

GARDENA, CA  
NEW BRUNSWICK, NJ

# Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Fire Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table>	Health Hazard	2	Fire Hazard	0	Reactivity	0	 See Section 15.
Health Hazard	2							
Fire Hazard	0							
Reactivity	0							

## Section 1. Chemical Product and Company Identification

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Common Name/ Trade Name	Silver nitrate	Catalog Number(s).	S1085, S1086, S1115
		CAS#	7761-88-8
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	RTECS	VW4725000
		TSCA	TSCA 8(b) inventory: Silver nitrate
Commercial Name(s)	Lunar caustic	CI#	Not available.
Synonym	Silver (1+) nitrate; Nitric acid, silver (1+) salt	<b>IN CASE OF EMERGENCY</b> <a href="tel:800-424-9300">CHEMTREC (24hr) 800-424-9300</a>  CALL (310) 516-8000	
Chemical Name	Silver Nitrate		
Chemical Family	Not available.		
Chemical Formula	AgNO <sub>3</sub>		
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248		

## Section 2. Composition and Information on Ingredients

		Exposure Limits			
Name	CAS #	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	% by Weight
1) Silver nitrate	7761-88-8	0.01			100

Toxicological Data on Ingredients	Silver nitrate:	
	ORAL (LD50):	Acute: 1173 mg/kg [Rat]. 50 mg/kg [Mouse]. 473 mg/kg [Guinea pig].

## Section 3. Hazards Identification

Potential Acute Health Effects	Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive). The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation.
Potential Chronic Health Effects	<b>CARCINOGENIC EFFECTS:</b> Not available. <b>MUTAGENIC EFFECTS:</b> Not available. <b>TERATOGENIC EFFECTS:</b> Not available. <b>DEVELOPMENTAL TOXICITY:</b> Not available. The substance is toxic to lungs. The substance may be toxic to mucous membranes, skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

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**Section 4. First Aid Measures**

<b>Eye Contact</b>	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
<b>Skin Contact</b>	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
<b>Serious Skin Contact</b>	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
<b>Serious Inhalation</b>	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. <b>WARNING:</b> It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.
<b>Ingestion</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Serious Ingestion</b>	Not available.

**Section 5. Fire and Explosion Data**

<b>Flammability of the Product</b>	Non-flammable.
<b>Auto-Ignition Temperature</b>	Not applicable.
<b>Flash Points</b>	Not applicable.
<b>Flammable Limits</b>	Not applicable.
<b>Products of Combustion</b>	Not available.
<b>Fire Hazards in Presence of Various Substances</b>	organic materials, combustible materials
<b>Explosion Hazards in Presence of Various Substances</b>	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
<b>Fire Fighting Media and Instructions</b>	Not applicable.
<b>Special Remarks on Fire Hazards</b>	Contact with combustible or organic materials may cause fire.
<b>Special Remarks on Explosion Hazards</b>	Silver nitrate mixed with dry powdered magnesium may ignite explosively on contact with a drop of water. An explosive fulminate may be formed if silver nitrate is mixed with alcohols. Highly explosive is formed by the addition of calcium carbide to silver nitrate solution.

**Section 6. Accidental Release Measures**

<b>Small Spill</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
<b>Large Spill</b>	Oxidizing material. Corrosive solid. Stop leak if without risk. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

**Section 7. Handling and Storage**

<b>Precautions</b>	Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from combustible material.. Do not ingest. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers. Sensitive to light. Store in light-resistant containers.

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>Personal Protection</b>	Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
<b>Personal Protection in Case of a Large Spill</b>	Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Exposure Limits</b>	TWA: 0.01 (mg/m <sup>3</sup> Ag) from ACGIH (TLV) [United States] TWA: 0.01 (mg/m <sup>3</sup> Ag) from OSHA (PEL) [United States]  Consult local authorities for acceptable exposure limits.

**Section 9. Physical and Chemical Properties**

<b>Physical state and appearance</b>	Solid. (Crystals solid.)	<b>Odor</b>	Not available.
<b>Molecular Weight</b>	169.87 g/mole	<b>Taste</b>	Bitter. Metallic
<b>pH (1% soln/water)</b>	6 - 7 [slightly acidic to neutral]	<b>Color</b>	Colorless. White.
<b>Boiling Point</b>	Decomposition temperature: 440°C (824°F)		
<b>Melting Point</b>	212°C (413.6°F)		
<b>Critical Temperature</b>	Not available.		
<b>Specific Gravity</b>	4.35 (Water = 1)		
<b>Vapor Pressure</b>	Not applicable.		
<b>Vapor Density</b>	5.8 (Air = 1)		
<b>Volatility</b>	Not available.		
<b>Odor Threshold</b>	Not available.		
<b>Water/Oil Dist. Coeff.</b>	Not available.		
<b>Ionicity (in Water)</b>	Not available.		
<b>Dispersion Properties</b>	See solubility in water, diethyl ether.		
<b>Solubility</b>	Easily soluble in cold water, hot water. Soluble in diethyl ether. Very slightly soluble in acetone. Solubility in water: 122 g/100 ml water @ 0 deg. C. Solubility in water: 952 g /100 ml water @ 190 deg. C Solubility in alcohol: 1 g/30 ml alcohol; 1g/ 6.5 ml boiling alcohol. Solubility in acetone: 1 g/ 253 ml acetone		

**Section 10. Stability and Reactivity Data**

<b>Stability</b>	The product is stable.
<b>Instability Temperature</b>	Not available.
<b>Conditions of Instability</b>	Incompatible materials, light
<b>Incompatibility with various substances</b>	Reactive with reducing agents, combustible materials, organic materials, alkalis.
<b>Corrosivity</b>	Non-corrosive in presence of glass.
<b>Special Remarks on Reactivity</b>	<p>Sensitive to light.</p> <p>Incompatible with antimony salts, arsenites, bromides, carbonates, chlorides, iodides, thiocyanates, ferrous salts, hypophosphites, morphine salts, oils, creosote, phosphates, tannic acid, tartrates, vegetable decoctions, and extracts, sodium hydroxide, charcoal, thimerosal, benzalkonium chloride, halogenated acids and their salts. alcohols.</p> <p>Silver nitrate reacts with acetylene in presence of ammonia to form silver acetylide, a sensitive powerful detonator when dry.</p> <p>Reaction between silver nitrate and chlorosulfonic acid is violent.</p> <p>Silver nitrate is reduced by hydrogen sulfide in the dark.</p> <p>Silver nitrate is easily reduced to metallic silver by ferrous salts, arsenites, hypophosphites, tartrates, sugars, tannins, volatile oils.</p>
<b>Special Remarks on Corrosivity</b>	Not available.
<b>Polymerization</b>	Will not occur.

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Toxicity to Animals</b>	Acute oral toxicity (LD50): 50 mg/kg [Mouse].
<b>Chronic Effects on Humans</b>	<p>Causes damage to the following organs: lungs.</p> <p>May cause damage to the following organs: mucous membranes, skin, eyes.</p>
<b>Other Toxic Effects on Humans</b>	<p>Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.</p> <p>Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive).</p>
<b>Special Remarks on Toxicity to Animals</b>	Not available.
<b>Special Remarks on Chronic Effects on Humans</b>	<p>May affect genetic material (mutagenic).</p> <p>May cause cancer based on animal test data.</p> <p>May cause adverse reproductive effects.</p>
<b>Special Remarks on other Toxic Effects on Humans</b>	<p>Acute Potential Health Effects:</p> <p>Skin: Causes severe irritation and possible burns. It may cause dermatitis. It may be absorbed through the skin.</p> <p>Eyes: Causes severe irritation. Can cause burns, corneal opacification, bleeding conjunctiva, burns of conjunctiva, blindness.</p> <p>Inhalation: Causes irritation of the respiratory tract and mucous membranes with possible chemical burns. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting.</p> <p>Ingestion: Causes severe digestive/gastrointestinal tract irritation and can cause burns. Symptoms may include pain and burning in the mouth, violent abdominal pain, a blackening of the skin and mucous membranes, salivation, vomiting of black material, diarrhea, hypermotility, ulcerative gingivitis. May affect kidneys (lesions of kidneys, anuria, ), lungs (lesions of lungs). Other symptoms of acute silver poisoning may include shock, dizziness, tetany, somnolence, vertigo, coma, convulsions), cardiovascular (fall in blood pressure), respiration (decreased respiration, cyanosis),</p> <p>Chronic Potential Health Effects:</p> <p>* Chronic exposure to Silver nitrate dust or fumes can gradually cause the eyes, nails, inner nose, throat, body organs and skin to bluish-grayish color. This usually takes 2 to 20 years to develop and is permanent.</p> <p>*Systemic absorption of the nitrate and reduction to nitrite may cause rare methemoglobinemia which is characterized by chocolate -brown colored blood, headache, weakness, dizziness, shortness of breath, cyanosis (bluish skin due to deficient oxygenation of blood), rapid heart rate.</p> <p>Eyes and Skin: Repeated or prolonged application on the skin or eyes causes argyria, a bluish-grayish discoloration of the skin and eyes.</p>

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Ingestion: Prolonged or repeated ingestion causes argyria characterized by a permanent blue-slate gray discoloration of the skin, eyes, mucous membranes, and internal organs. Prolonged or repeated ingestion may also affect the liver (hepatitis), kidneys (nephritis), cardiovascular system, behavior/central nervous system (symptoms similar to acute ingestion), and metabolism (weight loss)

Inhalation: Prolonged or repeated inhalation can cause bronchitis. It can also cause argyrosis of the respiratory tract, bluish-grayish/blackening of the mucous membranes of the respiratory tract with nasal mucosa showing impregnation of silver nitrate. It may also affect the cardiovascular system, and blood.


