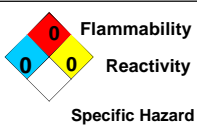





NFPA Classification	DOT / TDG Pictograms	WHMIS Classification	HMIS		PROTECTIVE CLOTHING
			Health	1	
			Flammability	0	
			Reactivity	0	
			PPE	B	

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME Ammonium Thiosulfate Solution

SYNONYM 12-0-0-26 Ammonium Thiosulfate

MSDS NUMBER: 16002

CHEMICAL NAME Ammonium thiosulfate

REVISION NUMBER 1.0

CHEMICAL FAMILY Inorganic sulfate salt. (Alkali.)

MSDS prepared by September 17, 2006
the Environment,
Health and Safety
Department on:

CHEMICAL FORMULA $(\text{NH}_4)_2\text{S}_2\text{O}_3$

24 HR EMERGENCY TELEPHONE NUMBER:

MATERIAL USES Agricultural industry: Fertilizer.
Industrial applications: Manufacture of specialty fertilizers.

Transportation: 1-800-792-8311
Medical: 1-888-670-8123

MANUFACTURER

Various

SUPPLIER

Agrium
North American Wholesale
13131 Lake Fraser Drive, S.E.
Calgary, Alberta, Canada, T2J 7E8

Agrium U.S. Inc.
Suite 1700, 4582 South Ulster St.
Denver, Colorado, U.S.A., 80237

Section II. Hazardous Ingredients

NAME	CAS #	Exposure Limits (ACGIH)						% by Weight
		TLV-TWA mg/m ³	TLV-TWA ppm	STEL mg/m ³	STEL ppm	CEIL mg/m ³	CEIL ppm	
No regulated components.								

ACGIH TLV notations:

--- No assigned TLV

(C) - Ceiling - the concentration not to be exceeded at any time

(I) - measured as the Inhalable fraction of the aerosol

(R) - measured as the Respirable fraction of the aerosol

(T) - measured as the Thoracic fraction of the aerosol

TOXICOLOGICAL DATA ON INGREDIENTS Ammonium Thiosulfate Solution TFI Product Testing Plan Results:

Acute oral toxicity, LD₅₀: 1,950-2,890 mg/kg (rat); 2,100->3,000 mg/kg (mouse)
Acute inhalation toxicity, LC₅₀: >1,800 mg/m³ (mouse 4hrs); >2,260 mg/m³ (rat 4hrs)
Repeated dose toxicity, LOAEL, rat: Oral 45-90 days - 300 mg/kg/day;
Inhalation 2 or 4 months 26.77 mg/m³
Skin irritation, OECD 404, rabbit, rat: not irritating
Eye irritation, OECD 405, rabbit: not irritating

Ecotoxicity:

Acute toxicity to fish, species not specified, 48 hr LC₅₀: >48.6 mg total NH₃/L

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS	This product may irritate eyes and skin upon prolonged or repeated contact. Over-exposure by inhalation may cause respiratory tract irritation. Ingestion of this substance may produce irritation of the gastro-intestinal tract, characterized by burning and diarrhea.
POTENTIAL CHRONIC HEALTH EFFECTS	CARCINOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA. MUTAGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA. TERATOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA. Chronic toxicity testing in rats indicated the development of CNS effects (twitching of the extremities) and reduced growth at doses in excess of 26.77 mg/m ³ . The significance or possibility of these findings in other species is unknown.

Section IV. First Aid Measures

EYE CONTACT	Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Obtain medical attention if irritation persists.
MINOR SKIN CONTACT	May cause skin irritation. Wash contaminated skin with soap and water. Cover dry or irritated skin with a good quality skin lotion. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.
EXTENSIVE SKIN CONTACT	No additional information.
MINOR INHALATION	Over-exposure by inhalation may cause respiratory irritation. Loosen tight clothing. Allow affected persons to rest in a well ventilated area. Give artificial respiration if breathing has stopped. Obtain immediate medical attention.
SEVERE INHALATION	No additional information.
SLIGHT INGESTION	Do not induce vomiting. Low toxicity. May cause digestive tract irritation, with accompanying nausea, vomiting and diarrhea. If spontaneous vomiting does occur, lower the head so that the vomit will not reenter the mouth and throat. If tolerated, give no more than 1 cup of milk or water for adults or 1/2 cup for children to rinse the mouth and throat, dilute the stomach contents, and minimize irritation. Obtain medical attention if irritation persists.
EXTENSIVE INGESTION	No additional information.

Section V. Fire and Explosion Data

THE PRODUCT IS	Non-flammable.
AUTO-IGNITION TEMPERATURE	Not applicable.
FLASH POINT	Not applicable.
FLAMMABILITY LIMITS	Not applicable.
PRODUCTS OF COMBUSTION	Not applicable.
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not applicable.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	This product is non-explosive.
FIRE FIGHTING MEDIA AND INSTRUCTIONS	Non-flammable.

