Material Safety Data Sheet

Sodium hydrosulfide solution

MSDS Number 8000TDC (Revised: 07/12/2007) 6 Pages

Section 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION

1.1 Product Name .....**Sodium hydrosulfide solution**
Chemical Family ..... Inorganic salt solution
Synonyms ..... Sodium hydrogen sulfide, sodium sulfhydrate' sodium bisulfide, sodium mercaptan, KI-300
Formula ..... H-Na-S

1.2 Manufacturer .....TDC, LLC
1916 Farmerville Highway
Ruston, Louisiana 71270
Information ..... (318) 242-5305

1.3 Emergency Contact ..... (800) 422-6274
(800) 424-9300 (**CHEMTREC)**

Section 2: COMPOSITION, INFORMATION ON INGREDIENTS

2.1 Chemical Ingredients (% by wt.)

Sodium hydrosulfide	CAS #:16721-80-5	20-45%
Sodium sulfide	CAS #: 1313-82-2	<1.0% (Typical)
Sodium carbonate	CAS #: 497-19-8	<3.0% (Typical)
Water	CAS #:7732-18-5	54-79%

(See Section 8 for exposure guidelines)

Section 3: HAZARDS IDENTIFICATION

NFPA: Health - 3 Flammability - 2 Reactivity - 1

Section 3: HAZARDS IDENTIFICATION, Cont.

EMERGENCY OVERVIEW

Warning: Solution is highly alkaline
Contains hydrogen sulfide, a highly toxic gas.
Eye contact will cause marked eye irritation and possibly severe corneal damage.
Skin contact will result in irritation and possible corrosion of the skin. Ingestion will irritate/burn mouth, throat and gastrointestinal tract. Contact with stomach acid will cause hydrogen sulfide vapors to be released. Heating or acid will cause hydrogen sulfide gas to evolve. Dilution of NaHS with water will also cause increased evolution of hydrogen sulfide.

3.1 POTENTIAL HEALTH EFFECTS

EYE: Contact with the eyes will cause marked eye irritation and possibly severe corneal damage.

SKIN CONTACT: Contact with the skin will cause skin irritation or burning sensation. Prolonged contact will result in corrosion of the skin.

SKIN ABSORPTION: Absorption is unlikely to occur.

INGESTION: Ingestion will result in severe burning and corrosion of mouth, throat and the gastrointestinal tract. If the ingested material contacts stomach acid, highly toxic hydrogen sulfide gas will be evolved.

INHALATION: Product solution and vapors contain highly toxic hydrogen sulfide gas. Exposure to this gas causes, headaches, nausea, dizziness and vomiting. Continued exposure can lead to loss of consciousness and death..

CHRONIC EFFECTS/CARCINOGENICITY: Not listed as a carcinogen by NTP, IARC or OSHA.

Section 4: FIRST AID MEASURES

4.1 EYES: Immediately flush with large quantities of water for a minimum of 15 minutes. Hold eyelids apart during irrigation to insure thorough flushing of the entire area of the eye. Obtain immediate medical attention.

4.2 SKIN: Immediately flush with large quantities of water. Remove contaminated clothing under a safety shower. Obtain immediate medical attention

4.3 INGESTION: DO NOT INDUCE VOMITING. If victim is conscious, immediately give 2 to 4 glasses of water. If vomiting does occur, repeat fluid administration. Obtain immediate medical attention.

4.4 INHALATION: Remove victim from contaminated atmosphere. If breathing is labored, administer oxygen. If breathing has ceased, clear airway and start artificial respiration with the aide of a pocket mask equipped with a one way valve or other proper respiratory medical device. If heart has stopped beating, external heart massage should be applied. Obtain immediate medical attention.

Section 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

FLASH POINT: Not flammable **METHOD USED:** NA

Section 5: FIRE FIGHTING MEASURES, Cont.

5.2 FLAMMABLE LIMITS **Hydrogen sulfide** **LFL**: 4% **UFL**: 44%

5.3 EXTINGUISHING MEDIA: Water spray or foam or as appropriate for combustibles involved in fire.

5.4 FIRE & EXPLOSIVE HAZARDS: Solution is non-flammable. However if these solutions are exposed to heat or acids, hydrogen sulfide will be released and may form explosive mixtures with air (see above).

Keep containers/storage vessels in fire area cooled with water spray. Heating may cause the release of hydrogen sulfide vapors.

