

# MATERIAL SAFETY DATA SHEET

## SODIUM THIOSULPHATE (ANHYDROUS AND PENTAHYDRATE), SOLID

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Brenntag Canada Inc.  
43 Jutland Rd.  
Toronto, ON  
M8Z 2G6  
(416) 259-8231

WHMIS#: 00061328  
Index: HCl0168/07A  
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Website: <http://www.brenntag.ca>

#### EMERGENCY TELEPHONE NUMBERS (FOR EMERGENCIES INVOLVING CHEMICAL SPILLS OR RELEASE)

Toronto, ON (416) 226-6117  
Edmonton, AB (780) 424-1754

Montreal, QC (514) 861-1211  
Calgary, AB (403) 263-8660

Winnipeg, MB (204) 943-8827  
Vancouver, BC (604) 685-5036

#### PRODUCT IDENTIFICATION

Product Name: Sodium Thiosulphate (Anhydrous and Pentahydrate), Solid.  
Chemical Name: Thiosulphuric Acid, Disodium Salt.  
Synonyms: Sodium Thiosulphate Anhydrous; Sodium Thiosulphate Pentahydrate; Sodium Hyposulphite.  
Chemical Family: Inorganic salt.  
Molecular Formula: Anhydrous : Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>; Pentahydrate : Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> · 5 H<sub>2</sub>O.  
Product Use: Chemical intermediate. Gold and silver extraction from mining ores. Photography. Food additive.

#### WHMIS Classification / Symbol:

D-2B: Toxic (skin and eye irritant)



READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

### 2. COMPOSITION, INFORMATION ON INGREDIENTS (Not Intended As Specifications)

<i>Ingredient</i>	<i>CAS#</i>	<i>ACGIH TLV</i>	<i>% Concentration</i>
Sodium Thiosulphate Anhydrous	7772-98-7	---	95 - 99
or		---	
Sodium Thiosulphate Pentahydrate	10102-17-7	---	95 - 99

Decomposition Product: Sulfur Dioxide 7446-09-5 2 ppm \*A4

A4 = Not classifiable as a human carcinogen. (ACGIH-A4).

### 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: May cause cyanosis (blue-grey skin and lips caused by lack of oxygen). Causes skin and eye irritation. Dust is irritating to respiratory tract. See "Other Health Effects" Section. Can decompose at high temperatures forming toxic gases.

POTENTIAL HEALTH EFFECTS

Inhalation:	Product is irritating to the nose, throat and respiratory tract. Excessive contact with powder may cause drying of mucous membranes of nose and throat due to absorption of moisture and oils. Dust may react with moisture in the air to form a weak sulphuric acid mist which can irritate the nose and throat. See "Other Health Effects" Section.
Skin Contact:	Skin contact can cause irritation, especially under the finger nails (and other confined spaces such as under rings or watch bands). May cause defatting, drying and cracking of the skin. Prolonged and repeated contact may lead to dermatitis.
Skin Absorption:	Not likely to be absorbed through the skin.
Eye Contact:	This product causes irritation, redness and pain. May cause corneal damage and conjunctivitis.
Ingestion:	This product may cause mild gastrointestinal discomfort. Ingestion of large doses can have cathartic (laxative) effects.
Other Health Effects:	Effects (irritancy) on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential. Ingestion of very high levels may cause nausea and vomiting, cyanosis, liver damage, kidney damage and high blood pressure. Cyanosis is characterized by navy blue, almost black lips, tongue, and mucous membranes, with skin colour being slate gray. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. Liver damage is characterized by the loss of appetite, jaundice (yellowish skin colour), and occasional pain in the upper left-hand side of the abdomen. Signs and symptoms of kidney damage generally progress from oliguria, to blood in the urine, to total renal failure. Sodium salts have a hypothetical risk of hypernatremia.

## 4. FIRST AID MEASURES

### FIRST AID PROCEDURES

Inhalation:	Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical attention IMMEDIATELY.
Skin Contact:	If irritation, redness, or a burning sensation develops and persists, obtain medical advice. Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, repeat flushing and obtain medical attention.
Eye Contact:	Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.
Ingestion:	Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. IMMEDIATELY contact local Poison Control Centre. Vomiting should only be induced under the direction of a physician or a poison control centre. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.
Note to Physicians:	Treat symptomatically. Sodium salts have a hypothetical risk of hypernatremia. In addition to calcium levels, sodium and phosphate levels should be monitored.  Medical conditions that may be aggravated by exposure to this product include neurological and cardiovascular disorders, diseases of the skin, eyes or respiratory tract, preexisting liver and kidney disorders.