## Section 12. Ecological Information

<b>Ecotoxicity</b>	Ecotoxicity in water (LC50): 0.0.001339-0.001637 mg/l 96 hours [Fish (Oncorhynchus mykiss)]. 0.0075 mg/l 96 hours [Fish (Oncorhynchus mykiss)]. 0.0.00181-0.00214 mg/l 96 hours [Fish (Pimephales promelas)]. 0.009 mg/l 96 hours [Fish (Pimephales promelas)]. 0.0.0008-0.001 mg/l 48 hours [Daphnia (daphnia)]. 0.0.0006 48 hours [Daphnia (daphnia)].
<b>BOD5 and COD</b>	Not available.
<b>Products of Biodegradation</b>	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
<b>Toxicity of the Products of Biodegradation</b>	The products of degradation are less toxic than the product itself.
<b>Special Remarks on the Products of Biodegradation</b>	Not available.

## Section 13. Disposal Considerations

<b>Waste Disposal</b>	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
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## Section 14. Transport Information

<b>DOT Classification</b>	CLASS 5.1: Oxidizing material.
<b>Identification</b>	UNNA: 1493 : Silver nitrate PG: II
<b>Special Provisions for Transport</b>	Not available.
<b>DOT (Pictograms)</b>	

## Section 15. Other Regulatory Information and Pictograms

<b>Federal and State Regulations</b>	<p>New York acutely hazardous substances: Silver nitrate</p> <p>Rhode Island RTK hazardous substances: Silver nitrate</p> <p>Pennsylvania RTK: Silver nitrate</p> <p>Minnesota: Silver nitrate</p> <p>Massachusetts RTK: Silver nitrate</p> <p>New Jersey: Silver nitrate</p> <p>New Jersey spill list: Silver nitrate</p> <p>Louisiana spill reporting: Silver nitrate</p> <p>California Director's List of Hazardous Substances: Silver nitrate</p> <p>TSCA 8(b) inventory: Silver nitrate</p> <p>SARA 313 toxic chemical notification and release reporting: Silver nitrate</p> <p>CERCLA: Hazardous substances.: Silver nitrate: 1 lbs. (0.4536 kg)</p>
<b>California Proposition 65 Warnings</b>	<p>California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.</p> <p>California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.</p>
<b>Other Regulations</b>	

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).  
 EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 231-853-9).  
 Canada: Listed on Canadian Domestic Substance List (DSL).  
 China: Listed on National Inventory.  
 Japan: Listed on National Inventory (ENCS).  
 Korea: Listed on National Inventory (KECI).  
 Philippines: Listed on National Inventory (PICCS).  
 Australia: Listed on AICS.

## Other Classifications

## WHMIS (Canada)

CLASS C: Oxidizing material.  
 CLASS E: Corrosive solid.

## DSCL (EEC)

R8- Contact with combustible material may cause fire.  
 R34- Causes burns.  
 R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.  
 S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
 S60- This material and its container must be disposed of as hazardous waste.  
 S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

## HMIS (U.S.A.)

Health Hazard	2
Fire Hazard	0
Reactivity	0
Personal Protection	j

## National Fire Protection Association (U.S.A.)

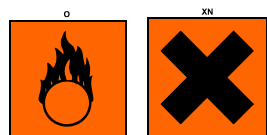
Health



Flammability

Reactivity

Specific hazard

WHMIS (Canada)  
(Pictograms)DSCL (Europe)  
(Pictograms)TDG (Canada)  
(Pictograms)ADR (Europe)  
(Pictograms)

## Protective Equipment



Gloves (impervious).



Synthetic apron.



Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Splash goggles.

**Section 16. Other Information****MSDS Code** S3440**References** Not available.**Other Special Considerations** Not available.

Validated by Sonia Owen on 9/23/2011.

Verified by Sonia Owen.






Printed 9/23/2011.

CALL (310) 516-8000

**Notice to Reader**

*All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.*

# Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Fire Hazard</td><td>1</td></tr><tr><td>Reactivity</td><td>0</td></tr></table>	Health Hazard	1	Fire Hazard	1	Reactivity	0	<div></div> <div>See Section 15.</div>
Health Hazard	1							
Fire Hazard	1							
Reactivity	0							

Section 1. Chemical Product and Company Identification			Page Number: 1
<b>Common Name/ Trade Name</b>	<b>Ferric ammonium citrate, green</b>	<b>Catalog Number(s).</b>	F1001
<b>Manufacturer</b>	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	<b>CAS#</b>	1185-57-5
<b>Commercial Name(s)</b>	Not available.	<b>RTECS</b>	GE7540000
<b>Synonym</b>	Ammonium Ferric Citrate; Ammonium iron (III) citrate; Iron (III) ammonium citrate; 1,2,3-Propanetricarboxylic acid, 2-hydroxy, ammonium iron (3+) salt	<b>TSCA</b>	TSCA 8(b) inventory: Ferric ammonium citrate
<b>Chemical Name</b>	Citric Acid, ammonium iron (3+) salt	<b>CI#</b>	Not available.
<b>Chemical Family</b>	Not available.	<b>IN CASE OF EMERGENCY</b> <a href="tel:8004249300">CHEMTREC (24hr) 800-424-9300</a>  CALL (310) 516-8000	
<b>Chemical Formula</b>	This compound is a complex salt of undetermined structure, composed of Iron, Ammonia, and Citric Acid		
<b>Supplier</b>	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248		

Section 2. Composition and Information on Ingredients					
		Exposure Limits			
Name	CAS #	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	% by Weight
1) Ferric ammonium citrate	1185-57-5	1		2	100
<b>Toxicological Data on Ingredients</b> Not applicable.					

Section 3. Hazards Identification	
<b>Potential Acute Health Effects</b>	Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.
<b>Potential Chronic Health Effects</b>	Slightly hazardous in case of skin contact (irritant). <b>CARCINOGENIC EFFECTS:</b> Not available. <b>MUTAGENIC EFFECTS:</b> Not available. <b>TERATOGENIC EFFECTS:</b> Not available. <b>DEVELOPMENTAL TOXICITY:</b> Not available.

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**Section 4. First Aid Measures**

<b>Eye Contact</b>	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs.
<b>Skin Contact</b>	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.
<b>Serious Skin Contact</b>	Not available.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
<b>Serious Inhalation</b>	Not available.
<b>Ingestion</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Serious Ingestion</b>	Not available.

**Section 5. Fire and Explosion Data**

<b>Flammability of the Product</b>	May be combustible at high temperature.
<b>Auto-Ignition Temperature</b>	Not available.
<b>Flash Points</b>	Not available.
<b>Flammable Limits</b>	Not available.
<b>Products of Combustion</b>	Not available.
<b>Fire Hazards in Presence of Various Substances</b>	Slightly flammable to flammable in presence of open flames and sparks, of heat.
<b>Explosion Hazards in Presence of Various Substances</b>	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.
<b>Fire Fighting Media and Instructions</b>	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
<b>Special Remarks on Fire Hazards</b>	Toxic oxides of nitrogen or ammonia gas may be formed in fires.
<b>Special Remarks on Explosion Hazards</b>	Containers may explode when heated.

**Section 6. Accidental Release Measures**

<b>Small Spill</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
<b>Large Spill</b>	Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

**Section 7. Handling and Storage**

<b>Precautions</b>	Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area. Sensitive to light. Store in light-resistant containers.

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>Personal Protection</b>	Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
<b>Personal Protection in Case of a Large Spill</b>	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Exposure Limits</b>	TWA: 1 STEL: 2 (mg(Fe)/m <sup>3</sup> ) [United Kingdom (UK)] TWA: 1 (mg(Fe)/m <sup>3</sup> ) from MSHA standard  Consult local authorities for acceptable exposure limits.

**Section 9. Physical and Chemical Properties**

<b>Physical state and appearance</b>	Solid. (Granular solid. Powdered solid. Deliquescent solid.)	<b>Odor</b>	Odorless.
<b>Molecular Weight</b>	Not available.	<b>Taste</b>	Saline, Mild ferruginous taste
<b>pH (1% soln/water)</b>	Not available.	<b>Color</b>	Greenish.
<b>Boiling Point</b>	Not available.		
<b>Melting Point</b>	Not available.		
<b>Critical Temperature</b>	Not available.		
<b>Specific Gravity</b>	1.8 (Water = 1)		
<b>Vapor Pressure</b>	Not applicable.		
<b>Vapor Density</b>	Not available.		
<b>Volatility</b>	Not available.		
<b>Odor Threshold</b>	Not available.		
<b>Water/Oil Dist. Coeff.</b>	Not available.		
<b>Ionicity (in Water)</b>	Not available.		
<b>Dispersion Properties</b>	See solubility in water.		
<b>Solubility</b>	Easily soluble in cold water. Solubility in water: 25 g/100 ml @ 20 deg. C. Practically insoluble in alcohol.		

**Section 10. Stability and Reactivity Data**

<b>Stability</b>	The product is stable.
<b>Instability Temperature</b>	Not available.
<b>Conditions of Instability</b>	Excess heat, incompatible materials, light
<b>Incompatibility with various substances</b>	Not available.
<b>Corrosivity</b>	Not available.
<b>Special Remarks on Reactivity</b>	Incompatible with iodides, acacia preparations, and tannins. Sensitive to light.
<b>Special Remarks on Corrosivity</b>	Not available.
<b>Polymerization</b>	Will not occur.