Continued on Next Page

SPECIAL REMARKS ON FIRE HAZARDS

Non combustible. Avoid temperatures above 100°C (212°F). On evaporation to dryness thermal decomposition may result. Emits toxic fumes on decomposition (ammonia, sulfur oxides). A self contained breathing apparatus should be used to avoid inhalation of toxic fumes.

SPECIAL REMARKS ON EXPLOSION HAZARDS

The substance is not explosive. May react with chlorine bleach to generate heat or explosive nitrogen trichloride.

Section VI. Accidental Release Measures

SMALL SPILL

Absorb with an inert material and place in an appropriate waste disposal container. Ensure disposal complies with local regulations.

LARGE SPILL

Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses, wells, etc. Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 250 mg/L (U.S.) or 500 mg/L (Canada). Will dissolve and disperse in water. Reclaiming material may not be viable. Recover and place material in suitable containers for recycle, reuse, or disposal. Ensure disposal complies with government requirements and local regulations.

Section VII. Handling and Storage

PRECAUTIONS

Keep out of reach of children. Wear suitable protective clothing, gloves and eye/face protection. Keep in a cool, well-ventilated place away from acids or bleaches.

STORAGE

Keep in a cool, well-ventilated place. Ensure compatibility with storage vessel materials of construction.

Section VIII. Exposure Controls/Personal Protection

ENGINEERING CONTROLS

If user operations generate mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

PERSONAL PROTECTION

The selection of personal protective equipment varies, depending upon conditions of use. Wear appropriate respiratory protection for dust/mist when ventilation is inadequate. A filtering facepiece dust mask is recommended for most applications if respiratory protection is needed. Where skin and eye contact may occur as a result of brief periodic exposures, wear long sleeved clothing, coveralls, chemical resistant gloves, and safety glasses with side shields.

PERSONAL PROTECTION IN CASE OF LARGE RELEASE

No additional information.

EXPOSURE LIMITS

Fed OSHA PEL:
If mists are generated, 15 mg/m³ total particulate, 5 mg/m³ respirable particulate as Particulates Not Otherwise Regulated.

Federal, State or Provincial exposure limits may vary by jurisdiction. Consult local authorities for acceptable exposure limits in your area.

Section IX. Physical and Chemical Properties

PHYSICAL STATE AND APPEARANCE

Liquid. (Clear to slightly hazy liquid.)

MOLECULAR WEIGHT

148.2

COLOR

Clear

pH (10% SOLN/WATER)

8

ODOR

Almond-like. (Slight.)

BOILING POINT

Decomposes.

ODOR THRESHOLD

~17 ppm, odor recognition threshold for ammonia

MELTING POINT

2°C (35.6°F)

TASTE

Saline.

CRITICAL TEMPERATURE

Not applicable.

VOLATILITY

Not available.

SPECIFIC GRAVITY g/cc

1.32 (Water = 1)

SOLUBILITY

Easily soluble in cold water, hot water.

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BULK DENSITY kg/m ³ ; lbs/ft ³	~1320 kg/m ³ ; 82.4 lbs/ft ³ ; ~11.0 lbs/gal (US).	DISPERSION PROPERTIES	See solubility in water.
VAPOR PRESSURE	Not applicable.	WATER/OIL DIST. COEFF.	Not available.
VAPOR DENSITY	Not applicable.		

Section X. Stability and Reactivity Data

STABILITY	The product is stable.
INSTABILITY TEMPERATURE	Not applicable.
CONDITIONS OF INSTABILITY	No additional remark.
INCOMPATIBILITY WITH VARIOUS SUBSTANCES	Slightly reactive to reactive with reducing agents, metals, acids. Non-reactive with oxidizing agents, combustible materials, organic materials, alkalis.
CORROSIVITY	Extremely corrosive to copper, brass, and iron. Corrosive to mild steel. Slightly corrosive to aluminum. Non-corrosive to 304 or 316 stainless steel.
SPECIAL REMARKS ON REACTIVITY	Incompatible with a wide variety of metals (copper, brass, and iron).
SPECIAL REMARKS ON CORROSIVITY	Will corrode a wide variety of metals. Incompatible with copper and its alloys. Corrosive to brass and iron. Contact your sales representative or a metallurgical specialist to ensure compatibility with your equipment.

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Ingestion. Inhalation.
TOXICITY TO ANIMALS	See Section II.
SPECIAL REMARKS ON TOXICITY TO ANIMALS	Will release ammonium ions. Ammonia is a toxic hazard to fish. May be harmful to livestock and wildlife if ingested. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs.
OTHER EFFECTS ON HUMANS	Our data base contains no additional remark on the toxicity of this product
SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS	Can cause gastrointestinal disturbances. Exposure can cause stomach pains, vomiting and diarrhea. Used medically as a cathartic (laxative).
SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS	No additional remark.

