.5. GET MEDICAL ATTENTION IMMEDIATELY. ADMINISTRATION OF Gastric Lavage SHOULD BE PERFORMED BY QUALIFIED MEDICAL PERSONELS.

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 PHYSICIAN PERSONNEL.

POISONING FROM ZINC SALTS:
GIVE CALCIUM DISODIUM EDTATE 15-25 MG/KG (0.08-0.125 ML OF 20% SOLUTION PER KILOGRAM OF BODY WEIGHT) IN 250-500 ML OF 1% DEXTROSE INTRAVENOUSLY OVER A 1 TO 2 HOUR PERIOD TWICE DAILY. THE MAXIMUM DOSE SHOULD NOT EXCEED 50 MG/KG PER DAY. A COURSE SHOULD NOT BE GIVEN IN 5-DAY COURSES WITH AT LEAST 2 DAYS BETWEEN COURSES. AFTER THE FIRST COURSE, SUBSEQUENT COURSES SHOULD USE 10 MG/KG DEXTROSE INTRAVENOUSLY OVER A 1 TO 2 HOUR PERIOD. DURING THE TREATMENT PERIOD, THE DOSAGE SHOULD BE REDUCED IF ANY UNUSUAL URINARY FINDINGS APPEAR. FOR INTRAMUSCULAR ADMINISTRATION, GIVE 12.5 MG/KG BODY WEIGHT EVERY 4-6 HOURS. GIVE EACH DOSE WITH AN EQUAL VOLUME OF 1% DEXTROSE INTRAVENOUSLY OVER A 1 TO 2 HOUR PERIOD.

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
ZINC SULFATE: OXIDIZING AGENTS.
SEE ALSO METAL SULFATES.

METAL SULFATES:
ALUMINUM: POSSIBLE EXPLOSION ON MELTING.
MAGNESIUM: POSSIBLE EXPLOSION.

DECOMPOSITION:
DECOMPOSITION MAY RESULT IN THE FORMATION OF ZINC OXIDE OR ZINC OXIDE OXIDES OF SULFUR.

POLYMORPHISM:
Hazardous polymerization has not 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 IN A COOL, DRY PLACE. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE. STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

CONDITIONS TO AVOID:
MAY BURN BUT DOES NOT IGNITE READILY. FLAMMABLE POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. MAY IGNITE COMBUSTIBLES (WOOD, PAPER, OIL, ETC.).

SPILL AND LEAK PROCEDURES:
SOIL SPILL:
DIG A PIT, POND, LAGOON OR HOLDING AREA TO CONTAIN LIQUID OR SOLID MATERIAL. COVER SOLIDS WITH A PLASTIC SHEET TO PREVENT SOLVING IN DRAIN OR FIREFIGHTING WATER.

WATER SPILL:
NEUTRALIZE WITH AGRICULTURAL LIME, SLAKED LIME, CRUSHED LIMESTONE, OR SODIUM BICARBONATE.

NEUTRALIZE WITH CAUSTIC SODA.

ADD SUITABLE AGENT TO NEUTRALIZE SPILLED MATERIAL TO PH 7.

USE MECHANICAL DREDGES OR UPS TO EXTRACT IMMOBILIZED MASSES OF POLLUTION AND PRECIPITATE.

OCCUPATIONAL SPILL:
DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL LEAKS, SLOW RISER UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR SMALL DRY SPILLS, WITH CLEAR NOVEL PLACEMENT INTO A CLEAN DRY AREA. CONTAIN萊 IN THE VICINITY AND COVER MOVING CONTAINERS FROM SPILL AREA. FOR LARGER SPILLS, DUE FAIR AHEAD OF SPILL. FOR LATER DISPOSAL KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT:
VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION SYSTEM.

RESPIRATORY:
THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.

ANY DUST AND MIST RESPIRATOR WITH A FULL FACEPIECE.
ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR WITH A HIGH-EFFICIENCY PARTICULATE FILTER.
ANY POWERED AIR-PURIFYING RESPIRATOR WITH A TIGHT-FITTING FACEPIECE AND HIGH-EFFICIENCY PARTICULATE FILTER.
ANY TYPE "C" SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-Demand OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-Demand OR OTHER POSITIVE PRESSURE MODE.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:
ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-Demand OR OTHER POSITIVE PRESSURE MODE IN COMBINATION WITH AN AUTOMATIC SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-Demand OR OTHER POSITIVE PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT.
TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

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