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Inhalation. Ingestion.
<b>Toxicity to Animals</b>	LD50: Not available. LC50: Not available.
<b>Chronic Effects on Humans</b>	Not available.
<b>Other Toxic Effects on Humans</b>	Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.
<b>Special Remarks on Toxicity to Animals</b>	Lethal Dose/Conc: LD [Rat] - Route: Oral; Dose: >2000 mg/kg
<b>Special Remarks on Chronic Effects on Humans</b>	Not available.
<b>Special Remarks on other Toxic Effects on Humans</b>	Acute Potential Health Effects: Skin: Contact may cause irritation or rash, particularly with moist skin. Eyes: May cause eye irritation with redness, tearing, and abrasion. Inhalation: Inhalation of high concentrations of dust may cause nasal, throat or lung irritation. Symptoms may include coughing and wheezing. Ingestion: Ingestion can produce gastrointestinal tract irritation with hypermotility, diarrhea. Chronic Potential Health Effects: Eyes: Prolonged eye contact may cause a brownish discoloration of the eyes. Skin: Prolonged skin contact may cause skin irritation.

**Section 12. Ecological Information**

<b>Ecotoxicity</b>	Not available.
<b>BOD5 and COD</b>	Not available.
<b>Products of Biodegradation</b>	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
<b>Toxicity of the Products of Biodegradation</b>	The product itself and its products of degradation are not toxic.
<b>Special Remarks on the Products of Biodegradation</b>	Not available.

**Section 13. Disposal Considerations**

**Waste Disposal**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14. Transport Information**

**DOT Classification**

Not a DOT controlled material (United States).

**Identification**

Not applicable.

**Special Provisions for Transport**

Not applicable.

**DOT (Pictograms)**



**Section 15. Other Regulatory Information and Pictograms**

**Federal and State Regulations**

Connecticut hazardous material survey.: Ferric ammonium citrate  
 Illinois chemical safety act: Ferric ammonium citrate  
 New York release reporting list: Ferric ammonium citrate  
 Pennsylvania RTK: Ferric ammonium citrate  
 Massachusetts RTK: Ferric ammonium citrate  
 Massachusetts spill list: Ferric ammonium citrate  
 New Jersey: Ferric ammonium citrate  
 New Jersey spill list: Ferric ammonium citrate  
 Louisiana spill reporting: Ferric ammonium citrate  
 TSCA 8(b) inventory: Ferric ammonium citrate  
 CERCLA: Hazardous substances.: Ferric ammonium citrate: 1000 lbs. (453.6 kg)

**California Proposition 65 Warnings**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.  
 California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

**Other Regulations**

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications**

**WHMIS (Canada)**

Not controlled under WHMIS (Canada).

**DSCL (EEC)**

This product is not classified according to the EU regulations. Not applicable.

**HMIS (U.S.A.)**

Health Hazard	1
Fire Hazard	1
Reactivity	0
Personal Protection	E

**National Fire Protection Association (U.S.A.)**

Health	1	Flammability	1
	1	Reactivity	0
		Specific hazard	

**WHMIS (Canada) (Pictograms)**



**DSCL (Europe)  
(Pictograms)**



**TDG (Canada)  
(Pictograms)**



**ADR (Europe)  
(Pictograms)**



**Protective Equipment**



Gloves.



Lab coat.



Dust respirator. Be sure to use an approved/certified respirator or equivalent.



Safety glasses.

**Section 16. Other Information**

**MSDS Code** F3087

**References** Not available.

**Other Special Considerations** Not available.

Validated by Sonia Owen on 8/11/2006.

Verified by Sonia Owen.

Printed 9/12/2006.

CALL (310) 516-8000

**Notice to Reader**

*All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.*

GARDENA, CA  
NEW BRUNSWICK, NJ

# Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Fire Hazard</td><td>1</td></tr><tr><td>Reactivity</td><td>0</td></tr></table>	Health Hazard	2	Fire Hazard	1	Reactivity	0	 See Section 15.
Health Hazard	2							
Fire Hazard	1							
Reactivity	0							

## Section 1. Chemical Product and Company Identification

Page Number: 1

Common Name/ Trade Name	L-Tartaric acid	Catalog Number(s).	YY1725, YY1404, T1009, T1015, TA105
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	CAS#	87-69-4
Commercial Name(s)	Not available.	RTECS	WW7875000
Synonym	2,3-Dihydroxybutanedioic acid; L-(+)-Tartaric Acid; Malic acid, 3-hydroxy-; Succinic acid, 2,3-dihydroxy	TSCA	TSCA 8(b) inventory: L-Tartaric acid
Chemical Name	Tartaric Acid	CI#	Not available.
Chemical Family	Not available.	<b>IN CASE OF EMERGENCY</b> <b><a href="tel:8004249300">CHEMTREC (24hr) 800-424-9300</a></b>  CALL (310) 516-8000	
Chemical Formula	HOOC(CHOH)2COOH		
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248		

## Section 2. Composition and Information on Ingredients

		Exposure Limits			
Name	CAS #	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	% by Weight
1) {L-}Tartaric acid	87-69-4				100

Toxicological Data on Ingredients	L-Tartaric acid LD50: Not available. LC50: Not available.
--------------------------------------	---

## Section 3. Hazards Identification

Potential Acute Health Effects	Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation (lung irritant). Corrosive to eyes and skin. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Severe over-exposure can produce lung damage, choking, unconsciousness or death.
Potential Chronic Health Effects	<b>CARCINOGENIC EFFECTS:</b> Not available. <b>MUTAGENIC EFFECTS:</b> Not available. <b>TERATOGENIC EFFECTS:</b> Not available. <b>DEVELOPMENTAL TOXICITY:</b> Not available. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

Continued on Next Page

**Section 4. First Aid Measures**

<b>Eye Contact</b>	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
<b>Skin Contact</b>	In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
<b>Serious Skin Contact</b>	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
<b>Serious Inhalation</b>	Not available.
<b>Ingestion</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Serious Ingestion</b>	Not available.

**Section 5. Fire and Explosion Data**

<b>Flammability of the Product</b>	May be combustible at high temperature.
<b>Auto-Ignition Temperature</b>	425°C (797°F)
<b>Flash Points</b>	OPEN CUP: 210°C (410°F).
<b>Flammable Limits</b>	Not available.
<b>Products of Combustion</b>	These products are carbon oxides (CO, CO2).
<b>Fire Hazards in Presence of Various Substances</b>	Slightly flammable to flammable in presence of heat. Non-flammable in presence of shocks.
<b>Explosion Hazards in Presence of Various Substances</b>	Slightly explosive in presence of open flames and sparks. Non-explosive in presence of shocks.
<b>Fire Fighting Media and Instructions</b>	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
<b>Special Remarks on Fire Hazards</b>	As with most organic solids, fire is possible at elevated temperatures
<b>Special Remarks on Explosion Hazards</b>	Fine dust dispersed in air in sufficient concentrations, and in the presences of an ignition source is a potential dust explosion hazard.

**Section 6. Accidental Release Measures**

<b>Small Spill</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
<b>Large Spill</b>	Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

**Section 7. Handling and Storage**

<b>Precautions</b>	Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust. Never add water to this product. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, alkalis.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>Personal Protection</b>	Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
<b>Personal Protection in Case of a Large Spill</b>	Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Exposure Limits</b>	Not available.

**Section 9. Physical and Chemical Properties**

<b>Physical state and appearance</b>	Solid. (Crystalline solid. Granular solid. Crystals solid. Powdered solid.)	<b>Odor</b>	Odorless.
<b>Molecular Weight</b>	150.09 g/mole	<b>Taste</b>	Acid.
<b>pH (1% soln/water)</b>	Not available.	<b>Color</b>	White.
<b>Boiling Point</b>	Not available.		
<b>Melting Point</b>	168°C (334.4°F) - 172 C		
<b>Critical Temperature</b>	Not available.		
<b>Specific Gravity</b>	Density: 1.76 (Water = 1)		
<b>Vapor Pressure</b>	Not applicable.		
<b>Vapor Density</b>	5.18 (Air = 1)		
<b>Volatility</b>	Not available.		
<b>Odor Threshold</b>	Not available.		
<b>Water/Oil Dist. Coeff.</b>	Not available.		
<b>Ionicity (in Water)</b>	Not available.		
<b>Dispersion Properties</b>	See solubility in water, methanol, diethyl ether.		
<b>Solubility</b>	Easily soluble in cold water, hot water, methanol. Soluble in diethyl ether. Solubility in Water: 1g/0.75 ml at room temperature. 1g/0.5 ml boiling water 115 g/100 ml @ 0 C 126 g/100 ml @ 10 C 139 g/100 ml @ 20 C 156 g/100 ml @ 30 C 176 g/100 ml @ 40 C 195 g/100 ml @ 50 C 217 g/100 ml @ 60 C 244 g/100 ml @ 70 C 273 g/100 ml @ 80 C 307 g/100 ml @ 90 C Solubility in methanol: 1 g/1.7 ml		

Continued on Next Page



Solubility in ethanol:  
1 g/3 ml  
Solubility in propanol:  
1 g/10.5 ml  
Solubility in ether:  
1 g/250 ml  
Also soluble in glycerol.  
Insoluble in chloroform

**Section 10. Stability and Reactivity Data**

<b>Stability</b>	The product is stable.
<b>Instability Temperature</b>	Not available.
<b>Conditions of Instability</b>	Excess heat, dust generation, incompatible materials
<b>Incompatibility with various substances</b>	Reactive with oxidizing agents, reducing agents, alkalis.
<b>Corrosivity</b>	Non-corrosive in presence of glass.
<b>Special Remarks on Reactivity</b>	Violent reaction possible with silver. Aqueous solution of tartaric acid can liberate explosive H <sub>2</sub> gas if contact with reactive metals (Iron, Zinc, Aluminum)
<b>Special Remarks on Corrosivity</b>	Not available.
<b>Polymerization</b>	Will not occur.