Section XII. Ecological Information

ECOTOXICITY	Low toxicity for humans or animals under normal conditions of use. Non-persistent. Non-cumulative when applied using normal agricultural practises. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use. Aquatic/Marine Toxicity: Will release ammonium ions. Ammonia is a toxic hazard to fish. Avoid spills or release to watercourses. U.S. D.O.T.: This material NOT listed as a Marine pollutant.
BOD and COD	Not available.
PRODUCTS OF DEGRADATION	Not applicable.


Continued on Next Page

TOXICITY OF THE PRODUCTS OF DEGRADATION	The product itself and its products of degradation are not harmful under normal conditions of use. Avoid spills or releases to watercourses.
SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION	The product itself and its products of degradation are not harmful under normal conditions of use if proper precautions are followed. Will disperse in water. Reclaiming material may not be viable. Sulfates in potable water should be maintained at less than 250 mg/L (U.S.) and 500 mg/L (Canada). Will dissolve and disperse in water. Reclaiming material may not be viable.

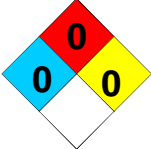


Section XIII. Disposal Considerations

WASTE DISPOSAL OR RECYCLING	Recover by pumping and place material in a suitable container for intended use or disposal, or absorb with an inert material and put the spilled material in an appropriate waste disposal. Ensure disposal complies with government requirements and local regulations.
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Section XIV. Transport Information

DOT / TDG CLASSIFICATION	Not controlled under DOT (US) or TDG (Canada).
PIN and Shipping Name	Not applicable.
SPECIAL PROVISIONS FOR TRANSPORT	Not applicable.
DOT (U.S.A) (Pictograms)	

Section XV. Other Regulatory Information and Pictograms

OTHER REGULATIONS	<p>CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product is on the Domestic Substances List (DSL), and acceptable for use under the provisions of CEPA.</p> <p>TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.</p> <p>This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:</p> <p style="padding-left: 20px;">Ammonium thiosulfate, CAS # 7783-18-8, 22.98 wt % ammonia (includes aqueous ammonia from water dissociable ammonium salts and other sources, 10% of which is reportable under this listing).</p> <p>This product has been classified in accordance with the hazard criteria of the Controlled Products</p>		
OTHER CLASSIFICATIONS	HCS (U.S.A.)	Not controlled under the HCS (United States).	
	DSCL (EEC)	Not controlled under DSCL (Europe).	
National Fire Protection Association (U.S.A.)	Hazards presented under acute emergency conditions only:	<p>Health </p>	<p>Fire Hazard</p> <p>Reactivity</p> <p>Specific Hazard</p>
TDG (Pictograms - Canada)			
DSCL (Europe) (Pictograms)			

ADR (Europe)
(Pictograms)**Section XVI. Other Information****REFERENCES**

-Transportation of Dangerous Goods Act and Clear Language Regulations, current revision.
 -Canada Gazette Part II, Vol. 122, No. 2 Registration SOR/88-64 31 December, 1987 Hazardous Products Act "Ingredient Disclosure List".
 -Domestic Substances List, Canadian Environmental Protection Act.
 -29 CFR Part 1910
 -33 CFR Parts 151, 153, 154, 156
 -40 CFR Parts 1-799
 -46 CFR Part 153
 -49 CFR Parts 1-199
 -American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances, 2006.
 -NFPA 704, National Fire Codes Online, National Fire Protection Association, current edition at time of MSDS preparation.
 -Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers
 -TOMES® System: Heitland G & Hurlbut KM (Eds) (electronic version): MICROMEDEX, Greenwood Village, Colorado, USA. Available at: <http://csi.micromedex.com> (2006). The TOMES® System includes MEDITEXT® Medical Management; HAZARDTEXT® Hazard Management; INFOTEXT® Documents; ERG2000 Emergency Response Guidebook Documents; REPROTEXT®: Heitland G & Hurlbut KM (Eds); CHRIS Hazardous Chemical Data: U.S. Department of Transportation, U.S. Coast Guard, Washington, D.C. (2006); HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland (2006); IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C. (2006); NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2006); OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C. (2006); REPROTOX®: Scialli A.R. Georgetown University Medical Center and Reproductive Toxicology Center, Columbia Hospital for Women Medical Center, Washington, D.C. (2006); RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2006); and SHEPARDS: Shepard T.H.: Shepard's Catalog of Teratogenic Agents (2006).
 -The Fertilizer Institute Product Testing Program Results, March 2003

OTHER SPECIAL CONSIDERATIONS

This revision, HMIS information added.

FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON THIS PRODUCT, CONTACT

AGRIUM
 Wholesale Environment, Health and Safety
 Telephone (780) 998-6906 or Fax (780) 998-6677

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