



Material Safety Data Sheet

NFPA 	HMIS <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #00FFFF;">Health Hazard</td> <td style="text-align: center; border: 1px solid black;">1</td> </tr> <tr> <td style="background-color: #FFCCCC;">Fire Hazard</td> <td style="text-align: center; border: 1px solid black;">0</td> </tr> <tr> <td style="background-color: #FFFF00;">Reactivity</td> <td style="text-align: center; border: 1px solid black;">0</td> </tr> </table>	Health Hazard	1	Fire Hazard	0	Reactivity	0	Personal Protective Equipment  See Section 15.
Health Hazard	1							
Fire Hazard	0							
Reactivity	0							

Section 1. Chemical Product and Company Identification		Page Number: 1
Common Name/Trade Name	Tris-Buffered-Saline, 20X	
	Catalog Number(s)	T3015
	CAS#	Mixture.
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	
	RTECS	Not applicable.
	TSCA	TSCA 8(b) inventory: Sodium chloride; Tris(hydroxymethyl)amino methane HCl; Tromethamine; Potassium chloride
Commercial Name(s)	Not available.	
	CI#	Not applicable.
Synonym	TBS, Buffer, 20X	
Chemical Name	Not applicable.	
Chemical Family	Chloride salt. (Salt.)	
Chemical Formula	Not applicable.	
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	
IN CASE OF EMERGENCY CHEMTREC (24hr) 800-424-9300 CALL (310) 516-8000		

Section 2. Composition and Information on Ingredients					
Name	CAS #	Exposure Limits			% by Weight
		TWA (mg/m ³)	STEL (mg/m ³)	CEIL (mg/m ³)	
1) Sodium chloride	7647-14-5				60-70
2) Tris(hydroxymethyl)amino methane HCl	1185-53-1				25-30
3) Tromethamine	77-86-1				0-5
4) Potassium chloride	7447-40-7				0-5
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 ³ 1 hours [Rat]. Tris(hydroxymethyl)amino methane HCl: ORAL (LD50): Acute: 5900 mg/kg [Rat]. Tromethamine: ORAL (LD50): Acute: 5900 mg/kg [Rat].					

Section 3. Hazards Identification

Potential Acute Health Effects	Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, inhalation.
Potential Chronic Health Effects	<p>CARCINOGENIC EFFECTS: Not available.</p> <p>MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Sodium chloride]. Mutagenic for bacteria and/or yeast. [Sodium chloride]. Mutagenic for mammalian somatic cells. [Potassium chloride]. Mutagenic for bacteria and/or yeast. [Potassium chloride].</p> <p>TERATOGENIC EFFECTS: Not available.</p> <p>DEVELOPMENTAL TOXICITY: Not available.</p> <p>The substance may be toxic to blood, kidneys, liver, cardiovascular system, skin.</p> <p>Repeated or prolonged exposure to the substance can produce target organs damage.</p>

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.
Skin Contact	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.
Serious Skin Contact	Not available.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Serious Inhalation	Not available.
Ingestion	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.
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 static discharge: Not available. Non-explosive in presence of shocks.
Fire Fighting Media and Instructions	Not applicable.
Special Remarks on Fire Hazards	Not available.
Special Remarks on Explosion Hazards	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. (Sodium chloride)

Section 6. Accidental Release Measures

Small Spill	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.
Large Spill	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

Precautions	Keep locked up.. 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.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. 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	Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
Personal Protection in Case of a Large Spill	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.
Exposure Limits	Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance	Solid. (Crystalline powder.)	Odor	Not available.
Molecular Weight	Not applicable.	Taste	Not available.
pH (1% soln/water)	Not available.	Color	White.
Boiling Point	Not available.		
Melting Point	801°C (1473.8°F) based on data for: Sodium chloride. Weighted average: 600.44°C (1112.8°F)		
Critical Temperature	Not available.		
Specific Gravity	Weighted average: 2.16 (Water = 1)		
Vapor Pressure	Not applicable.		
Vapor Density	Not available.		
Volatility	Not available.		
Odor Threshold	Not available.		
Water/Oil Dist. Coeff.	The product is much more soluble in water.		
Ionicity (in Water)	Not available.		
Dispersion Properties	See solubility in water, methanol, acetone.		
Solubility	Easily soluble in cold water, hot water. Partially soluble in methanol, acetone. Very slightly soluble in n-octanol.		

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Dust generation, incompatible materials
Incompatibility with various substances	Reactive with oxidizing agents, metals, acids. Slightly reactive to reactive with alkalis.
Corrosivity	Non-corrosive in presence of glass.
Special Remarks on Reactivity	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. (Sodium chloride)
Special Remarks on Corrosivity	Not available.
Polymerization	Will not occur.