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Inhalation. Ingestion.
<b>Toxicity to Animals</b>	LD50: Not available. LC50: Not available.
<b>Chronic Effects on Humans</b>	Not available.
<b>Other Toxic Effects on Humans</b>	Hazardous in case of skin contact (irritant), of ingestion, of inhalation (lung irritant).
<b>Special Remarks on Toxicity to Animals</b>	Lowest Published Lethal Dose: LDL [Rat - Route: oral; Dose: 7500 mg/kg LDL [Rabbit] - Route: Oral; Dose: 5000 mg/kg LDL [Dog] - Rout: Oral; Dose: 5000 mg/kg Lethal Dose/Conc 50% kill: LD50 [Mouse] - Route: Intravenous; Dose: 485 mg/kg
<b>Special Remarks on Chronic Effects on Humans</b>	Not available.
<b>Special Remarks on other Toxic Effects on Humans</b>	Acute Potential Health Effects: Skin: Causes skin irritation Eyes: Causes eye irritation Inhalation: Causes respiratory tract irritation Ingestion: Causes gastrointestinal tract irritation with nausea, vomiting and diarrhea. May affect kidneys (kidney damage), blood, and behavior (convulsions, somnolence), and respiration. Chronic Potential Health Effects: Ingestion: Repeated or prolonged ingestion may cause lesions of the mouth, gastric ulcers, gastrointestinal hyperacidity, and symptoms similar to those of metal fume fever - flu-like condition with fever, chills, sweats, nausea, vomiting, muscle aches, pains, and weakness. Skin: Repeated or prolonged skin contact may cause skin ulcerations or lesions.


**Section 12. Ecological Information**

<b>Ecotoxicity</b>	Not available.
<b>BOD5 and COD</b>	Not available.
<b>Products of Biodegradation</b>	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
<b>Toxicity of the Products of Biodegradation</b>	The product itself and its products of degradation are not toxic.
<b>Special Remarks on the Products of Biodegradation</b>	Not available.




**Section 13. Disposal Considerations**

<b>Waste Disposal</b>	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
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**Section 14. Transport Information**

<b>DOT Classification</b>	Not a DOT controlled material (United States). Not an IATA controlled material
<b>Identification</b>	Not applicable.
<b>Special Provisions for Transport</b>	Not applicable.
<b>DOT (Pictograms)</b>	

**Section 15. Other Regulatory Information and Pictograms**

Federal and State Regulations		TSCA 8(b) inventory: L-Tartaric acid																	
California Proposition 65 Warnings		California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.  California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.																	
Other Regulations		EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 202-766-0). Canada: Listed on Canadian Domestic Substance List (DSL). China: Not listed on National Inventory. Japan: Listed on National Inventory (ENCS). Korea: Listed on National Inventory (KECI). Philippines: Listed on National Inventory (PICCS). Australia: Listed on AICS.																	
Other Classifications	WHMIS (Canada)	CLASS E: Corrosive solid.																	
	DSCL (EEC)	R36/37/38- Irritating to eyes, respiratory system and skin.	S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.																
HMIS (U.S.A.)	<table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Fire Hazard</td><td>1</td></tr><tr><td>Reactivity</td><td>0</td></tr><tr><td>Personal Protection</td><td>i</td></tr></table>	Health Hazard	2	Fire Hazard	1	Reactivity	0	Personal Protection	i	National Fire Protection Association (U.S.A.)	<table><tr><td rowspan="2">Health</td><td></td><td>Flammability</td></tr><tr><td></td><td>Reactivity</td></tr><tr><td></td><td></td><td>Specific hazard</td></tr></table>	Health		Flammability		Reactivity			Specific hazard
Health Hazard	2																		
Fire Hazard	1																		
Reactivity	0																		
Personal Protection	i																		
Health		Flammability																	
		Reactivity																	
		Specific hazard																	

**WHMIS (Canada)  
(Pictograms)****DSCL (Europe)  
(Pictograms)****TDG (Canada)  
(Pictograms)****ADR (Europe)  
(Pictograms)****Protective Equipment**

Gloves.



Synthetic apron.



Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Splash goggles.

**Section 16. Other Information****MSDS Code** T3040**References** Not available.**Other Special Considerations** Not available.

Validated by Sonia Owen on 8/26/2013.

Verified by Sonia Owen.



Printed 8/26/2013.

CALL (310) 516-8000

[Notice to Reader](#)

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# Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	Irritating to skin, eyes, and the respiratory system.	

## Section I. Chemical Product and Company Identification

Chemical Name	<b>Citric Acid</b>		
Catalog Number	C1949	Supplier	TCI America 9211 N. Harborside St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>		
CAS Number	77-92-9	In case of Emergency Call	<b>Chemtrec®</b> <b>(800) 424-9300 (U.S.)</b> <b>(703) 527-3887 (International)</b>

## Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Citric Acid	77-92-9	Min. 98.0 (T)	Not available.	Rat LD <sub>50</sub> (oral) 3 gm/kg Mouse LD <sub>50</sub> (oral) 5040 mg/kg Rat LD <sub>50</sub> (intraperitoneal) 290 mg/kg Rat LD <sub>50</sub> (subcutaneous) 5500 mg/kg

## Section III. Hazards Identification

Acute Health Effects	Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	<b>CARCINOGENIC EFFECTS</b> : Not available. <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : Not available. <b>DEVELOPMENTAL TOXICITY</b> : Not available. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

## Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

## Section V. Fire and Explosion Data

Flammability	May be combustible at high temperature.	Auto-Ignition	Not available.
Flash Points	Not available.	Flammable Limits	LOWER: 0.28% UPPER: 2.29%
Combustion Products	These products are toxic carbon oxides (CO, CO <sub>2</sub> ).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Continued on Next Page

Emergency phone number (800) 424-9300

**Section VI. Accidental Release Measures**Spill Cleanup  
Instructions

Irritating material.

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning the spill by rinsing any contaminated surfaces with copious amounts of water. Consult federal, state, and/or local authorities for assistance on disposal.

**Section VII. Handling and Storage**Handling and Storage  
Information

IRRITANT. Keep away from heat. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. Do not breathe dust.  
Always store away from incompatible compounds such as oxidizing agents, reducing agents, alkalis (bases).

**Section VIII. Exposure Controls/Personal Protection**

## Engineering Controls

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

## Personal Protection

Splash goggles. Lab coat. Dust respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.



## Exposure Limits

Not available.

**Section IX. Physical and Chemical Properties**

## Physical state @ 20°C

Solid. (White Crystal)

## Solubility

Very soluble in water, alcohol.  
Soluble in ether, chloroform.  
Insoluble in Benzene.

## Specific Gravity

1.665 (water=1)

## Molecular Weight

192.12

## Partition Coefficient

Lot P<sub>ow</sub>: -1.72

## Boiling Point

Not available.

## Vapor Pressure

Not applicable.

## Melting Point

153°C (307.4°F)

## Vapor Density

Not available.

## Refractive Index

Not available.

## Volatility

Not available.

## Critical Temperature

Not available.

## Odor

Odorless.

## Viscosity

Not available.

## Taste

Not available.

**Section X. Stability and Reactivity Data**

## Stability

This material is stable if stored under proper conditions. (See Section VII for instructions)

## Conditions of Instability

Avoid excessive heat and light.

## Incompatibilities

Reactive with oxidizing agents, reducing agents, alkalis (bases), nitrates.

**Section XI. Toxicological Information**

## RTECS Number

GE7350000

## Routes of Exposure

Eye Contact. Ingestion. Inhalation.

## Toxicity Data

Rat LD<sub>50</sub> (oral) 3 gm/kg  
Mouse LD<sub>50</sub> (oral) 5040 mg/kg  
Rat LD<sub>50</sub> (intraperitoneal) 290 mg/kg  
Rat LD<sub>50</sub> (subcutaneous) 5500 mg/kg

## Chronic Toxic Effects

**CARCINOGENIC EFFECTS** : Not available.  
**MUTAGENIC EFFECTS** : Not available.  
**TERATOGENIC EFFECTS** : Not available.  
**DEVELOPMENTAL TOXICITY** Not available.  
Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

## Acute Toxic Effects

Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.  
Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

**Section XII. Ecological Information**

Ecotoxicity Not available.

## Environmental Fate

Citric acid's production and use as an acidulant in beverages, confectionery, effervescent salts, in pharmaceutical syrups, elixirs; in processing cheese, in chemical manufacture, a foam inhibitor, a sequestering agent, a mordant, in electroplating, in special inks, an anticoagulant, and in water-conditioning agent and detergent builder may result in its release to the environment through various waste streams. Citric acid is widely distributed in plants and in animal tissues and fluids. If released to air, an estimated vapor pressure of 1.66X10<sup>-8</sup> mm Hg at 25 deg C indicates citric acid will exist solely in the particulate phase in the atmosphere. Particulate-phase citric acid will be removed from the atmosphere by wet or dry deposition. Citric acid does not contain chromophores that absorb at wavelengths >290 nm and therefore is not expected to be susceptible to direct photolysis by sunlight. If released to soil, citric acid is expected to have very high mobility based upon an estimated K<sub>oc</sub> of 3.1. The pK<sub>a</sub> of citric acid is 2.79, indicating that this compound will primarily exist in the anion form in the environment and anions generally do not adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts. Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 4.3X10<sup>-14</sup> atm-cu m/mole. Citric acid is not expected to volatilize from dry soil surfaces based upon its estimated vapor pressure. Citric acid may be susceptible to biodegradation in terrestrial environments based on the observed degradation of 53-100% in sludge inoculum after time periods ranging from 1 to 42 days. If released into water, citric acid is not expected to adsorb to suspended solids and sediment based upon the estimated K<sub>oc</sub>. Screening tests show that citric acid is readily biodegradable in aquatic environments reaching 66.4% and 67.3% of its theoretical BOD after 5 days using freshwater and seawater inoculums, respectively. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. An estimated BCF of 3.2 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Occupational exposure to citric acid may occur through dermal contact with this compound at workplaces where citric acid is produced or used. Monitoring data indicate that the general population may be exposed to citric acid via ingestion of food and dermal contact with this compound and other products containing citric acid.