5.5 FIRE FIGHTING EQUIPMENT: Because of the possible presence of toxic gases and the corrosive nature of the product, wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 Small releases: Isolate for 100 feet. Confine area to qualified response personnel. Wear proper Personnel Protective equipment (See Section 8). Confine release material by berming or diverting its path. Absorb on sand, earth or other inert dry absorbent. Do not allow into sewer, storm drains or any waterway. Oxidize residual reactive sulfides with a weak (3-5%) hydrogen peroxide solution to stop the release of toxic hydrogen sulfide. Remove contaminated soil and dispose of in accordance with all governmental regulations.

6.2 Large releases: Activate Emergency Response Plan procedures. Isolate release area for 700 feet. Confine area to qualified response personnel. Wear proper Personnel Protective Equipment (See Section 8). Shut off release, if safe to do so. Dike spill area to prevent runoff into sewers, drains (potential toxic and explosive mixtures of hydrogen sulfide in confined spaces) or surface waterways (potential aquatic toxicity). Recover as much of the solution as possible. Treat remaining material as a small release (above).

Section 7: HANDLING and STORAGE

7.1 Handling: Wear proper protective equipment (See Section 8). Avoid breathing product vapors. Avoid contact with skin and eyes. Use only in a well ventilated area. Dilute product only in enclosed containers. Wash thoroughly after handling.

7.2 Storage: Store in well ventilated areas. Do not store combustibles in the area of storage vessels. Keep away from any sources of heat or flame. Store tote and smaller containers out of direct sunlight at moderate temperatures [<80º F (27º C)]. (See Section 10.4 for materials of construction)

Section 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

8.1 RESPIRATORY PROTECTION: If working near open container, storage vessel opening or open tank truck dome cover, wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH (approved or equivalent).

Section 8: EXPOSURE CONTROLS, PERSONAL PROTECTION, Cont.

8.2 SKIN PROTECTION: Neoprene rubber gloves, chemical suit and boots should be worn to prevent contact with the liquid. Wash contaminated clothing prior to reuse. Contaminated leather shoes cannot be cleaned and should be discarded.

8.3 EYE PROTECTION: Chemical goggles and a full face shield.

8.4 EXPOSURE GUIDELINES:

	OSHA		ACGIH	
	TWA	STEL	TLV	STEL
Hydrogen sulfide	20 ppm (ceiling)		10 ppm (ceiling)	

8.5 ENGINEERING CONTROLS: Use adequate exhaust ventilation to prevent inhalation of product vapors. Where feasible scrub process or storage vessel vapors with caustic solution.
Maintain eyewash/safety shower in areas where chemical is handled.

Section 9: PHYSICAL and CHEMICAL PROPERTIES

9.1 APPEARANCE:	May be yellow to red, to dark green to black liquid.
9.2 ODOR:	Hydrogen sulfide (rotten egg), hydrocarbon (mercaptan) odor.
9.3 BOILING POINT:	253 °F (122.8 °C) - 269 °F (131.7 °C)
9.4 VAPOR PRESSURE:	17 mm Hg @ 68 °F (20 °C)
9.5 VAPOR DENSITY: (Air = 1.0)	1.17
9.6 SOLUBILITY IN WATER:	Complete
9.7 SPECIFIC GRAVITY:	1.152 - 1.303 (9.6 - 10.9 lbs/gal)
9.8 FREEZING POINT:	0° F (-17.8° C) - 20% 56º F (13.3º C) - 45%
9.9 pH:	11.5 - 12.5
9.10 VOLATILE:	Not determined

Section 10: STABILITY and REACTIVITY

10.1 STABILITY: This is a stable material

10.2 HAZARDOUS POLYMERIZATION: Will not occur.

10.3 HAZARDOUS DECOMPOSITION PRODUCTS: Heating this product will evolve hydrogen sulfide. Fire conditions will also cause the production of sulfur dioxide. Hydrogen sulfide (4-44%) may form flammable mixtures with air. Heating to decomposition emits toxic fumes of sulfoxides and Na_2O

10.4 INCOMPATIBILITY: Acids will cause the release of highly toxic hydrogen sulfide. Reacts violently with diazonium salts. **Sodium hydrosulfide solution is not compatible with copper, zinc, aluminum or their alloys** (i.e. bronze, brass, galvanized metals, etc.). Corrosive to steel above 150º F (65.5º C). These materials of construction should not be used in handling systems or storage containers for this product (SEE Section 7.2, Storage). Dilution of NaHS with water will increase the evolution of hydrogen sulfide. Dilution should be done in an enclosed container.