Section 11. Toxicological Information

Routes of Entry	Inhalation. Ingestion.
Toxicity to Animals	Acute oral toxicity (LD50): 1500 mg/kg [Mouse]. (Potassium chloride). Acute dermal toxicity (LD50): >10000 mg/kg [Rabbit]. (Sodium chloride).
Chronic Effects on Humans	MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Sodium chloride]. Mutagenic for bacteria and/or yeast. [Sodium chloride]. Mutagenic for mammalian somatic cells. [Potassium chloride]. Mutagenic for bacteria and/or yeast. [Potassium chloride]. Contains material which may cause damage to the following organs: blood, kidneys, liver, cardiovascular system, skin.
Other Toxic Effects on Humans	Hazardous in case of inhalation (lung irritant). Slightly hazardous in case of skin contact (irritant), of ingestion, .
Special Remarks on Toxicity to Animals	Lowest Published Lethal Dose (LDL) [Man] - Route: Oral; Dose: 1000 mg/kg (Sodium chloride)
Special Remarks on Chronic Effects on Humans	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 adverse reproductive effects 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 oral, intraperitoneal, intraplacental, intrauterine, parenteral, and subcutaneous routes may cause adverse reproductive effects and birth defects (fetotoxicity, abortion, musculoskeletal abnormalities, and maternal effects (effects on ovaries, fallopian tubes) based on animals studies. While sodium chloride has been used as a negative control n some reproductive studies, it has also been used as an example that almost any chemical can cause birth defects in experimental animals if studied under the right conditions (Nishimura & Miyamoto, 1969). May affect genetic material (mutagenic). (Sodium chloride)
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects: Skin: May cause skin irritation. Eyes: May cause skin irritation. Inhalation: Material is irritating to mucous membranes and upper respiratory tract. Ingestion: Contains Sodium Chloride which, if ingested in large quantities can irritate the stomach (as in overuse of salt tablets) with nausea and vomiting. May cause dehydration and thirst, and affect behavior (muscle spasticity/contraction, somnolence, headache, restlessness, dizziness, seizures, coma), sense organs, metabolism, and cardiovascular system (hypertension or hypotension, tachycardia). Continued exposure may produce dehydration, internal organ congestion, and coma. Contains Potassium Chloride which may affect behavior (coma, change in motor activity, listlessness, vertigo, mental confusion, paresthesias, general weakness, flaccid paralysis), metabolism, blood (change in clotting factor, electrolytic imbalance), cardiovascular (hypotension, circulatory disturbances, cardiac arrhythmias, heart block), and respiratory, gastrointestinal (irritation of GI tract, nausea, vomiting, diarrhea, abdominal discomfort, purging), and urinary(impairment of renal function) systems. Acute potassium intoxication by mouth is rare because large single doses usually induce vomiting, and because in the absence of pre-existing kidney damage potassium is rapidly excreted. Maximal nontoxic oral dose of KCl in man varies from 0.2g to 1 g of potassium/kg/day depending upon efficiency of individual excretory

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mechanism; lower doses sometimes cause impairment of renal function as shown by reduced inulin, and urea clearance.
 Chronic Potential Health Effects: Prolonged or repeated ingestion of large amounts of Potassium chloride may affect blood and cardiovascular system.
 Contains Tris (hydroxymethyl)amino Methane HCl, which if Ingested in excessive amounts, may cause nausea, vomiting, diarrhea. It may also cause weakness, collapse and coma.
 Contains Tromethamine which can cause irritation of the digestive/gastrointestinal tract and reddening of the mucous membranes of the, mouth, esophagus. Symptoms may include nausea, vomiting, diarrhea. May affect behavior/central nervous system(somnolence, muscle weakness, coma), liver (liver damage), kidneys (kidney damage). May cause alkalosis, hyperkalemia, hypoglycemia, and may depress respiratory center.
 Chronic Potential Health Effects:
 Skin: Prolonged or repeated skin contact with Tromethamine may cause dermatitis.


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	TSCA 8(b) inventory: Sodium chloride; Tris(hydroxymethyl)amino methane HCl; Tromethamine; Potassium 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	OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).	
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	0
Reactivity	0
Personal Protection	E

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

Health



Flammability

Reactivity

Specific hazard

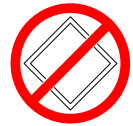
WHMIS (Canada)
(Pictograms)



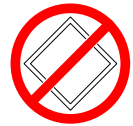
DSCL (Europe)
(Pictograms)



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 T4021

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. (Sodium chloride)

Validated by Sonia Owen on 2/18/2011.

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.