**Section XIII. Disposal Considerations**

Waste Disposal Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

**Section XIV. Transport Information**

DOT Classification Not a DOT controlled material (United States).

PIN Number Not applicable.

Proper Shipping Name Not applicable.

Packing Group (PG) Not applicable.

DOT Pictograms

**Section XV. Other Regulatory Information and Pictograms**TSCA Chemical Inventory (EPA) This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.

WHMIS Classification (Canada) On DSL

EINECS Number (EEC) 201-069-1



EEC Risk Statements R36/37/38- Irritating to eyes, respiratory system and skin.

Japanese Regulatory Data ENCS No. 2-1318

**Section XVI. Other Information****Version 1.0****Validated on 3/13/2008.****Printed 3/13/2008.****Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.

# Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Fire Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table>	Health Hazard	2	Fire Hazard	0	Reactivity	0	 See Section 15.
Health Hazard	2							
Fire Hazard	0							
Reactivity	0							

## Section 1. Chemical Product and Company Identification

Page Number: 1

<b>Common Name/ Trade Name</b>	<b>Sodium thiosulfate pentahydrate</b>	<b>Catalog Number(s).</b>	S1497, S1500, S1502, SO210
<b>Manufacturer</b>	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	<b>CAS#</b>	10102-17-7
<b>Commercial Name(s)</b>	Ametox, Antichlor	<b>RTECS</b>	WE6660000
<b>Synonym</b>	Sodium Hyposulfite, pentahydrate	<b>TSCA</b>	TSCA 8(b) inventory: No products were found. This product is exempt from TSCA 8(b) Inventory since it is a hydrate. However, the anhydrous form (CAS no. 7772-98-7) is listed on the TSCA 8(b) Inventory.
<b>Chemical Name</b>	Thiosulfuric Acid, disodium salt, pentahydrate	<b>CI#</b>	Not available.
<b>Chemical Family</b>	Not available.	<b>IN CASE OF EMERGENCY</b> <a href="tel:800-424-9300">CHEMTREC (24hr) 800-424-9300</a> CALL (310) 516-8000	
<b>Chemical Formula</b>	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ·5H <sub>2</sub> O		
<b>Supplier</b>	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248		

## Section 2. Composition and Information on Ingredients

		Exposure Limits			
Name	CAS #	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	% by Weight
1) Sodium thiosulfate pentahydrate	10102-17-7				100

<b>Toxicological Data on Ingredients</b>	<b>Sodium thiosulfate pentahydrate</b> LD50: Not available. LC50: Not available.
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## Section 3. Hazards Identification

<b>Potential Acute Health Effects</b>	Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of ingestion, of inhalation.
<b>Potential Chronic Health Effects</b>	Slightly hazardous in case of skin contact (sensitizer). <b>CARCINOGENIC EFFECTS:</b> Not available. <b>MUTAGENIC EFFECTS:</b> Not available. <b>TERATOGENIC EFFECTS:</b> Not available. <b>DEVELOPMENTAL TOXICITY:</b> Not available.

Continued on Next Page



**Section 4. First Aid Measures**

<b>Eye Contact</b>	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
<b>Skin Contact</b>	In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
<b>Serious Skin Contact</b>	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
<b>Serious Inhalation</b>	Not available.
<b>Ingestion</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Serious Ingestion</b>	Not available.

**Section 5. Fire and Explosion Data**

<b>Flammability of the Product</b>	Non-flammable.
<b>Auto-Ignition Temperature</b>	Not applicable.
<b>Flash Points</b>	Not applicable.
<b>Flammable Limits</b>	Not applicable.
<b>Products of Combustion</b>	Not available.
<b>Fire Hazards in Presence of Various Substances</b>	Not applicable.
<b>Explosion Hazards in Presence of Various Substances</b>	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
<b>Fire Fighting Media and Instructions</b>	Not applicable.
<b>Special Remarks on Fire Hazards</b>	When heated to decomposition it emits toxic fumes of sulfur oxides, hydrogen sulfide, and sodium oxide
<b>Special Remarks on Explosion Hazards</b>	An explosion may occur if triturated with nitrates, chlorates, or permanganates.

**Section 6. Accidental Release Measures**

<b>Small Spill</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
<b>Large Spill</b>	Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

**Section 7. Handling and Storage**

<b>Precautions</b>	Do not breathe dust. Wear suitable protective clothing. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.
<b>Storage</b>	Hygroscopic. Keep container tightly closed. Keep container in a cool, well-ventilated area.

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>Personal Protection</b>	Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
<b>Personal Protection in Case of a Large Spill</b>	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Exposure Limits</b>	Not available.

**Section 9. Physical and Chemical Properties**

<b>Physical state and appearance</b>	Solid. (Crystals solid.)	<b>Odor</b>	Odorless.
<b>Molecular Weight</b>	248.19 g/mole	<b>Taste</b>	Saline.
<b>pH (1% soln/water)</b>	pH of a 5% solution: 6.0-8.4	<b>Color</b>	Colorless. White.
<b>Boiling Point</b>	>100°C (212°F)		
<b>Melting Point</b>	48°C (118.4°F)		
<b>Critical Temperature</b>	Not available.		
<b>Specific Gravity</b>	1.7 - 1.75(Water = 1)		
<b>Vapor Pressure</b>	Not applicable.		
<b>Vapor Density</b>	Not available.		
<b>Volatility</b>	Not available.		
<b>Odor Threshold</b>	Not available.		
<b>Water/Oil Dist. Coeff.</b>	Not available.		
<b>Ionicity (in Water)</b>	Not available.		
<b>Dispersion Properties</b>	See solubility in water.		
<b>Solubility</b>	Easily soluble in hot water. Soluble in cold water. Solubility in water: 79 g/100 ml @ 4 deg. C (39 deg. F) 680 g/liter @ 20 deg		

**Section 10. Stability and Reactivity Data**

<b>Stability</b>	The product is stable.
<b>Instability Temperature</b>	Not available.
<b>Conditions of Instability</b>	Incompatible materials, moisture
<b>Incompatibility with various substances</b>	Reactive with oxidizing agents, acids.
<b>Corrosivity</b>	Non-corrosive in presence of glass.
<b>Special Remarks on Reactivity</b>	It is a strong reducing agent and can react with oxidizers. Reacts with acids to release sulfur dioxide. Sodium Thiosulfate pentahydrate dissolves in its own water of hydration; it effloresces in warm dry air. Sodium Thiosulfate pentahydrate loses water at 100 deg. C. It is incompatible with iodine, acids, lead, mercury, and silver salts (e.g. silver nitrate), halogens. Hygroscopic; keep container tightly closed. Protect from moisture

Continued on Next Page

Special Remarks on Corrosivity	Not available.
Polymerization	Will not occur.

**Section 11. Toxicological Information**

Routes of Entry	Inhalation. Ingestion.
Toxicity to Animals	LD50: Not available. LC50: Not available.
Chronic Effects on Humans	Not available.
Other Toxic Effects on Humans	Hazardous in case of skin contact (irritant). Slightly hazardous in case of ingestion, of inhalation.
Special Remarks on Toxicity to Animals	Not available.
Special Remarks on Chronic Effects on Humans	Not available.
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects: Skin: Causes skin irritation. Eyes: Causes eye irritation. Inhalation: May cause upper respiratory tract and mucous membrane irritation. Ingestion: Sodium Thiosulfate is an agent with a low order of toxicity. Ingestion of large doses may cause gastrointestinal irritation disturbances with nausea, vomiting, abdominal cramping, diarrhea, metabolic acidosis, and hypernatremia. It may result in a cathartic (laxative, purging) effect. May also affect respiration (cyanosis, respiratory stimulation), cardiovascular(hypotension), behavior (ataxia, convulsions) Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact may allergic dermatitis, and irritation.

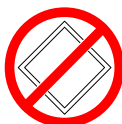
**Section 12. Ecological Information**

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The product itself and its products of degradation are not toxic.
Special Remarks on the Products of Biodegradation	Not available.

**Section 13. Disposal Considerations**

Waste Disposal	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
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**Section 14. Transport Information**

DOT Classification	Not a DOT controlled material (United States).
Identification	Not applicable.
Special Provisions for Transport	Not applicable.
DOT (Pictograms)	

## Section 15. Other Regulatory Information and Pictograms

## Federal and State Regulations

No products were found.

## California Proposition 65 Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

## Other Regulations

EINECS: This product is not on the European Inventory of Existing Commercial Chemical Substances

Canada: Listed on Canadian Domestic Substance List (DSL)

China: Listed on National Inventory.

Japan: Listed on National Inventory (ENCS).

Korea: Not listed on National Inventory (KECI).

Philippines: Listed on National Inventory (PICCS).

Australia: Listed on AICS.

## Other Classifications

**WHMIS (Canada)** Not controlled under WHMIS (Canada).**DSCL (EEC)** Not available Not available

## HMIS (U.S.A.)

Health Hazard	2
Fire Hazard	0
Reactivity	0
Personal Protection	E

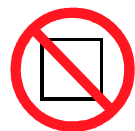
## National Fire Protection Association (U.S.A.)

Health	1	0	0	Flammability
				Reactivity
				Specific hazard

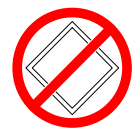
## WHMIS (Canada) (Pictograms)



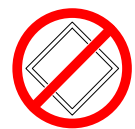
## DSCL (Europe) (Pictograms)



## TDG (Canada) (Pictograms)



## ADR (Europe) (Pictograms)



## Protective Equipment



Gloves.