## 5. FIRE-FIGHTING MEASURES

<i>Flashpoint (°C)</i>	<i>Autolgnition Temperature (°C)</i>	<b>Flammability Limits in Air (%):</b>	
		<i>LEL</i>	<i>UEL</i>
Non-combustible (does not burn).	Not applicable.	Not applicable.	Not applicable.
Flammability Class (WHMIS):	Not regulated.		
Hazardous Combustion Products:	Thermal decomposition products are toxic and may include hydrogen sulphide, oxides of sodium, sulphur and irritating gases.		
Unusual Fire or Explosion Hazards:	Minimize air borne spreading of dust. Spilled material may cause floors and contact surfaces to become slippery. Sulphur Dioxide gas, which is toxic, corrosive and an oxidizer, is driven off above 100 degrees Celcius, leaving a Sodium Sulfide residue which is flammable, a strong irritant to skin and tissue and is also incompatible with acids.		
Sensitivity to Mechanical Impact:	Not expected to be sensitive to mechanical impact.		

Rate of Burning: Not available.  
Explosive Power: Not available.  
Sensitivity to Static Discharge: Not expected to be sensitive to static discharge.

#### EXTINGUISHING MEDIA

Fire Extinguishing Media: Foam. Dry chemical, carbon dioxide or water spray. Use carbon dioxide or dry chemical media for small fires. If only water is available, use it in the form of a fog.

#### FIRE FIGHTING INSTRUCTIONS

Instructions to the Fire Fighters: Use water spray to cool fire-exposed containers or structures. Use water spray to disperse vapours. Spilled material may cause floors and contact surfaces to become slippery.

Fire Fighting Protective Equipment: Use self-contained breathing apparatus and protective clothing.

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## 6. ACCIDENTAL RELEASE MEASURES

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Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region.

Containment and Clean-Up Procedures: In all cases of leak or spill contact vendor at Emergency Number shown on the front page of this MSDS. Minimize air borne spreading of dust. Eliminate all sources of ignition. Wear respirator, protective clothing and gloves. Avoid dry sweeping. Do not use compressed air to clean surfaces. Vacuuming or wet sweeping is preferred. Return all material possible to container for proper disposal. Any recovered product can be used for the usual purpose, depending on the extent and kind of contamination. Where a package (drum or bag) is damaged and / or leaking, repair it, or place it into an over-pack drum immediately so as to avoid or minimize material loss and contamination of surrounding environment. Replace damaged containers immediately to avoid loss of material and contamination of surrounding atmosphere. Notify applicable government authority if release is reportable or could adversely affect the environment.

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## 7. HANDLING AND STORAGE

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#### HANDLING

Handling Practices: Use normal "good" industrial hygiene and housekeeping practices. Minimize air borne spreading of dust.  
Ventilation Requirements: See Section 8, "Engineering Controls".  
Other Precautions: Use only with adequate ventilation and avoid breathing dusts. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

#### STORAGE

Storage Temperature (°C): Store below 48 °C. (3)  
Ventilation Requirements: Ventilation should be explosion proof.  
Storage Requirements: Store in a cool, dry and well-ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Avoid moisture contamination. Prolonged storage may result in lumping or caking. Protect from direct sunlight. Protect against physical damage. Hygroscopic. Avoid moisture contamination.  
Special Materials to be Used for Packaging or Containers: Multi-layer polyethylene or Polypropylene bags or sacks. (3) Confirm suitability of any material before using.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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Recommendations listed in this section indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

