SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Manganese sulfate monohydrate
Catalog Number : io-5721
CAS Number : 10034-96-5
Identified uses : Laboratory chemicals, manufacture of chemical compounds
Company : Ionz

>> R&D Use only

2. Hazards Identification

GHS Classification:

Flammable liquid (category 2)
Acute toxicity, oral (Category 3)
Acute toxicity, dermal (Category 3)
Acute toxicity, inhalation (Category 3)
Specific target organ toxicity, single exposure (Category 1)

Note

>> Pictograms displayed are for 99.9% (1541 of 1543) of reports that indicate hazard statements. This chemical does not meet GHS hazard criteria for 0.1% (2 of 1543) of reports.

Pictogram(s)

>> Warning

GHS Hazard Statements

>> H373 (99.7%): May causes damage to organs through prolonged or repeated exposure [Warning Specific target organ toxicity, repeated exposure]

>> H411 (99.7%): Toxic to aquatic life with long lasting effects [Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P260, P273, P319, P391, and P501

Health Hazards:

>> SYMPTOMS: Symptoms of exposure to this compound include mild irritation of the eyes and mucous membranes of the respiratory tract. Symptoms of exposure to this type of compound include apathy, anorexia, headache, recurring leg cramps, loss of balance, clumsiness, pneumonia and associated pulmonary problems. Other symptoms include central nervous system damage, pulmonary system damage, upper respiratory infections, languor, sleepiness, weakness in the legs, a stolid, mask-like face, muscular twitchings, varying from a fine tremor of the hands to coarse, rhythmical movements of the arms, legs and trunk; slight increase in tendon reflexes, ankle and patellar clonus, typical Parkinsonian slapping gait and minute handwriting (affected by micrographia). It can cause spastic gait, insomnia, dystonia, fatiguability, asthenia and an inability to concentrate. It can also cause impaired mentation, ataxia, difficulty in walking and decreased movement of the eyelids and eyes. Other symptoms include lethargy, edema, extrapyramidal effects, sleep disturbances, dermatitis, irritability, liver enlargement, increased muscle tone, muscular cramps, mental deterioration, excessive salivation and perspiration, sexual disturbances, blood changes and, very rarely, hypothyroidism. Exposure can cause spasms, arthralgias and speech disturbances such as slurred speech, slow and monotonous voice tone, inability to speak above a whisper, difficult articulation and incoherence, and even complete

muteness. Psychosis may occur with unaccountable laughter, euphoria, impulsive acts, absentmindedness, mental confusion, aggressiveness and hallucinations. Propulsion, retropropulsion and lateropropulsion are affected with no movement for protection when falling. Absolute detachment may occur, broken by sporadic or spasmodic laughter. Inhalation may cause acute bronchitis, nasopharyngitis and itching. Numbness of the extremities and impairment of libido may occur. Other effects include weakness, delusions, compulsions, rigidity, bradykinesia, sudden crying, stuttering, hoarse voice, nervousness, inability to walk backward, hyporeflexia, Romberg's sign, adiadochokinesia, forgetfulness, general malaise, drowsiness, stiffness of the arms or legs, urinary difficulty, somnolence, sexual excitement followed by impotence, "hen's gait" and frequent falling. Fever may occur, with chills, upset stomach (nausea), vomiting, dryness of the throat, cough and body aches. Other symptoms include trouble with memory and judgment, unstable emotions, incoordination, chest pain, restlessness, double vision, impaired hearing, anemia, lassitude and low back pain. Symptoms of exposure may simulate progressive bulbar paralysis, post-encephalitic Parkinsonism, multiple sclerosis, amyotrophic lateral sclerosis and progressive lenticular degeneration (Wilson's Disease).

>> ACUTE/CHRONIC HAZARDS: When heated to decomposition this compound emits toxic fumes of sulfur oxides. (NTP, 1992)

>> Flash point data for this chemical are not available; however, it is probably combustible. (NTP, 1992)

>> Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.

3. Composition/Information On Ingredients

Chemical name : Manganese sulfate monohydrate
CAS Number : 10034-96-5
Molecular Formula : H2MnO5S
Molecular Weight : 169.0200 g/mol

4. First Aid Measures

First Aid:

>> EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

>> SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

>> INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

>> INGESTION: DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. Be prepared to transport the victim to a hospital if advised by a physician. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

First Aid Measures

Inhalation First Aid

>> Fresh air, rest.

Eye First Aid

>> Rinse with plenty of water for several minutes (remove contact lenses if easily possible).

