Material Safety Data Sheet

NITRO-SUL®, 20-0-0-40S

MSDS Number 5000 (Revised: 1/22/10) 6 Pages

Section 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION

1.1 Product Name ..... **NITRO-SUL®, 20-0-0-40S**
Chemical Family ..... Inorganic salt solution
Synonyms ..... Ammonium polysulfide and ammonium hydroxide, APS
Formula ..... $(NH_4)_2S_X$

1.2 Manufacturer .....Tessenderlo Kerley Inc.
2255 N. 44th Street, Suite 300
Phoenix, Arizona 85008-3279
Information .....…..... (602) 889-8300

1.3 Emergency Contact ..... (800) 877-1737 (Tessenderlo Kerley)
(800) 424-9300 (CHEMTREC)

Section 2: COMPOSITION, INFORMATION ON INGREDIENTS

2.1 Chemical Ingredients (% by wt.)

Ammonium polysulfide	CAS #:12259-92-6	49%
Ammonium hydroxide	CAS #:1336-21-6	33%
Free Water	CAS #:7732-18-5	18%

(See Section 8 for exposure guidelines)

Section 3: HAZARDS IDENTIFICATION

NFPA: Health - 3 Flammability - 1 Reactivity - 1

EMERGENCY OVERVIEW

Warning: Avoid inhalation of product fumes near openings on storage container.
Upon release of product solution to the environment ammonia and
hydrogen sulfide vapors will evolve. Both of these gases are highly toxic.
Product solution is alkaline and corrosive to the skin.
Eye contact will cause severe eye irritation and possible corneal damage.
Ingestion will result in corrosion of tissues of the gastrointestinal tract.

Section 3: HAZARDS IDENTIFICATION

3.1 POTENTIAL HEALTH EFFECTS

EYE: Contact with the eyes by product mist or solution will cause irritation and a burning sensation. Eye contact may result in severe corneal injury.

SKIN CONTACT: Contact with product mist or solution will cause skin irritation and may result in corrosion of the skin.

SKIN ABSORPTION: Absorption is unlikely to occur.

INGESTION: Ingestion of product solution will cause irritation and corrosion of the gastrointestinal tract to include nausea, vomiting and diarrhea. Contact with stomach acid will cause highly toxic hydrogen sulfide to evolve.

INHALATION: Inhalation of product vapors (ammonia and hydrogen sulfide) will cause dizziness and unconsciousness possibly resulting in serious falls from elevated positions..

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 15 minutes. Hold eyelids apart during irrigation to insure thorough flushing of the entire area of the eye and lids. 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 large quantities of water. If vomiting does occur, continue to give fluids. 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 mouth to mouth resuscitation. 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 (See Section 5.4) **METHOD USED:** NA

5.2 FLAMMABLE LIMITS

H_2S	**LFL**: 4%	**UFL**: 44%
NH_3	**LFL**: 16%	**UFL**: 28%

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

Section 5: FIRE FIGHTING MEASURES (Cont.)

5.4 FIRE & EXPLOSIVE HAZARDS: .When heated or diluted ammonia vapors and hydrogen sulfide vapors will evolve. Both of these gases may form explosive mixtures with air. (See Section 5.2) Keep containers/storage vessels in fire area cooled with water spray.

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: Confine and absorb small releases on sand, earth or other inert absorbent. Released material may contain residual sulfides. Spray with weak (~5%) hydrogen peroxide to oxidize sulfides.

6.2 Large releases: Confine area to qualified personnel. Wear proper protective equipment. Shut off release if safe to do so. Dike spill area to prevent runoff into sewers, drains (possible explosive mixtures) or surface waterways (potential aquatic toxicity). Spray product vapors with water spray or mist. Recover as much of the solution as possible. Treat remaining material as a small release (above).

Section 7: HANDLING and STORAGE

7.1 Handling: Handle in enclosed containers to avoid breathing product. Avoid contact with skin and eyes. Dilute only in enclosed containers. Use in a well ventilated area. Wash thoroughly after handling.

