MATERIAL SAFETY DATA SHEET

SODIUM HYDROSULFIDE

EMERGENCY PHONE NUMBERS:
CHEMTREC: 1-800-424-9300 (for fire, spill and emergency response information)
CHEMTREC CUSTOMER NUMBER: CCN14937
GREAT FALLS POISON CONTROL CENTER: 1-800-525-5042 (for poisoning)
SPOKANE POISON CONTROL CENTER: 1-800-732-6985 (for poisoning)

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME: Sodium Hydrosulfide
CAS NUMBER: 16721-80-05
FORMULA: NaHS
CHEMICAL FAMILY: Inorganic salt solution
SYNONYMS: NASH, Sodium Hydrosulfide, NaHS, Sodium Sulhydral, Sodium Bisulfide, Sodium Hydrogen Sulfide, Sodium Mercaptan

SECTION 2 - HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>HAZARDOUS COMPONENTS</th>
<th>CAS NO.</th>
<th>VOL%</th>
<th>TLV (8 Hr TWA)</th>
<th>PEL (8 Hr TWA)</th>
<th>STEL</th>
<th>IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydrosulfide</td>
<td>16721-80-5</td>
<td>34-46</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>54-66</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>7783-06-4</td>
<td>--</td>
<td>10ppm</td>
<td>20ppm</td>
<td>15ppm</td>
<td>100ppm</td>
</tr>
</tbody>
</table>

OTHER INGREDIENT INFORMATION:
May contain traces of sulfur.
Exposure to heat or contact with acids will result in release of toxic hydrogen sulfide gas.

SECTION 3 - PHYSICAL DATA

BOILING POINT: 212-269 °F
VAPOR PRESSURE: 17mm Hg at 20°C
VAPOR DENSITY (AIR=1): 1.17
SOLUBILITY IN WATER: Completely
ODOR THRESHOLD: 0.05ppm (Hydrogen Sulfide)
APPEARANCE: Yellow, green, to brown liquid
ODOR: Hydrogen Sulfide (rotten egg)
SPECIFIC GRAVITY (WATER=1): 1.15 - 1.31
pH: 11-12 (strongly alkaline)
PHYSICAL HAZARD: Release of Hydrogen Sulfide gas (H₂S)
Sodium Hydrosulfide

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

CLASSIFICATION: CORROSIVE LIQUID
FLASH POINT: N.A.
FLAMMABLE LIMITS: Hydrogen Sulfide LEL = 4.0% UEL = 44.0%
EXTINGUISHING MEDIA: Water, Foam, dry chemical
SPECIAL FIRE FIGHTING PROCEDURES: Extinguish fire using agent suitable for type of
surrounding fire. Material itself does not burn or burns with difficulty. Move
containers from fire area if possible. Use water to keep fire exposed containers
cool. Fight fires from the maximum distance possible.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Exposure to heat will result in release of toxic
hydrogen sulfide gas (H₂S), burning H₂S produces sulfur dioxide (SO₂) which is a
severe respiratory irritant that can be life threatening.

NFPA FIRE = 2  (moderate)

SECTION 5 - REACTIVITY DATA

STABILITY: Stable
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID/INCOMPATABILITY: Strong oxidizers, diazonium salts
HAZARDOUS DECOMPOSITION PRODUCTS: Hydrogen Sulfide gas (H₂S)

NFPA REACTIVITY = 1  (slight)

SECTION 6 - HEALTH HAZARD DATA

ROUTES OF ENTRY: Inhalation, ingestion, contact
TARGET ORGANS: Eyes, skin, respiratory system, central nervous system.

HEALTH HAZARDS: Because NaHS is corrosive, it presents a hazard to unprotected skin (pain,
irritation, redness or full thickness burns) and eyes (can produce severe
conjunctival irritation and chemosis, corneal epithelial defects, limbal ischemia,
and may result in permanent tissue damage). However, its most serious hazard is its
propensity to produce toxic H₂S gas when mixed with an acid or exposed to high heat
sources such as a fire. Inhalation of H₂S is irritating to the nose and throat. At
higher concentrations, it can produce olfactory fatigue, a buildup of fluid in the
lungs (pulmonary edema), severe shortness of breath, and death. Continuous exposure
to low concentrations (5 to 10 ppm) of H₂S or brief exposure to higher
concentrations (above 50 ppm) deadens the odor detecting nerves in the nose and
lessens the ability to smell dangerous concentrations. The higher the concentration
of H₂S, the faster the onset of olfactory fatigue.