Lab coat.



Dust respirator. Be sure to use an approved/certified respirator or equivalent.



Splash goggles.

**Section 16. Other Information****MSDS Code** S4600**References** Not available.

**Other Special Considerations** Major Uses: To remove chlorine from solution; as an "anchlor" in the bleaching of paper, pulp; fixer in photography; mordant in dyeing and printing textiles; reducer in chrome dyeing; in manufacturing of leather; agent in chrome leather tanning; in extracting of silver from ores; bleaching bone, straw, ivory; reagent in analytical chemistry; preservative.

Validated by Sonia Owen on 9/11/2012.

Verified by Sonia Owen.

Printed 9/11/2012.



CALL (310) 516-8000

**Notice to Reader**

*All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.*



# Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Fire Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table>	Health Hazard	2	Fire Hazard	0	Reactivity	0	<div></div> <div>See Section 15.</div>
Health Hazard	2							
Fire Hazard	0							
Reactivity	0							

Section 1. Chemical Product and Company Identification			Page Number: 1	
Common Name/ Trade Name	Ammonium thiocyanate		Catalog Number(s).	A1270, A1271
			CAS#	1762-95-4
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248		RTECS	XK7875000
			TSCA	TSCA 8(b) inventory: Ammonium thiocyanate
Commercial Name(s)	Not available.		CI#	Not available.
Synonym	Not available.		<b><u>IN CASE OF EMERGENCY</u></b> <b><u>CHEMTREC (24hr) 800-424-9300</u></b>  CALL (310) 516-8000	
Chemical Name	Ammonium Thiocyanate			
Chemical Family	Not available.			
Chemical Formula	NH4SCN			
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248			

Section 2. Composition and Information on Ingredients					
		Exposure Limits			
Name	CAS #	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	% by Weight
1) Ammonium thiocyanate	1762-95-4				100
Toxicological Data on Ingredients	Ammonium thiocyanate: ORAL (LD50): Acute: 750 mg/kg [Rat]. 500 mg/kg [Mouse]. 500 mg/kg [Guinea pig].				

Section 3. Hazards Identification	
Potential Acute Health Effects	Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.
Potential Chronic Health Effects	<b>CARCINOGENIC EFFECTS:</b> Not available. <b>MUTAGENIC EFFECTS:</b> Not available. <b>TERATOGENIC EFFECTS:</b> Not available. <b>DEVELOPMENTAL TOXICITY:</b> Not available. The substance may be toxic to blood, thyroid. Repeated or prolonged exposure to the substance can produce target organs damage.

Continued on Next Page

**Section 4. First Aid Measures**

<b>Eye Contact</b>	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
<b>Skin Contact</b>	In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
<b>Serious Skin Contact</b>	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
<b>Serious Inhalation</b>	Not available.
<b>Ingestion</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
<b>Serious Ingestion</b>	Not available.

**Section 5. Fire and Explosion Data**

<b>Flammability of the Product</b>	Non-flammable.
<b>Auto-Ignition Temperature</b>	Not applicable.
<b>Flash Points</b>	Not applicable.
<b>Flammable Limits</b>	Not applicable.
<b>Products of Combustion</b>	Not available.
<b>Fire Hazards in Presence of Various Substances</b>	Not applicable.
<b>Explosion Hazards in Presence of Various Substances</b>	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
<b>Fire Fighting Media and Instructions</b>	Not applicable.
<b>Special Remarks on Fire Hazards</b>	Not available.
<b>Special Remarks on Explosion Hazards</b>	Ammonium Thiocyanate + Lead Nitrate may cause explosion

**Section 6. Accidental Release Measures**

<b>Small Spill</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
<b>Large Spill</b>	Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

**Section 7. Handling and Storage**

<b>Precautions</b>	Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area.

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>Personal Protection</b>	Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
<b>Personal Protection in Case of a Large Spill</b>	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Exposure Limits</b>	Not available.

**Section 9. Physical and Chemical Properties**

<b>Physical state and appearance</b>	Solid. (Crystals solid.)	<b>Odor</b>	Odorless.
<b>Molecular Weight</b>	76.12g/mole	<b>Taste</b>	Not available.
<b>pH (1% soln/water)</b>	Not available.	<b>Color</b>	Colorless.
<b>Boiling Point</b>	Not available.		
<b>Melting Point</b>	149.6°C (301.3°F)		
<b>Critical Temperature</b>	Not available.		
<b>Specific Gravity</b>	1.305 (Water = 1)		
<b>Vapor Pressure</b>	Not applicable.		
<b>Vapor Density</b>	Not available.		
<b>Volatility</b>	Not available.		
<b>Odor Threshold</b>	Not available.		
<b>Water/Oil Dist. Coeff.</b>	Not available.		
<b>Ionicity (in Water)</b>	Not available.		
<b>Dispersion Properties</b>	See solubility in water, acetone.		
<b>Solubility</b>	Easily soluble in cold water, hot water. Soluble in acetone. Soluble in ammonia, and alcohol. Practically insoluble in chloroform, and ethyl acetate.		

**Section 10. Stability and Reactivity Data**

<b>Stability</b>	The product is stable.
<b>Instability Temperature</b>	Not available.
<b>Conditions of Instability</b>	Incompatible materials
<b>Incompatibility with various substances</b>	Not available.

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<b>Corrosivity</b>	Extremely corrosive in presence of copper, brass, iron. Non-corrosive in presence of glass.
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<b>Special Remarks on Reactivity</b>	Incompatible with KClO <sub>3</sub> and mixtures with Pb(NO <sub>3</sub> ) <sub>2</sub>
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<b>Special Remarks on Corrosivity</b>	Not available.
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<b>Polymerization</b>	Will not occur.
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### **Section 11. Toxicological Information**

<b>Routes of Entry</b>	Inhalation. Ingestion.
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<b>Toxicity to Animals</b>	Acute oral toxicity (LD <sub>50</sub> ): 500 mg/kg [Guinea pig].
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<b>Chronic Effects on Humans</b>	May cause damage to the following organs: blood, thyroid.
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<b>Other Toxic Effects on Humans</b>	Hazardous in case of skin contact (irritant), of ingestion, of inhalation.
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<b>Special Remarks on Toxicity to Animals</b>	Not available.
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<b>Special Remarks on Chronic Effects on Humans</b>	Not available.
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<b>Special Remarks on other Toxic Effects on Humans</b>	Acute Potential Health Effects: Skin: Causes skin irritation Eyes: Causes eye irritation Inhalation: Causes respiratory tract and mucous membrane irritation. Ingestion: May cause gastrointestinal tract irritation with nausea and vomiting. May affect behavior/Central Nervous System (hallucinations, distorted perceptions, personality and mood changes, mania, disorientation, weakness, seizures), metabolism. Chronic Potential Health Effects: Prolonged exposure may affect the thyroid gland and blood cells, and cause personality and mood changes.
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### **Section 12. Ecological Information**

<b>Ecotoxicity</b>	Not available.
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<b>BOD<sub>5</sub> and COD</b>	Not available.
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<b>Products of Biodegradation</b>	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
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<b>Toxicity of the Products of Biodegradation</b>	The products of degradation are less toxic than the product itself.
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<b>Special Remarks on the Products of Biodegradation</b>	Not available.
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### **Section 13. Disposal Considerations**

<b>Waste Disposal</b>	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
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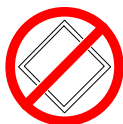
**Section 14. Transport Information**

**DOT Classification** Not a DOT controlled material (United States).

**Identification** Not applicable.

**Special Provisions for Transport** Not applicable.

**DOT (Pictograms)**

**Section 15. Other Regulatory Information and Pictograms**

**Federal and State Regulations**

Connecticut hazardous material survey.: Ammonium thiocyanate  
 Illinois toxic substances disclosure to employee act: Ammonium thiocyanate  
 Illinois chemical safety act: Ammonium thiocyanate  
 New York release reporting list: Ammonium thiocyanate  
 Pennsylvania RTK: Ammonium thiocyanate  
 Massachusetts RTK: Ammonium thiocyanate  
 Massachusetts spill list: Ammonium thiocyanate  
 New Jersey: Ammonium thiocyanate  
 New Jersey spill list: Ammonium thiocyanate  
 Louisiana spill reporting: Ammonium thiocyanate  
 TSCA 8(b) inventory: Ammonium thiocyanate  
 CERCLA: Hazardous substances.: Ammonium thiocyanate: 5000 lbs. (2268 kg)

**California Proposition 65 Warnings**

**Other Regulations** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).  
 EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications**

**WHMIS (Canada)** Not controlled under WHMIS (Canada).

**DSCL (EEC)**

R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.  
 R36/37/38- Irritating to eyes, respiratory system and skin.

S2- Keep out of the reach of children.  
 S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 S36- Wear suitable protective clothing.  
 S46- If swallowed, seek medical advice immediately and show this container or label.

**HMIS (U.S.A.)**

Health Hazard	2
Fire Hazard	0
Reactivity	0
Personal Protection	E

**National Fire Protection Association (U.S.A.)**

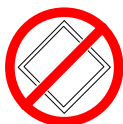
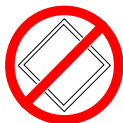
Health	2	0	Flammability
	0	0	Reactivity
			Specific hazard

**WHMIS (Canada) (Pictograms)**



**DSCL (Europe) (Pictograms)**



**TDG (Canada)  
(Pictograms)****ADR (Europe)  
(Pictograms)****Protective Equipment**

Gloves.



Lab coat.



Dust respirator. Be sure to use an approved/certified respirator or equivalent.



Splash goggles.

**Section 16. Other Information****MSDS Code** A5340**References** Not available.**Other Special Considerations** Not available.