#### ENGINEERING CONTROLS

Engineering Controls: Local exhaust ventilation required. Ventilation should be explosion proof. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Avoid accumulation and dispersion of dust to reduce explosion potential. Ventilate low lying areas such as sumps or pits where dense dust may collect.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Eye Protection:	Safety glasses with side shields are recommended to prevent eye contact. Use dust-tight chemical safety goggles when there is potential for eye contact. Contact lenses should not be worn when working with this material.
Skin Protection:	Gloves and protective clothing made from PVC, neoprene, rubber or plastic should be impervious under conditions of use. Prior to use, user should confirm impermeability. Discard contaminated gloves.
Respiratory Protection:	No specific guidelines available. A NIOSH/MSHA-approved air-purifying respirator equipped with dust, mist, fume cartridges for concentrations up to 50 ppm Sulphur Dioxide or 100 mg/m <sup>3</sup> particulate. An air-supplied respirator if concentrations are higher or unknown.
Other Personal Protective Equipment:	Avoid accumulation and dispersion of dust to reduce explosion potential. Wear regular work clothing. The use of coveralls is recommended. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

**EXPOSURE GUIDELINES**

<b>SUBSTANCE</b>	<b>ACGIH TLV (STEL)</b>	<b>OSHA PEL</b>		<b>NIOSH REL</b>	
		<b>(TWA)</b>	<b>(STEL)</b>	<b>(TWA)</b>	<b>(STEL)</b>
Decomposition Product: Sulfur Dioxide	5 ppm	5 ppm	---	2 ppm	5 ppm
Particulate Not Otherwise Classified: ACGIH	OSHA				
10 mg/m <sup>3</sup> - Inhalable particulate	50 mppcf* or 15 mg/m <sup>3</sup> - Total Dust				
3 mg/m <sup>3</sup> - Respirable particulate	15 mppcf* or 5 mg/m <sup>3</sup> - Respirable Fraction				

\* mppcf = million particles per cubic foot

**9. PHYSICAL AND CHEMICAL PROPERTIES (Not intended as Specifications)**

Physical State:	Solid.
Appearance:	White crystalline powder.
Odour:	Odourless.
Odour Threshold (ppm):	Not available.
Boiling Range (°C):	Not applicable.
Melting/Freezing Point (°C):	48.
Vapour Pressure (mm Hg at 20° C):	Not applicable.
Vapour Density (Air = 1.0):	Not applicable.
Relative Density (g/cc):	1.67 - 1.73.
Bulk Density:	Not available.
Viscosity:	Not applicable.
Evaporation Rate (Butyl Acetate = 1.0):	Not applicable.
Solubility:	Soluble in water.
% Volatile by Volume:	Not applicable.
pH:	6.5 - 9.5.
Coefficient of Water/Oil Distribution:	Not available.
Volatile Organic Compounds (VOC):	Not applicable.

**10. STABILITY AND REACTIVITY****CHEMICAL STABILITY**

Under Normal Conditions:	Stable. Decomposes at or Loses water at temperatures above 100 °C.
Under Fire Conditions:	Not flammable.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	High temperatures, sparks, open flames and all other sources of ignition. Keep tightly closed to protect quality. Avoid moisture contamination. Minimize air borne spreading of dust. Decomposition will occur above 48 °C.

Materials to Avoid:	Strong oxidizers. Strong acids. Silver. Mercury. Lead. Iodine.. Water reactive materials such as Sodium cause strong exothermic reaction with the hydrate. A violent reaction occurs with Sodium Nitrite when water of crystallization has been driven off by heating.
Decomposition or Combustion Products:	Thermal decomposition products are toxic and may include hydrogen sulphide, oxides of sodium, sulphur and irritating gases.

## 11. TOXICOLOGICAL INFORMATION

### TOXICOLOGICAL DATA:

<b>SUBSTANCE</b>	<b>LD50 (Oral, Rat)</b>	<b>LD50 (Dermal, Rabbit)</b>	<b>LC50 (Inhalation, Rat, 4h)</b>
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Sodium Thiosulphate Anhydrous	8 000 mg/kg (3)	---	---
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Carcinogenicity Data:	The ingredient(s) of this product is (are) not classed as carcinogenic by ACGIH, IARC, OSHA or NTP.
Reproductive Data:	No adverse reproductive effects are anticipated.
Mutagenicity Data:	No adverse mutagenic effects are anticipated.
Teratogenicity Data:	No adverse teratogenic effects are anticipated.
Respiratory / Skin Sensitization Data:	None known.
Synergistic Materials:	None known.
Other Studies Relevant to Material:	None known.