7.2 Storage: Store in well ventilated areas in enclosed containers. 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 [<90ºF (32ºC)]. (See Section 10.4 for materials of construction)

Section 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

8.1 RESPIRATORY PROTECTION: Wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH (approved or equivalent).

8.2 SKIN PROTECTION: Gloves, boots, and chemical suit should be worn to prevent liquid contact. Wash contaminated clothing prior to reuse. Contaminated 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
Ammonia	25 ppm	35 ppm	25 ppm	35 ppm
Hydrogen sulfide	20 ppm (ceiling)		10 ppm (ceiling)	

8.5 ENGINEERING CONTROLS: Use adequate exhaust ventilation to prevent inhalation of product vapors. Maintain eyewash/safety shower in areas where chemical is handled.

Section 9: PHYSICAL and CHEMICAL PROPERTIES

9.1 APPEARANCE:	Ruby red liquid
9.2 ODOR:	Strong ammonia odor.
9.3 BOILING POINT:	100 °F(38 °C)
9.4 VAPOR PRESSURE:	314 mm Hg @ 70 °F (21.1 °C)
9.5 VAPOR DENSITY:	Not determined
9.6 SOLUBILITY IN WATER:	Dissolves with precipitation of elemental sulfur.
9.7 SPECIFIC GRAVITY:	1.13 - 1.16 (9.4 - 9.7 lbs/gal)
9.8 FREEZING POINT:	0º - 32º F (-17.8º - 0º C)
9.9 pH:	10.8 - 11.5
9.10 VOLATILE:	Not applicable

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 initially evolve ammonia. As the pH of the solution decreases more hydrogen sulfide vapors will evolve. Continued heating will also cause oxides of nitrogen to be released.

10.4 INCOMPATIBILITY: Strong oxidizers such as nitrates, nitrites or chlorates can cause explosive mixtures if heated to dryness. Acids will cause the release of hydrogen sulfide, a highly toxic gas and ammonia. Alkalies will accelerate the evolution of ammonia. Ammonium polysulfide is not compatible with copper, zinc or their alloys (i.e. bronze, brass, galvanized metals, etc.). These materials of construction should not be used in handling systems or storage containers for this product. (SEE Section 7.2, Storage)

Section 11: TOXICOLOGICAL INFORMATION

11.1 ORAL: Oral-Rat LD_{50}: 152 mg/Kg (ammonium polysulfide)
Oral-Rat LD_{50}: 350 mg/Kg (ammonium hydroxide)

11.2 DERMAL: Data not available

11.3 INHALATION: Data not available

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

No data available.

Section 13: DISPOSAL CONSIDERATIONS

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

Section 14: TRANSPORT INFORMATION

14.1 DOT Shipping Name:		Ammonium polysulfide solution
14.2 DOT Hazard Class:		8, 6.1
	IMO:	8, 6.1
14.3 UN/NA Number:		2818
	IMO:	2818
14.4 Packing Group:		III
14.5 DOT Placard:		Corrosive
	IMO:	Corrosive, poison
14.6 DOT Label(s):		Corrosive, poison
	IMO:	Corrosive, poison
14.7 IMO Shipping Name:		Ammonium polysulphide solution
14.8 RQ (Reportable Quantity):		100 lbs (Hydrogen sulfide released - requires 176 gal of product.)
14.9 RR STCC Number:		28-714-33

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 Reporting-Form R):		Yes

Section 15: REGULATORY INFORMATION, Cont

Chemical Name	CAS Number	Concentration
Ammonia	7664-41-7	24.3%

d. **TPQ** (Threshold Planning Quantity): No

15.3 CERCLA/SUPERFUND: RQ (Reportable Quantity) No

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

15.5 RCRA (Resource Conservation and Recovery Act) Status: No (See Section 13)

15.6 WHMIS (Canada) Hazard Classification: E, D2B

15.7 DOT Hazardous Material: (See Section 14) Yes

15.8 CAA Hazardous Air Pollutant (HAP) No

Section 16: OTHER INFORMATION

REVISIONS: The entire MSDS was reformatted to comply to ANSI Standard Z400.1-1993, by Technical Services-Tessenderlo Kerley, Inc.

Address updated, 4/30/99
Section 8.3, Eye Protection revised and revised logo, 4/30/02
Section 13, Disposal considerations revised, 5/12/06
Section 14, Transportation Information revised 1/02/08
Revised Section 2.1, to correct typographical error in compound percentage., 1/22/10.