CARCINOGENICITY: Inadequate evidence as a human carcinogen

EMERGENCY AND FIRST AID PROCEDURES:
INGESTION: DO NOT induce vomiting or attempt to neutralize. Dilute immediately with water
or milk, no more than 8 ounces in adults. Immediately seek medical attention.
INHALATION: Move victim into fresh air, maintain respirations, assist with artificial
respiration if needed, give oxygen if available and trained to do so. Seek emergency
medical attention.
EYES: Flush eyes with copious amounts of water for at least 30 minutes. Seek immediate
medical attention.
SKIN: Remove contaminated clothing. Wash skin with copious amounts of water for 20
minutes. If irritation persists seek medical attention.

NFPA HEALTH = 3  (high)
**Sodium Hydrosulfide**

**SECTION 7 - PRECAUTIONS FOR SAFE HANDLING AND USE**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Do NOT allow NaHS to come in contact with acids. Contain the spill. Do NOT flush to a sewer unless the sewer is designed and engineered to control the H\textsubscript{2}S that may be released. Remove sources of ignition so that any H\textsubscript{2}S released will not ignite. Provide maximum ventilation. Recover spilled material on adsorbents, such as sand or vermiculite, and place in covered containers for reclamation or disposal. For spills that exceed the 5,000-pound reporting threshold notify NRC at 1-800-424-8802.

**WASTE DISPOSAL:** Dispose in accordance with RCRA regulations. Handling must conform with EPA hazardous waste number D003, and with EPA regulations in storage, transportation, treatment and disposal of waste. Do not put in sewers or any water course.

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:** Control access and supervise product delivery and transfer. Installing local exhaust ventilation on process or storage equipment where personnel exposure is likely and ensuring that such systems are operating properly before starting a process. Installing fixed H\textsubscript{2}S monitors with alarms in NaHS storage and offloading areas where concentrations could exceed safe levels. Providing PPE and emergency eyewash and shower facilities where there is a risk of exposure to NaHS. Ensuring that NaHS-containing wastes are not flushed to acid containing sewers without controls to prevent a release of H\textsubscript{2}S. Always store NaHS separately from low pH (acidic) materials to avoid inadvertent mixing. All NaHS containers, process piping, and critical process piping valves that may contain NaHS must be clearly labeled with essential hazard information. Warn against exposure of NaHS to excessive heat or storage near open flames or other ignition sources that might generate or ignite flammable H\textsubscript{2}S. Ensure that storage containers and process equipment materials are compatible with the alkalinity of NaHS. Do not use copper, zinc, or aluminum. Implement an emergency notification system to inform emergency responders and potentially impacted offsite residents of threatening incidents.

**OTHER PRECAUTIONS:** Avoid breathing vapors. Vapors may be explosive. Accumulation of hydrogen sulfide may occur in vapor spaces of confined spaces where this product is handled, stored, or used.

**SECTION 8 - ENVIRONMENTAL AND SPECIAL PROTECTION INFORMATION**

**RESPIRATORY PROTECTION:** Use NIOSH\textbackslash MSHA full face-piece SCBA in pressure-demand or positive-pressure mode if H\textsubscript{2}S is present in concentrations exceeding PEL.

**VENTILATION:** Use in well ventilated area or provide ventilation to limit exposure to acceptable levels.

**EYE/SKIN PROTECTION:** Rubber gloves, face shields, goggles or safety glasses with side shields, protective coveralls and foot protection.

**WORK/HYGIENIC PRACTICES:** Remove contaminated clothing immediately. Always wash after handling hazardous chemicals.

**NOTICE:** This product does not contain chemicals subject to the reporting Requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

**CERCLA:** RQ = 5000 POUNDS or 2270 kg  
**WHMIS:** Hazard Classification = E, D1

NRC phone is (800) 424-8802

This notice should be included in all copies or redistribution of this Material Safety Data Sheet.
Because of the possible presence of toxic gases $\text{H}_2\text{S}$ and the corrosive nature of the product, wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Dike spill area to prevent runoff into sewers, drains (potential explosive mixtures of hydrogen sulfide in confined spaces) or surface waterways (potential aquatic toxicity). Recover as much of the solution as possible.

**REFER TO DEPARTMENT OF TRANSPORTATION (DOT) EMERGENCY RESPONSE GUIDEBOOK GUIDE 135 and 154 FOR ADDITIONAL EMERGENCY INFORMATION.**

**SECTION 9 – SHIPPING DATA**

**DOT**
- Identification #: UN 2922
- Shipping name: Corrosive liquid, toxic, N.O.S. (Sodium hydrosulfide, solution)
- Hazard class/division: 8, (6.1)
- Packing group: II
- Label: Corrosive, Toxic
- Placard required: Corrosive/2922
- RQ: 5000 pounds

**IATA**
- Identification #: UN 2922
- Shipping name: Corrosive liquid, toxic, NOS
- Hazard class/division: 8, (6.1)
- Packing group: II
- Non-bulk package Marking: UN 2922, Corrosive liquid, toxic, N.O.S. (Sodium Hydrosulfide, solution),
- Label name: Corrosive and Toxic

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