Section 11: TOXICOLOGICAL INFORMATION

11.1 ORAL: Data not available

Section 11: TOXICOLOGICAL INFORMATION, Cont.

11.2 DERMAL: Data not available

11.3 INHALATION: INH-RAT LC_{50}: 444 ppm (hydrogen sulfide)
INH-MOUSE LC_{50}: 1,500 mg/m^3 18 minutes
INH-RAT LC_{50}: 1,500 mg/m^3 14 minutes

11.4 CHRONIC/CARCINOGENICITY: No evidence available

11.5 TERATOLOGY: Data not available

11.6 REPRODUCTION: Data not available

11.7 MUTAGENICITY: Data not available

Section 12: ECOLOGICAL INFORMATION

Static acute 96 hour-LC_{50} for mosquito fish is 206 mg/L. (Tl_m - fresh water)
LC_{50} fly inhalation 1,500 mg/m^3, 7 minutes
TL_m Gammarus 0.84 mg/L, 96 hours (hydrogen sulfide)
TL_m Ephemera 0.316 mg/L, 96 hours (hydrogen sulfide)
TL_m Flathead minnow 0.071 – 0.55 mg/L @ 6-24ºC, 96 hour flow through bioassay (hydrogen sulfide)
TL_m Bluegill 0.0090 – 0.0140 mg/L @ 20-22ºC, 96 hour flow through bioassay (hydrogen sulfide)
TL_m Brook trout 0.0216 – 0.0308 mg/L @ 8-12.5ºC, 96 hour flow through bioassay (hydrogen sulfide)

Section 13: DISPOSAL CONSIDERATIONS

If released to the environment for other than its intended purpose, this product contains some reactive sulfides which may be in sufficient quantity to meet the definition of a D003, hazardous waste.

Section 14: TRANSPORT INFORMATION

14.1 DOT Shipping Name:	Corrosive liquids, toxic, n.o.s.	
14.2 DOT Hazard Class:	8 (6.1)	
14.3 UN/NA Number:	UN2922	UN2949 (IMDG - over water)
14.4 Packing Group:	II	
14.5 DOT Placard:	Corrosive	
14.6 DOT Label(s):	Corrosive, Toxic	
14.7 IMO Shipping Name:	Sodium hydrosulphide solution	
14.8 RQ (Reportable Quantity):	5,000 lbs (2268 Kg) 100% basis [2,604 gal (20%) 1,019 gal (45%)]	

Section 14: TRANSPORT INFORMATION, Cont

14.9 RR STCC Number: 28-123-33/49-352-04

14.10 USCG Codes: Bulk — SHR (sodium hydrosulfide solution)
Barge — SSI (Sodium sulfide, hydrosulfide solutions, H_2S greater than 15 ppm but less than 200 ppm)

Section 15: REGULATORY INFORMATION

15.1 OSHA: This product is listed as a hazardous material under criteria of the Federal OSHA Hazard Communication Standard, 29 CFR 1910.1200.

15.2 SARA TITLE III:

a.	EHS (Extremely Hazardous Substance) List:		No
b.	Section 311/312, (Tier I,II) Categories:	Immediate (acute)	Yes
		Fire	Yes
		Sudden release	No
		Reactivity	Yes
		Delayed (chronic)	No
c.	Section 313 (Toxic Release Report-Form R):		No
d.	TPQ (Threshold Planning Quantity):		No

15.3 CERCLA/SUPERFUND: RQ (Reportable Quantity) 5,000 lbs (2270 Kg)

15.4 TSCA (Toxic Substance Control Act) Inventory List: Yes

15.5 RCRA (Resource Conservation and Recovery Act) Status: D003 (See Section 13)

15.6 WHMIS (Canada) Hazard Classification: E, D1

15.7 DOT Hazardous Material: (See Section 14) Yes

15.8 CAA Hazardous Air Pollutant (HAP) No

Section 16: OTHER INFORMATION

REVISIONS:
Entire MSDS was reformatted to comply to ANSI Standard Z400.1-1993.
Revised Sections 1.1, 8.3, 11, 12, 5/7/02
Revised pH range in Section 8, 6/19/02
Revised shipping info & RQ data, 1/15/03
Revised Section 3, Emergency Overview & Section 10.4 to include dilution caution. 1/23/04
Revised Section 2.1, Ingredients & Section 15, added USCG Codes. 5/3/04
Revised Section14.10 (added), 15.9 (deleted), USCG shipping codes, 7/21/04.
Revised Logo and Emergency contact telephone number, 2/23/07
Revised 4.4 inhalation information, 7/12/07