1. Identification

Product identifier: Sulfidic Caustic Solution

Other means of identification

SDS number: GENLP-TDC-003

Recommended use: Product is a unique alkaline material, playing a vital role in many industrial processes. TDC offers sulfidic caustic solutions as an additional source of sodium and sulfur.

Recommended restrictions: Use in accordance with supplier's recommendations.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer: TDC, L.L.C.
Address: 1916 Farmerville Hwy
Ruston, LA 71270

Telephone: Customer Service (800) 422-6274
Email: TDCcustomerservice@genlp.com
24 Hour Emergency Telephone: CHEMTREC 800-424-9300

2. Hazard(s) identification

Physical hazards: Corrosive to metals Category 1

Health hazards: Acute toxicity, oral Category 4
Skin corrosion/irritation Category 1
Serious eye damage/eye irritation Category 1

Environmental hazards: Hazardous to the aquatic environment, acute hazard Category 2

OSHA defined hazards: Not classified.

Label elements

Signal word: Danger

Hazard statement: May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. Toxic to aquatic life.

Precautionary statement

Prevention: Keep only in original container. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response: If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center/doctor. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Absorb spillage to prevent material damage.

Storage: Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC): None known.

Supplemental information: None.
3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium sulfide</td>
<td>1313-82-2</td>
<td>2 - 15</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>0 - 15</td>
</tr>
<tr>
<td>Sodium hydrosulfide</td>
<td>16721-80-5</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Sodium carbonate</td>
<td>497-19-8</td>
<td>0 - 4</td>
</tr>
</tbody>
</table>

Composition comments: All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. Components not listed are either non-hazardous or are below reportable limits.

4. First-aid measures

Inhalation: Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact: Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Provide eyewash station. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion: Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed: Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Causes digestive tract burns.

Indication of immediate medical attention and special treatment needed: Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information: Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: No restrictions known.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed. Hydrogen sulfide (H2S) may be given off when this material is heated. Do not depend on sense of smell for warning.

Special protective equipment and precautions for firefighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions: Cool containers exposed to heat with water spray and remove container, if no risk is involved.

Specific methods: Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Neutralization/oxidation of residue using dilute bleach or peroxide. Recover as much product as possible.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Recover the product and place in a suitable container for reuse. For waste disposal, see section 13 of the SDS.

Environmental precautions
Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling
Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Hydrogen sulfide, a very toxic gas, may be present with this material. Keep face clear of tank and/or tank car openings. When using, do not eat, drink or smoke. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store locked up. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Keep only in the original container. Store away from incompatible materials (see Section 10 of the SDS). Protect from heat and direct sunlight. Store at temperature below 150°F. Provide appropriate secondary containment.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide (CAS 1310-73-2)</td>
<td>PEL</td>
<td>2 mg/m3</td>
</tr>
</tbody>
</table>

US. ACGIH Threshold Limit Values

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide (CAS 1310-73-2)</td>
<td>Ceiling</td>
<td>2 mg/m3</td>
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US. NIOSH: Pocket Guide to Chemical Hazards

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</tbody>
</table>

Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear chemical splash goggles/face shield.

Skin protection
Hand protection
Neoprene gloves are recommended. Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Skin protection
Other
Wear appropriate chemical resistant clothing.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
9. Physical and chemical properties

Appearance
- Physical state: Liquid.
- Form: Liquid.
- Color: Light to dark brown to green or red.

Odor
Hydrocarbon or mercaptan odor, possibly also hydrogen sulfide (rotten egg).

Odor threshold
Not available.

pH
11.5 - 13.5

Melting point/freezing point
Not available.

Initial boiling point and boiling range
> 212 °F (> 100 °C)

Flash point
Not available.

Evaporation rate
Not available.

Upper/lower flammability or explosive limits
- Flammability limit - lower (%): Not available.
- Flammability limit - upper (%): Not available.
- Explosive limit - lower (%): Not available.
- Explosive limit - upper (%): Not available.

Vapor pressure
17 - 18 mm Hg (20°C / 68°F)

Vapor density
1.17 (Air = 1)

Relative density
1.1 - 1.3 (Water = 1)

Solubility(ies)
- Solubility (water): Completely soluble in water.

Partition coefficient (n-octanol/water)
Not available.

Auto-ignition temperature
Not available.

Decomposition temperature
Not available.

Viscosity
Not available.

Other information
- Explosive properties: Not explosive.
- Oxidizing properties: Not oxidizing.
- Pounds per gallon: 9.16 - 10.83 lbs/gal

10. Stability and reactivity

Reactivity
Reacts violently with strong acids. This product may react with oxidizing agents. May be corrosive to metals.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
- Contact with strong acids will release highly flammable and highly toxic hydrogen sulfide gas.
- Sodium hydroxide solution will react with trichloroethylene to form dichloroacetylene which is spontaneously flammable.

Conditions to avoid
Contact with incompatible materials. Heat, sparks, flames, elevated temperatures. Do not mix with other chemicals.