Validated by Sonia Owen on 8/11/2006.

Verified by Sonia Owen.






Printed 9/8/2006.

CALL (310) 516-8000

**Notice to Reader**

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# Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table><tr><td>Health Hazard</td><td>3</td></tr><tr><td>Fire Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table>	Health Hazard	3	Fire Hazard	0	Reactivity	0	<div></div> <div>See Section 15.</div>
Health Hazard	3							
Fire Hazard	0							
Reactivity	0							

Section 1. Chemical Product and Company Identification		Page Number: 1
Common Name/ Trade Name	Gold chloride	Catalog Number(s). G1025
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	CAS# 16961-25-4; 16903-35-8 (anhydrous CAS no.)
Commercial Name(s)	Not available.	RTECS MD5420000
Synonym	Aurate(1-), tetrachloro, hydrogen, trihydrate (8Cl); Gold acid chloride trihydrate; Hydrogen tetrachloroaurate(1-) trihydrate; Tetrachloroauric acid trihydrate; Hydrogen Tetrachloroaurate (III) Trihydrate; Tetrachloroauric (III) Acid, Trihydrate	TSCA TSCA 8(b) inventory: No products were found. It is not on the TSCA 8(b) Inventory since it is a hydrate. However, the anhydrous form (CAS no. 16903-35-8) is listed on the TSCA 8(b) Inventory.
Chemical Name	Aurate(1-), tetrachloro, hydrogen, trihydrate, (SP-4-1)- (9Cl)	CI# Not available.
Chemical Family	Not available.	<b>IN CASE OF EMERGENCY</b> <a href="tel:800-424-9300">CHEMTREC (24hr) 800-424-9300</a>  CALL (310) 516-8000
Chemical Formula	HAuCl <sub>4</sub> .3H <sub>2</sub> O	
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	

Section 2. Composition and Information on Ingredients					
		Exposure Limits			
Name	CAS #	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	% by Weight
1) Gold chloride	16961-25-4				100
<b>Toxicological Data on Ingredients</b> Gold chloride LD50: Not available. LC50: Not available.					

**Section 3. Hazards Identification****Potential Acute Health Effects**

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive). The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

**Potential Chronic Health Effects**

**CARCINOGENIC EFFECTS:** Not available.

**MUTAGENIC EFFECTS:** Not available.

**TERATOGENIC EFFECTS:** Not available.

**DEVELOPMENTAL TOXICITY:** Not available.

Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

**Section 4. First Aid Measures****Eye Contact**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**Skin Contact**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Serious Skin Contact**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Serious Inhalation**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**Ingestion**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion**

Not available.

**Section 5. Fire and Explosion Data**

**Flammability of the Product** Non-flammable.

**Auto-Ignition Temperature** Not applicable.

**Flash Points** Not applicable.

**Flammable Limits** Not applicable.

**Products of Combustion** Not available.

**Fire Hazards in Presence of Various Substances** Not applicable.

**Explosion Hazards in Presence of Various Substances** Risks of explosion of the product in presence of mechanical impact: Not available.  
Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions** Not applicable.

**Special Remarks on Fire Hazards** Not available.

**Special Remarks on Explosion Hazards** Not available.

**Continued on Next Page**

**Section 6. Accidental Release Measures**

<b>Small Spill</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
<b>Large Spill</b>	Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

**Section 7. Handling and Storage**

<b>Precautions</b>	Keep container dry. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as reducing agents, organic materials, metals.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area.

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>Personal Protection</b>	Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
<b>Personal Protection in Case of a Large Spill</b>	Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Exposure Limits</b>	Not available.

**Section 9. Physical and Chemical Properties**

<b>Physical state and appearance</b>	Solid. (Crystalline solid. Crystalline powder.)	<b>Odor</b>	Odorless or faint odor of chlorine
<b>Molecular Weight</b>	393.83 g/mole	<b>Taste</b>	Not available.
<b>pH (1% soln/water)</b>	Not available.	<b>Color</b>	Yellow or brown. Yellow-Orange.
<b>Boiling Point</b>	Not available.		
<b>Melting Point</b>	Decomposition temperature: 254°C (489.2°F)		
<b>Critical Temperature</b>	Not available.		
<b>Specific Gravity</b>	3.9 (Water = 1)		
<b>Vapor Pressure</b>	Not applicable.		
<b>Vapor Density</b>	Not available.		
<b>Volatility</b>	Not available.		
<b>Odor Threshold</b>	Not available.		
<b>Water/Oil Dist. Coeff.</b>	Not available.		
<b>Ionicity (in Water)</b>	Not available.		
<b>Dispersion Properties</b>	See solubility in water.		
<b>Solubility</b>	Easily soluble in cold water, hot water.		

**Section 10. Stability and Reactivity Data**

<b>Stability</b>	The product is stable.
<b>Instability Temperature</b>	Not available.
<b>Conditions of Instability</b>	Incompatible materials
<b>Incompatibility with various substances</b>	Reactive with reducing agents, organic materials, metals.
<b>Corrosivity</b>	Non-corrosive in presence of glass.
<b>Special Remarks on Reactivity</b>	Incompatible with ammonia and ammonium salts. Incompatible with zinc. Incompatible with Potassium cyanide
<b>Special Remarks on Corrosivity</b>	Not available.
<b>Polymerization</b>	Will not occur.

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Inhalation. Ingestion.
<b>Toxicity to Animals</b>	LD50: Not available. LC50: Not available.
<b>Chronic Effects on Humans</b>	Not available.
<b>Other Toxic Effects on Humans</b>	Very hazardous in case of skin contact (irritant), of ingestion, . Hazardous in case of inhalation (lung corrosive). Slightly hazardous in case of skin contact (corrosive), of eye contact (corrosive).
<b>Special Remarks on Toxicity to Animals</b>	Not available.
<b>Special Remarks on Chronic Effects on Humans</b>	May affect genetic material (mutagenic)
<b>Special Remarks on other Toxic Effects on Humans</b>	Acute Potential Health Effects: Skin: Causes severe irritation and burns. Eyes: Causes severe irritation and burns. Inhalation: Causes severe irritation and chemical burns to the respiratory tract. Ingestion: Harmful if swallowed. Causes digestive/gastrointestinal tract burns and can cause violent diarrhea, gastritis, colitis. May affect blood (blood dyscrasias, leukopenia, agranulocytosis, aplastic anemia), liver kidneys.

**Section 12. Ecological Information**

<b>Ecotoxicity</b>	Not available.
<b>BOD5 and COD</b>	Not available.
<b>Products of Biodegradation</b>	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
<b>Toxicity of the Products of Biodegradation</b>	The product itself and its products of degradation are not toxic.
<b>Special Remarks on the Products of Biodegradation</b>	Not available.

**Section 13. Disposal Considerations****Waste Disposal**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14. Transport Information****DOT Classification**

Class 8: Corrosive material

**Identification**

UNNA: 3260 : Corrosive solid, acidic, inorganic, n.o.s. (Gold Chloride) PG: III

**Special Provisions for Transport**

Not available.

**DOT (Pictograms)****Section 15. Other Regulatory Information and Pictograms****Federal and State Regulations**

No products were found.

**California Proposition 65 Warnings**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.  
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

**Other Regulations**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).  
EINECS: This product is not on the European Inventory of Existing Commercial Chemical Substances.  
Canada: Not listed on Canadian Domestic Substance List (DSL) or Canadian Non- Domestic Substance List (NDSL).  
China: Listed on National Inventory.  
Japan: Not listed on National Inventory (ENCS).  
Korea: Not listed on National Inventory (KECI).  
Philippines: Listed on National Inventory (PICCS).  
Australia: Not listed on AICS.

**Other Classifications**

**WHMIS (Canada)** CLASS E: Corrosive solid.

**DSCL (EEC)**

R34- Causes burns.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S36/37- Wear suitable protective clothing and gloves.  
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**HMIS (U.S.A.)**

Health Hazard	3
Fire Hazard	0
Reactivity	0
Personal Protection	j

**National Fire Protection Association (U.S.A.)**

Health



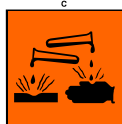
Flammability

Reactivity

Specific hazard

**WHMIS (Canada) (Pictograms)**



**DSCL (Europe)**  
**(Pictograms)****TDG (Canada)**  
**(Pictograms)****ADR (Europe)**  
**(Pictograms)****Protective Equipment**

Gloves.



Synthetic apron.



Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Splash goggles.

**Section 16. Other Information****MSDS Code** G3300**References** Not available.**Other Special Considerations** Not available.

Validated by Sonia Owen on 8/29/2011.

Verified by Sonia Owen.

Printed 8/29/2011.






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GARDENA, CA  
NEW BRUNSWICK, NJ

# Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Fire Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table>	Health Hazard	1	Fire Hazard	0	Reactivity	0	<div></div> <div>See Section 15.</div>
Health Hazard	1							
Fire Hazard	0							
Reactivity	0							

## Section 1. Chemical Product and Company Identification

Page Number: 1

<b>Common Name/ Trade Name</b>		<b>Sodium chloride</b>		<b>Catalog Number(s).</b>	YY1696, YY1629, YY1075, S1529, S1240, S1241, S1247, S1248, S1249, SO155, SO160, YY1516. YY879
				<b>CAS#</b>	7647-14-5
<b>Manufacturer</b>		SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248		<b>RTECS</b>	VZ4725000
				<b>TSCA</b>	TSCA 8(b) inventory: Sodium chloride
<b>Commercial Name(s)</b>		Not available.		<b>CI#</b>	Not applicable.
<b>Synonym</b>		Salt; Sea Salt		<b><u>IN CASE OF EMERGENCY</u></b> <b><u>CHEMTREC (24hr) 800-424-9300</u></b>  CALL (310) 516-8000	
<b>Chemical Name</b>		Sodium chloride			
<b>Chemical Family</b>		Chloride salt. (Salt.)			
<b>Chemical Formula</b>		NaCl			
<b>Supplier</b>		SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248			

## Section 2. Composition and Information on Ingredients

		<i>Exposure Limits</i>			
Name	CAS #	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )	CEIL (mg/m <sup>3</sup> )	% by Weight
1) Sodium chloride	7647-14-5				100

### Toxicological Data on Ingredients

#### Sodium chloride:

ORAL (LD50): Acute: 3000 mg/kg [Rat]. 4000 mg/kg [Mouse].  
DERMAL (LD50): Acute: >10000 mg/kg [Rabbit].  
DUST (LC50): Acute: >42000 mg/m<sup>3</sup> 1 hours [Rat].