## 12. ECOLOGICAL INFORMATION

Ecotoxicity:	Not available. May be harmful to aquatic life.
Environmental Fate:	This product is biodegradable. May be hazardous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

## 13. DISPOSAL CONSIDERATIONS

Deactivating Chemicals:	None required.
Waste Disposal Methods:	This information applies to the material as manufactured. Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.
Safe Handling of Residues:	See "Waste Disposal Methods".
Disposal of Packaging:	Empty containers retain product residue and can be hazardous. Dispose of waste material at an approved waste incineration facility or (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations.

## 14. TRANSPORTATION INFORMATION

### CANADIAN TDG ACT SHIPPING DESCRIPTION:

This product is not regulated by TDG.  
 Label(s): Not applicable. Placard: Not applicable.  
 ERAP Index: ----- Exemptions: None known.

### US DOT CLASSIFICATION (49CFR 172.101, 172.102):

This product is not regulated by DOT.  
 Label(s): Not applicable. Placard: Not applicable.  
 CERCLA-RQ: Not available. Exemptions: None known.

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## 15. REGULATORY INFORMATION

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### CANADA

CEPA - NSNR: All constituents of this product are included on the DSL.  
CEPA - NPRI: Not included.  
CANADIAN FOOD AND DRUG ACT/REGULATIONS: The use of this material/product as a food additive is regulated by Health and Welfare Canada in the Food and Drug Act and the Food and Drug Regulations. It is incumbent on the user of this material/product to ensure any intended food application is consistent with Health and Welfare Canada guidelines. Food Grade designation in no way implies that the product is safe for consumption by humans. (3)

Controlled Products Regulations Classification (WHMIS):

D-2B: Toxic (skin and eye irritant)

### USA

Environmental Protection Act: All constituents of this product are included on the TSCA inventory.

OSHA HCS (29CFR 1910.1200): Skin and Eye Irritant.

U.S. FOOD AND DRUG ADMINISTRATION: This material/product is regulated for use by the US FDA. It is incumbent on the user of this material/product to ensure any intended food application is consistent with US FDA guidelines. Food Grade designation in no way implies that the product is safe for consumption by humans. (3)

NFPA: Health, Fire, Reactivity (Not available.)

HMIS: 1 Health, 0 Fire, 0 Reactivity (3)

### INTERNATIONAL

Sodium Thiosulphate Anhydrous is found on the following inventories: EINECS (European Inventory of Existing Commercial Chemical Substances).

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## 16. OTHER INFORMATION

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### REFERENCES

1. RTECS-Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety RTECS database.
2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.
3. Supplier's Material Safety Data Sheet(s).
4. CHEMINFO, through "CCINFODisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
5. Guide to Occupational Exposure Values, 2005, American Conference of Governmental Industrial Hygienists, Cincinnati, 2005.
6. Regulatory Affairs Group, Brenntag Canada Inc.
7. The British Columbia Drug and Poison Information Centre, Poison Managements Manual, Canadian Pharmaceutical Association, Ottawa, 1981.
8. NFPA 325M Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids, 1994 Edition, Quincy, MA, 1994.

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The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Brenntag Canada Inc. will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years.

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To obtain revised copies of this or other Material Safety Data Sheets, contact your nearest Brenntag Canada Regional office.

British Columbia: 20333-102B Avenue, Langley, BC, V1M 3H1  
Phone: (604) 513-9009 Facsimile: (604) 513-9010

Alberta: 6628 - 45 th. Street, Leduc, AB, T9E 7C9  
Phone: (780) 986-4544 Facsimile: (780) 986-1070

Manitoba: 681 Plinquet Street, Winnipeg, MB, R2J 2X2

Sodium Thiosulphate (Anhydrous and Pentahydrate), Solid

WHMIS Number : 00061328

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Brenntag Canada Inc.

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Phone: (204) 233-3416      Facsimile: (204) 233-7005

Ontario: 43 Jutland Road, Toronto, ON, M8Z 2G6

Phone: (416) 259-8231      Facsimile: (416) 259-6175

Quebec: 2900 Jean Baptiste Des., Lachine, PQ, H8T 1C8

Phone: (514) 636-9230      Facsimile: (514) 636-0877

Atlantic: A-105 Akerley Boulevard, Dartmouth, NS, B3B 1R7

Phone: (902) 468-9690      Facsimile: (902) 468-3085

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Prepared By: Regulatory Affairs Group, Brenntag Canada Inc., (416) 259-8231.