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Effective Date: 1-17-96

Product Name: Sodium Sulfide Monohydrate

Cas No.: 1313-84-4

Hazardous Ingredients:

Hydrogen Sulfide, Sulfur Dioxide

Physical Data: (at standard temperature/pressure unless otherwise noted-25°C/77°F: normal sea level pressure).

| | |
|-------------------|---|
| Color: | Colorless or white |
| Physical Status: | Crystalline solid |
| Odor: | Rotten eggs (hydrogen sulfide) detectable only above TLV // |
| Boiling Point: | Decomposes at 1688°F (920°C) |
| Halting Point: | 122°F (50°C) |
| Vapor Pressure: | N/A |
| Vapor Density: | (Air-1) N/A |
| Evaporation Rate: | N/A |
| Solubility's: | 125 gm/100gm water; slight in ethanol |
| Specific Gravity: | (Water-1): 1.43 (61°F: 16°C) |

Fire and Explosion Information:

| | |
|--|--|
| Flash point: | N/A |
| (Auto) Ignition temperature: | N/A |
| Extinguishing media to be recommended: | Water |
| Unusual fire and explosion hazards: | Fire releases toxic sulfur oxide (eg, sulfur dioxide) gases. Contact with almost any acid will produce hydrogen sulfide gas, which is flammable, explosive and toxic |
| Special firefighting procedures: | Isolate from acids, if possible. Avoid contact with water that has been in contact with sodium sulfide, water solutions are strongly alkaline and may be corrosive |
| Special firefighting Protective Equipment/Clothes: | Self contained breathing apparatus (5CRA) with full fireproof operated in a positive pressure mode. Impervious clothing and gloves. |

Reactivity Data: **Stable** X **Unstable**

Hazardous Instability: NA:

Incompatibilities: Acids (in Liquid form) oxidizers (especially when in liquid form). Corrodes nonferrous metals and their alloys, for example, aluminum, copper, zinc.

Physical Hazards:

Produce hydrogen sulfide gas (flammable, explosive and toxic) on contact with acids (weak or strong). Hydrogen sulfide can be rapidly fatal if inhaled at about 1000 ppm. causes the same symptoms that sodium sulfide does when inhaled(sodium sulfide is converted into hydrogen sulfide in the body), and also causes eye skin irritation or burn.

Produces sulfur dioxide gas (toxic) on contact with oxidizers. Sulfur dioxide causes the same health effects as hydrogen sulfide and sodium sulfide on eye/skin contact or when inhaled. It is an immediate danger to life /health if inhaled at 100 PPM.

Corrodes containers not made of iron or steel.

Precautions

Health Hazards:

Do not swallow, get on hands or food. Avoid inhaling dust, use only in ventilated area, avoid eye contact, avoid skin contact.

Physical Hazards:

Keep away from incompatible substances: acids (liquid), oxidizers, nonferrous (non-iron) metals.
Do not store in aluminum or zinc-lined containers.
Store in dry, well ventilated area.

Workplace Exposure Limits

| | | | |
|--|------|--|------|
| Time-weighted Average short-term Exposure Limit | None | Permissible Exposure limits Immediately Dangerous to life or Health level | None |
| Celling Limit | | | |

Clinical Effects

Ingestion: Swallowing can cause such acute affects as nausea , vomiting, diarrhea, headache, dizziness, drowsiness, confusion, weakness, heart palpitations, low blood pressure, slow or irregular breathing, fainting, stoppage of breathing, coma and death-the later effects accruing with higher doses. Very high doses can cause sudden collapse, stoppage of breathing, convulsions and death within minutes. These effects of acute exposure can aggravate pre-existing heart and respiratory conditions (e.g. heart failure, chronic bronchitis).

Inhalation: The first acute effects of breathing the dust are nasal congestion and runny nose, cough, and large amounts of mucus, rapid breathing, abortness of breath, and pain on breathing occur with higher doses or longer exposure. More severe exposure can lead to most of the signs and symptoms listed under Ingestion but no cases of breathing failure/death by inhalation are known.

Ingestion/Inhalation: Chronic exposure (low doses over long periods) causes headaches, nausea, vomiting, irritability, sleeplessness, and a slow heart beat. Chronic exposure may aggravate existing heart conditions, for example, heart failure.

Eye: Contact can cause severe irritation, redness and swelling of the cornea and conjunction with itching, burning, tearing, eyelid swelling, sensitivity to light, blurred vision. Contact can also cause burns (intense pain, swelling, loss of vision).

Skin: Contact can cause severe irritation, drying, cracking, rashes, (redness, swelling, itching, pain and tenderness). Skin contact can also cause blistering or burns

Leak/Spill Information:

Notify safety personnel; provide first aid, if needed clear area of nonessential personnel, remove incompatible substance, if feasible, assure maxim ventilation. Put on required NIOSH/MSHA approved protection equipment/clothing use fire and explosion data.

Disposal Information:

Spilled material is usually recoverable. When not, dispose of in accordance with in accordance with all Federal, State and Local regulations.

Clean Up Procedure:

Shovel or carefully sweep spilled material into container raising minimum dust. Vacuum spill area, wash down with water, wet vacuum damp area, do not flush any material into sewer.

Health Hazard Information:

A. Exposure/Health Effects

Ingestion: Can be fatal if small amounts are swallowed (a teaspoon or less). Can cause dizziness, confusion, weakness and unconsciousness.

Skin Contact: Can cause severe irritation or burns of the skin, stomach, nose and throat.

Eye contact: Irritation, possible burns (may lead to blindness).

Organs/Systems Affected (type of Effect)

Eye (corrosion, irritation), skin (corrosion, irritation), respiratory system (irritation), gastrointestinal system (corrosion, irritation), nervous (CNS depression), cardiovascular (fast or slow heart beat, low blood pressure, shock).

Chronic Exposures: Can cause headaches, nausea, irritability, sleeplessness.

Aggravation of pre-existing conditions: No data is available.

B. First Aid:

Inhalation: Remove to fresh air IMMEDIATELY, keep warm and quiet. If breathing is slow or labored, or has stopped, give artificial respiration without stopping until breathing is normal, then give oxygen, if available. Get medical attention.

Ingestion: Do not induce vomiting. If conscious, give antacids, 1-2 glasses of milk or water. Then transport immediately to an emergency medical facility. If breathing is aborted or has stopped, give artificial respiration without stop until breathing is normal or medical personnel take over responsibility, give oxygen if possible.

Skin Contact: Promptly rinse affected area, wash with soap and large amounts of water, get medical attention.

Eye Contact: Immediately wash with large amounts of water at least for 20 mins. Turn back eye lids and flush several times. Get medical attention.

C. Toxicity Data

Acute toxicity level: moderately toxic by ingestion.

Protective Measures: (worker protection)

Ventilation Systems: Assure good ventilation. No specific regulatory requirements have been established.

Personal Respirators Protection: Whenever dust generation is likely, use NIOSH/MSHA approved dust or acid gas/dust cartridge or canister respirator with full facepiece. In case of toxic gas generation (caused by contact with incompatible substance or fire), have air-line or SCRA equipment readily available.

Skin Protection: Protective (Impervious) clothing and equipment. Neoprene gloves, boots, apron, or chemical suit conforming to 29 CFR 1910.132 and 29 CFR 1910.133.

Eye Protection: Chemical Safety Goggles.