## Section 3. Hazards Identification

**Potential Acute Health Effects** Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

### Potential Chronic Health Effects

**CARCINOGENIC EFFECTS:** Not available.  
**MUTAGENIC EFFECTS:** Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.  
**TERATOGENIC EFFECTS:** Not available.  
**DEVELOPMENTAL TOXICITY:** Not available.  
Repeated or prolonged exposure is not known to aggravate medical condition.

Continued on Next Page

**Section 4. First Aid Measures**

<b>Eye Contact</b>	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.
<b>Skin Contact</b>	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.
<b>Serious Skin Contact</b>	Not available.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.
<b>Serious Inhalation</b>	Not available.
<b>Ingestion</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.
<b>Serious Ingestion</b>	Not available.

**Section 5. Fire and Explosion Data**

<b>Flammability of the Product</b>	Non-flammable.
<b>Auto-Ignition Temperature</b>	Not applicable.
<b>Flash Points</b>	Not applicable.
<b>Flammable Limits</b>	Not applicable.
<b>Products of Combustion</b>	Not available.
<b>Fire Hazards in Presence of Various Substances</b>	Not applicable.
<b>Explosion Hazards in Presence of Various Substances</b>	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
<b>Fire Fighting Media and Instructions</b>	Not applicable.
<b>Special Remarks on Fire Hazards</b>	When heated to decomposition it emits toxic fumes.
<b>Special Remarks on Explosion Hazards</b>	Electrolysis of sodium chloride in presence of nitrogenous compounds to produce chlorine may lead to formation of explosive nitrogen trichloride. Potentially explosive reaction with dichloromaleic anhydride + urea.

**Section 6. Accidental Release Measures**

<b>Small Spill</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
<b>Large Spill</b>	Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

**Section 7. Handling and Storage**

<b>Precautions</b>	Do not ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, metals, acids.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
<b>Personal Protection</b>	Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
<b>Personal Protection in Case of a Large Spill</b>	Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
<b>Exposure Limits</b>	Not available.

**Section 9. Physical and Chemical Properties**

<b>Physical state and appearance</b>	Solid. (Solid crystalline powder. Granular solid.)	<b>Odor</b>	Slight.
<b>Molecular Weight</b>	58.44 g/mole	<b>Taste</b>	Saline.
<b>pH (1% soln/water)</b>	7 [Neutral.]	<b>Color</b>	White.
<b>Boiling Point</b>	1413°C (2575.4°F)		
<b>Melting Point</b>	801°C (1473.8°F)		
<b>Critical Temperature</b>	Not available.		
<b>Specific Gravity</b>	2.165 (Water = 1)		
<b>Vapor Pressure</b>	Not applicable.		
<b>Vapor Density</b>	Not available.		
<b>Volatility</b>	Not available.		
<b>Odor Threshold</b>	Not available.		
<b>Water/Oil Dist. Coeff.</b>	Not available.		
<b>Ionicity (in Water)</b>	Not available.		
<b>Dispersion Properties</b>	See solubility in water.		
<b>Solubility</b>	Easily soluble in cold water, hot water. Soluble in glycerol, and ammonia. Very slightly soluble in alcohol. Insoluble in Hydrochloric Acid.		

**Section 10. Stability and Reactivity Data**

<b>Stability</b>	The product is stable.
<b>Instability Temperature</b>	Not available.
<b>Conditions of Instability</b>	Incompatible materials, high temperatures.
<b>Incompatibility with various substances</b>	Reactive with oxidizing agents, metals, acids.
<b>Corrosivity</b>	Non-corrosive in presence of glass.
<b>Special Remarks on Reactivity</b>	Hygroscopic. Reacts with most nonnoble metals such as iron or steel, building materials (such as cement) Sodium chloride is rapidly attacked by bromine trifluoride. Violent reaction with lithium.
<b>Special Remarks on Corrosivity</b>	Not available.
<b>Polymerization</b>	Will not occur.

Continued on Next Page

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Inhalation. Ingestion.
<b>Toxicity to Animals</b>	Acute oral toxicity (LD50): 3000 mg/kg [Rat]. Acute dermal toxicity (LD50): >10000 mg/kg [Rabbit]. Acute toxicity of the dust (LC50): >42000 mg/m <sup>3</sup> 1 hours [Rat].
<b>Chronic Effects on Humans</b>	<b>MUTAGENIC EFFECTS:</b> Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.
<b>Other Toxic Effects on Humans</b>	Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.
<b>Special Remarks on Toxicity to Animals</b>	Lowest Published Lethal Dose (LDL) [Man] - Route: Oral; Dose: 1000 mg/kg
<b>Special Remarks on Chronic Effects on Humans</b>	High intake of sodium chloride, whether from occupational exposure or in the diet, may increase risk of TOXEMIA OF PREGNANCY in susceptible women (Bishop, 1978). Causes developmental effects/toxicity in humans (fetotoxicity, abortion, ) by intraplacental, or intrauterine routes, but this route of administration is not relevant to occupational exposures. Prolonged or repeated very large doses by intraperitoneal, intraplacental, intrauterine, parenteral, and subcutaneous routes may cause adverse reproductive effects, developmental toxicity/effects, and birth defects (musculoskeletal abnormalities, and maternal effects (effects on ovaries, fallopian tubes) based on animals studies. May affect genetic material (mutagenic).
<b>Special Remarks on other Toxic Effects on Humans</b>	Acute Potential Health Effects: Skin: May cause skin irritation. Eyes: Causes eye irritation. Ingestion: Ingestion of large quantities can irritate the stomach (as in overuse of salt tablets) and cause abdominal pain, nausea, vomiting, and diarrhea. May cause dehydration and thirst, and affect behavior (muscle spasticity/contraction, somnolence, headache, irritability, restlessness, dizziness, convulsions/seizures, coma), metabolism (sodium level), and cardiovascular system (hypertension or hypotension, tachycardia). Continued exposure may produce dehydration, internal organ congestion, and coma. Inhalation: Material is irritating to mucous membranes and upper respiratory tract.

**Section 12. Ecological Information**

<b>Ecotoxicity</b>	Ecotoxicity in water (LC50): 4747-7824 mg/l 96 hours [Fish (Oncorhynchus mykiss)]. 5560-6080 mg/l 96 hours [Fish (Lepomis macrochirus)]. 6020-7070 mg/l 96 hours [Fish (Pimephales promelas)]. 340.7-469.2 mg/l 48 hours [Daphnia (daphnia)]. 1000 mg/l 48 hours [Daphnia (daphnia)].
<b>BOD5 and COD</b>	Not available.
<b>Products of Biodegradation</b>	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
<b>Toxicity of the Products of Biodegradation</b>	The product itself and its products of degradation are not toxic.
<b>Special Remarks on the Products of Biodegradation</b>	Not available.

**Section 13. Disposal Considerations**

<b>Waste Disposal</b>	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
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**Section 14. Transport Information**

<b>DOT Classification</b>	Not a DOT controlled material (United States).
<b>Identification</b>	Not applicable.
<b>Special Provisions for Transport</b>	Not applicable.

Continued on Next Page

## DOT (Pictograms)



## Section 15. Other Regulatory Information and Pictograms

## Federal and State Regulations

TSCA 8(b) inventory: Sodium chloride

## California Proposition 65 Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

## Other Regulations

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 231-598-3).

Canada: Listed on Canadian Domestic Substance List (DSL).

China: Listed on National Inventory.

Japan: Listed on National Inventory (ENCS).

Korea: Listed on National Inventory (KECI).

Philippines: Listed on National Inventory (PICCS).

Australia: Listed on AICS.

## Other Classifications

**WHMIS (Canada)** Not controlled under WHMIS (Canada).**DSCL (EEC)**

Not available

Not available

## HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	0
Reactivity	0
Personal Protection	E

## National Fire Protection Association (U.S.A.)

Health



Flammability

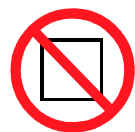
Reactivity

Specific hazard

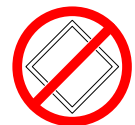
## WHMIS (Canada) (Pictograms)



## DSCL (Europe) (Pictograms)



## TDG (Canada) (Pictograms)



## ADR (Europe) (Pictograms)



## Protective Equipment



Gloves.



Lab coat.



Dust respirator. Be sure to use an approved/certified respirator or equivalent.



Safety glasses.

### Section 16. Other Information

**MSDS Code** S3810

**References** Not available.

**Other Special Considerations** Major Uses: Food preservative; in mineral waters; in soap manufacturing; home water softeners; highway deicing; regeneration of ion-exchange resins; in photography; in the production of chemicals; in ceramic glazes; metallurgy; curing hides; food seasoning; herbicide; fire extinguishing; in mouthwash.

Validated by Sonia Owen on 10/7/2013.

Verified by Sonia Owen.

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CALL (310) 516-8000

#### Notice to Reader

*All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.*