Incompatible materials

Hazardous decomposition products
Hydrogen sulfide. Contact with water produces heat, as well as toxic and corrosive fumes. Contact with metals may evolve flammable hydrogen gas. Thermal decomposition or combustion may produce: Sodium oxides. Carbonates. Peroxides.

11. Toxicological information

Information on likely routes of exposure
- Inhalation: May cause irritation to the respiratory system.
Skin contact
Causes severe skin burns.

Eye contact
Causes serious eye damage.

Ingestion
Causes digestive tract burns. Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics
Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Causes digestive tract burns.

Information on toxicological effects

Acute toxicity
Harmful if swallowed.

Components
Species
Test Results
Sodium hydrosulfide (CAS 16721-80-5)

| Acute          | Oral | LD50 | Rat | 100 - 215 mg/kg |

Skin corrosion/irritation
Causes severe skin burns.

Serious eye damage/eye irritation
Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization
Not a respiratory sensitizer.

Skin sensitization
This product is not expected to cause skin sensitization.

Germ cell mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity
This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity
Not listed.

NTP Report on Carcinogens
Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not regulated.

Reproductive toxicity
This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure
Not classified.

Specific target organ toxicity - repeated exposure
Not classified.

Aspiration hazard
Not an aspiration hazard.

Further information
No other specific acute or chronic health impact noted.

12. Ecological information

Ecotoxicity
Toxic to aquatic life.

Components
Species
Test Results
Sodium hydrosulfide (CAS 16721-80-5)

| Aquatic          | Acute | LC50 | Lepomis macrochirus | > 0.0478 mg/l, 96 Hours |
| Chronic          | Fish   | LOAEL| Lepomis macrochirus | > 0.0041 mg/l, 97 days |

Sodium hydroxide (CAS 1310-73-2)

| Aquatic          | Acute | EC50 | Ceriodaphnia dubia | 40.4 mg/l, 48 Hours |

Persistence and degradability
No data is available on the degradability of this product.

Bioaccumulative potential
No data available.

Mobility in soil
This product is water soluble and may disperse in soil.
Other adverse effects
The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

13. Disposal considerations

Disposal instructions
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations
Dispose in accordance with all applicable regulations.

Hazardous waste code
D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]
D003: Waste Reactive material
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT
UN number UN3266
UN proper shipping name Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydrosulfide, Sodium Hydroxide)
Transport hazard class(es)
Class 8
Subsidiary risk -
Label(s) 8
Packing group II
Environmental hazards
Marine pollutant Yes
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions B2, IB2, T11, TP2, TP27
Packaging exceptions 154
Packaging non bulk 202
Packaging bulk 242

IATA
UN number UN3266
UN proper shipping name Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydrosulfide, Sodium Hydroxide)
Transport hazard class(es)
Class 8
Subsidiary risk -
Label(s) 8
Packing group II
Environmental hazards Yes
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG
UN number UN3266
UN proper shipping name Corrosive liquid, basic, inorganic, n.o.s. (Sodium Hydrosulfide, Sodium Hydroxide)
Transport hazard class(es)
Class 8
Subsidiary risk -
Label(s) 8
Packing group II
Environmental hazards
Marine pollutant Yes
EmS Not available.
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable.
15. Regulatory information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
- Sodium hydrosulfide (CAS 16721-80-5) LISTED
- Sodium hydroxide (CAS 1310-73-2) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
- Immediate Hazard - Yes
- Delayed Hazard - No
- Fire Hazard - No
- Pressure Hazard - No
- Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations
- Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
  Not regulated.
- Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
  Not regulated.
- Safe Drinking Water Act (SDWA)
  Not regulated.

US state regulations
- US. Massachusetts RTK - Substance List
  Sodium hydrosulfide (CAS 16721-80-5)
  Sodium hydroxide (CAS 1310-73-2)
- US. New Jersey Worker and Community Right-to-Know Act
  Sodium hydrosulfide (CAS 16721-80-5)
  Sodium hydroxide (CAS 1310-73-2)
- US. Pennsylvania Worker and Community Right-to-Know Law
  Sodium hydrosulfide (CAS 16721-80-5)
  Sodium hydroxide (CAS 1310-73-2)
- US. Rhode Island RTK
  Sodium hydrosulfide (CAS 16721-80-5)
  Sodium hydroxide (CAS 1310-73-2)
- US. California Proposition 65
  California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Country(s) or region | Inventory name                                                                 | On inventory (yes/no)
--- | --- | ---
Korea | Existing Chemicals List (ECL) | Yes
New Zealand | New Zealand Inventory | Yes
Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes
United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes

*"Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 16-August-2016
Revision date -
Version # 01

NFPA ratings

List of abbreviations
- EC50: Effective Concentration, 50%.
- IC50: Inhibitory concentration, 50%.
- TWA: Time weighted average.
- STEL: Short term exposure limit.

Disclaimer
TDC, L.L.C. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.