

MATERIAL SAFETY DATA SHEET

1. PRODUCT IDENTIFIERNAME: **Sodium Sulfide, Hydrated**

SYNONYMS: Sodium Sulfide Flake; Sodium Sulfide.

MANUFACTURER: Chemical Products Corporation (CPC)
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2. INFORMATION ON INGREDIENTS

<u>COMPONENT</u>	<u>CAS #</u>	<u>EXPOSURE LIMITS</u>	<u>% BY WT</u>
Sodium Sulfide	1313-82-2	No ACGIH TLV or OSHA PEL established for Sodium Sulfide For Hydrogen Sulfide gas: OSHA PEL - 20 ppm. ACGIH TLV-TWA - 10 ppm	60 - 63%
Water	7732-18-5		37 - 40%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: **WARNING! CORROSIVE TO SKIN AND MUCOUS MEMBRANES. CAN CAUSE PERMANENT EYE INJURY. DUST CAUSES SEVERE RESPIRATORY TRACT IRRITATION. HARMFUL IF SWALLOWED. HARMFUL IF INHALED.**

Do not taste or swallow. Avoid breathing dust. Use only with adequate ventilation. Avoid skin contact. Wash thoroughly after handling.

CONTACT WITH ACID RELEASES POISONOUS AND FLAMMABLE HYDROGEN SULFIDE GAS.

POTENTIAL HEALTH EFFECTS: Dust from this product is a powerful systemic poison, causing headache, dizziness, and unconsciousness. It is highly corrosive to eyes and skin.

Routes of Entry: Skin contact with possible absorption through skin, inhalation of dust, and possible ingestion.

Human Effects: High alkalinity makes this product corrosive to mucous membranes - chemical burns result from contact. Dust causes irritation to the conjunctiva and cornea of the eye and to respiratory passages. In acute over-exposure, victim experiences headache, nausea, dizziness, confusion, and weakness of the extremities, followed by a precipitous lapse into unconsciousness.

Acute Inhalation: Severe respiratory distress, confusion, weakness of the extremities, unconsciousness, pulmonary edema, asphyxiation and possible central respiratory paralysis leading to death.

Chronic Inhalation: Extreme irritation to respiratory passages.

Acute Skin Contact: Painful chemical burns. Systemic poisoning by sulfide causes headache, nausea, dizziness, confusion, weakness of the extremities, and possible unconsciousness.

Chronic Skin Contact: Extreme irritation to skin.

Acute Eye Contact: Alkali burns to conjunctiva and cornea with possible irreversible destruction of tissue.

Chronic Eye Contact: Extreme irritation to the eyes caused by dusts; corneal opacity.

Acute Ingestion: Destruction of the lining of the esophagus and stomach. Rapid breathing, confusion, unconsciousness, paralysis of respiratory muscles leading to death.

Chronic Ingestion: Headache, nausea, dizziness, confusion, and painful alkali burns to the esophagus.

Carcinogenicity: NTP.....: Not listed.
IARC.....: Not listed.
OSHA.....: Not regulated.

Medical Conditions Aggravated by Exposure: None are known.

4. FIRST AID MEASURES

Ingestion: Have victim drink as much milk or water as possible. Do not induce vomiting. If vomiting occurs, give more liquids. Never give anything by mouth to an unconscious person. Get immediate medical assistance.

Inhalation: Remove from contaminated atmosphere. Begin artificial respiration immediately if necessary. Begin CPR immediately if necessary. Administer oxygen if it is available.

Eye Contact: Flush with large quantities of water for at least 15 minutes. Always seek medical attention.

Skin Contact: Flush with large quantities of water. Wash with soap and water if available.

5. FIRE FIGHTING MEASURES

Flashpoint: Non-flammable; dust can be flammable if heated sufficiently to remove water of hydration.

Flammability: Finely divided dust forms combustible mixtures with air. Dry grinding of these flakes can result in fires in the grinding equipment.

Autoignition: Not applicable.

General Hazard: POISON, FLAMMABLE HYDROGEN SULFIDE GAS WILL BE EVOLVED FROM THIS PRODUCT ON EXPOSURE TO ACID. If this product burns after excessive heat has removed water of hydration, toxic sulfur oxide gases will be produced. Water used to fight a fire will be highly alkaline and corrosive to skin if it contacts this product.

Fire Fighting Instructions: Firefighters should wear self-contained breathing apparatus. **Do not use carbon dioxide fire extinguishers because toxic hydrogen sulfide gas may be liberated from this product.**

Fire Fighting Equipment: Use water in flooding quantities. A heavy fog of water may be effective in knocking down vapors.

Hazardous Combustion Products: Poisonous sulfur dioxide gas will be generated if dust from this product burns.

6. ACCIDENTAL RELEASE MEASURES

Small Spill: Keep dry and away from acid. Scoop up and store in sealed containers. Dispose of in accordance with local, state, or federal regulations.

Large Spill: Keep dry and away from acid. Recover as much of the solid as possible. If the material is dissolved in water, mix the solution with excess oxidizing agent such as hydrogen peroxide or sodium hypochlorite to oxidize the sulfide and eliminate the danger of hydrogen sulfide evolution.

7. HANDLING AND STORAGE

Storage Temperature: As cool as practical, never above 80 Deg. C. (176 Deg. F.). Product becomes a highly alkaline, corrosive liquid at about 91°C (dissolves in its water of hydration).

Storage Pressure: Atmospheric.