Ingestion First Aid

>> Rinse mouth. Seek medical attention if you feel unwell.

5. Fire Fighting Measures

>> Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. A water spray may also be used. (NTP, 1992)

>> In case of fire in the surroundings, use appropriate extinguishing media.

6. Accidental Release Measures

Isolation and Evacuation:

Isolation and evacuation measures to take when a large amount of this chemical is accidentally released in an emergency.

>> Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]:

>> IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

>> SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

>> FIRE: If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2024)

Spillage Disposal:

Methods for containment and safety measures to protect workers dealing with a spillage of this chemical.

>> Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Wash away remainder with plenty of water. Store and dispose of according to local regulations.

7. Handling And Storage

Safe Storage:

>> Dry. Well closed. Store in an area without drain or sewer access.

8. Exposure Control/ Personal Protection

>> 0.02 [mg/m3], as Mn (respirable fraction), 0.1 mg/m3, as Mn (inhalable fraction)

>> (as Mn, respirable fraction): 0.02 mg/m

EU-OEL

>> (as Mn, respirable fraction): 0.05 mg/m

MAK (Maximale Arbeitsplatz Konzentration)

>> (as Mn, respirable fraction): 0.02 mg/m

Inhalation Risk:

>> Evaporation at 20 °C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed, especially if powdered.

Effects of Short Term Exposure:

>> The substance is irritating to the eyes.

Effects of Long Term Exposure:

>> The substance may have effects on the central nervous system. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

Exposure Prevention

>> PREVENT DISPERSION OF DUST!

Inhalation Prevention

>> Use local exhaust or breathing protection.

Skin Prevention

>> Protective gloves.

Eye Prevention

>> Wear safety spectacles or eye protection in combination with breathing protection if powder.

Ingestion Prevention

>> Do not eat, drink, or smoke during work.

Exposure Control and Personal Protection

Maximum Allowable Concentration (MAK)

>> 0.2 [mg/m3], as Mn (inhalable fraction), 0.02 mg/m3, as Mn (respirable fraction)[German Research Foundation (DFG)]

9. Physical And Chemical Properties

Molecular Weight:

>> 169.02

Exact Mass:

>> 168.900337

Physical Description:

>> Manganese(ii) sulfate monohydrate appears as odorless pale red slightly efflorescent crystals or light pink powder. pH (5% solution) 3.7. (NTP, 1992)

>> PINK HYGROSCOPIC CRYSTALS.

Melting Point:

>> greater than 752 °F (NTP, 1992)

>> 400-450 °C

Solubility:

>> 50 to 100 mg/mL at 70 °F (NTP, 1992)

>> Solubility in water, g/100ml: 76.2 (freely soluble)

Density:

>> 2.95 (NTP, 1992) - Denser than water; will sink

>> Relative density (water = 1): 2.95

10. Stability And Reactivity

>> Water soluble. Hygroscopic.

11. Toxicological Information

Exposure Routes:

>> The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

Inhalation Exposure

>> Cough. Sore throat. Shortness of breath.

Eye Exposure

>> Redness. Pain.

Ingestion Exposure

>> Sore throat.

Adverse Effects:

An adverse effect is an undesired harmful effect resulting from a medical treatment or other intervention.

>> Neurotoxin - Parkinsonism

12. Ecological Information

ICSC Environmental Data:

>> The substance is toxic to aquatic organisms. It is strongly advised not to let the chemical enter into the environment.

13. Disposal Considerations

Spillage Disposal

>> Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Wash away remainder with plenty of water. Store and dispose of according to local regulations.

14. Transport Information

DOT

Manganese sulfate monohydrate
9
UN Pack Group: III

IATA

Manganese sulfate monohydrate
9,
UN Pack Group: III

15. Regulatory Information

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: Sulfuric acid, manganese(2+) salt (1:1), monohydrate

New Zealand EPA Inventory of Chemical Status

>> Manganese (II) sulphate, monohydrate: Does not have an individual approval but may be used under an appropriate group standard

New Zealand EPA Inventory of Chemical Status

>> Manganese sulphate hydrate: Does not have an individual approval but may be used under an appropriate group standard

16. Other Information

Other Safety Information

Chemical Assessment

>> IMAP assessments - Soluble manganese compounds: Human health tier II assessment

"The information provided is believed to be accurate but is not comprehensive and should be used as a reference. It reflects our current knowledge and is intended for safety guidance related to the product. This document does not constitute a warranty of the product's properties. Ionz is not responsible for any damages resulting from handling or contact with the product incorrectly."