General: Poison hydrogen sulfide gas will be produced if this product contacts acid.

KEEP AWAY FROM ACID.

--Do not store in contact with copper, zinc, or aluminum.

--Keep containers closed to avoid slow reaction with air (oxygen and carbon dioxide) producing hydrogen sulfide gas (rotten egg odor).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Adequate ventilation is required to remove the toxic and corrosive dust which may be present. Safety shower and eyewash fountain should always be available in the work area.

Respiratory Protection: Use self-contained breathing apparatus or supplied-air respirator if the PEL for hydrogen sulfide might be exceeded.

Skin Protection: Cover all exposed skin to protect it from dust and small particles.

Eye Protection: Chemical safety goggles and safety shield for protection from dust and small particles.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid.

Vapor Pressure: Not applicable.

Specific Gravity: About 1.69

Solubility in Water: 25 grams per 100 ml of water at 10 Deg. C. (50 Deg. F.)

pH: Highly alkaline.

Boiling Point: About 145 Deg. C. (293 Deg. F.)

Melting Point: About 91 Deg. C. (195 Deg. F.)

Vapor Density: Not applicable.

Evaporation Rate: Not applicable.

Odor: Slight "Rotten egg" odor.

Appearance: Yellow to orange waxy-looking solid flakes.

10. STABILITY AND REACTIVITY

Chemical Stability: Contact with acids liberates poisonous, flammable hydrogen sulfide gas. Mixing with strong oxidizers causes a violent reaction.

Incompatibility: Acids and strong oxidizers.

Hazardous Decomposition Products: Very high temperatures will decompose this product to form poisonous hydrogen sulfide gas.

Hazardous Polymerization: Does not occur.

11. TOXICOLOGICAL INFORMATION

Eye: Corrosive due to product's alkalinity.

Skin: Corrosive to skin due to product's alkalinity. May be toxic when absorbed through intact skin; no data available.

Ingestion: TOXIC - Human Oral LD_{LO} reported to be 50 mg/kg for anhydrous sodium sulfide. Equivalent to 80 mg/kg for this product.

Inhalation: TOXIC - Hydrogen sulfide inhalation is assumed. Human LC_{LO} is 600 ppm for 30 minutes for hydrogen sulfide; equivalent to 2200 ppm respirable dust from this product.

Sub-chronic: Irritation to the conjunctiva and cornea of the eye from vapors.

Chronic/Carcinogenic: Not a known carcinogen. Chronic acute exposures to dust may cause neurologic deficits like those in survivors of other severe asphyxiant poisonings.

Teratogenic: Not known.

Reproductive: Not known.

Mutagenic: Not known.

12. ECOLOGICAL INFORMATION

TOXICITY: Toxic to aquatic organisms. Only the strength of this product contributes to its environmental toxicity. Dilution yields only naturally-occurring chemical species.

In water containing 3.2 mg/l of sodium sulfide, trout overturned in 2 hours at pH 9.0 and in 10 minutes at pH 7.8.

Sulfide ion reacts with oxygen; waters containing sulfide ions will not contain dissolved oxygen.

DISTRIBUTION: All components of this product are found naturally in all ecosystems.

CHEMICAL FATE: With dilution, the sulfide will be readily incorporated into the pre-existing natural sulfur cycle.

13. WASTE MANAGEMENT INFORMATION

Waste with a pH of 12.5 or above is a RCRA hazardous waste because of its corrosivity. Waste containing sulfide may be hazardous and may require disposal in an approved hazardous waste landfill. Sulfide can be oxidized with dilute hydrogen peroxide or any other oxidizing agent to non-hazardous sulfate; care should be taken as the reaction may be violent.

14. TRANSPORT INFORMATION

D.O.T. Shipping Name..... : Sodium sulfide, hydrated.

Technical Shipping Name..... : Sodium sulfide, flake.

D.O.T. Hazard Class..... : 8 - Corrosive. Packing Group II.

U.N./N.A. Number..... : UN 1849.

Product R.Q. (lbs)..... : None

D.O.T. Label..... : CORROSIVE.

D.O.T. Placard..... : CORROSIVE.

Freight Class Bulk..... : Inorganic chemical.

Freight Class Package..... : Inorganic chemical.

Product Label..... : Sodium Sulfide, Hydrated.

15. REGULATORY INFORMATION

OSHA Status..... : This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard, 29 CFR 1910.1200. It is classified as toxic based on ingestion information and corrosive based on its alkalinity.

TSCA Status..... : Listed on TSCA Inventory.

CERCLA Reportable Quantity..... : None.

SARA Title III:

Section 302, Extremely Hazardous Substances.... : None.

Section 311/312, Hazard Categories..... : Category 1 (Acute Hazard).

Section 313, Toxics Release Inventory..... : None.

RCRA Status.....: If discarded in its purchased form, this product would be a hazardous waste because of its sulfide content and alkalinity. Under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing or derived from this product should be classified as a hazardous waste under 40 CFR 261.20-24.

16. OTHER INFORMATION

NFPA Rating (National Fire Protection Association):

Health -3 (Materials which on short exposure could cause serious temporary or residual injury).

Fire -1 (Materials which will burn in air when exposed to a temperature of 1500 Deg. F.)

Reactivity -1 (Materials which are normally stable but which can become unstable at elevated temperature and pressure).

Special - NA

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Prepared by..... : Jerry A. Cook.

Title..... : Technical Director.

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