Safety Data Sheet

Material Name: Sodium Thiosulfate Pentahydrate, Technical Grade

*** Section 1 - Chemical Product and Company Identification ***

Chemical Name: Sodium Thiosulfate Pentahydrate, Technical Grade
Product Use: For Commercial Use

RESTRICTIONS on USE

NOT TO BE USED AS A PESTICIDE. THIS PRODUCT IS NOT TO BE USED IN VIOLATION OF ANY PATENTS. CHEM ONE LTD. DISCLAIMS ANY AND ALL WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR APPLICATION. IN NO EVENT SHALL CHEM ONE LTD. OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER INCLUDING DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LOSS OF BUSINESS PROFITS OR SPECIAL DAMAGES, EVEN IF CHEM ONE LTD. OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES SO THE FOREGOING LIMITATION MAY NOT APPLY.

Supplier Information
Chem One Ltd.
14140 Westfair East Drive
Houston, Texas  77041-1104
Phone: (713) 896-9966
Fax: (713) 896-7540
Emergency # (800) 424-9300 or +1 (703) 527-3887

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

*** Section 2 - Composition / Information on Ingredients ***

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Classification of the substance or mixture: Not a hazardous substance or mixture.

Label elements, including precautionary statements: Not a hazardous substance or mixture.

Hazards not otherwise classified (HNOC) or not covered by GHS: MAY CAUSE EYE AND SKIN IRRITATION. RELEASES TOXIC, IRRITATING GAS AT HIGH TEMPERATURES (100 deg. C). MAY CAUSE ALLERGIC SKIN REACTIONS.

*** Section 3 - Hazards Identification ***

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10102-17-7</td>
<td>Sodium Thiosulfate Pentahydrate</td>
<td>&gt; 90</td>
</tr>
</tbody>
</table>

Synonyms: Chlorine control, Declor-it, Disodium thiosulfate, S-hydrl, Sodium hyposulfite, Sodium oxide sulfide, Antichlor, Sodothiol, Sulfothiorine, Ametox

*** Section 4 - First Aid Measures ***

Emergency Overview
Sodium Thiosulfate Pentahydrate is a colorless solid found in crystalline or powder forms. May cause irritation to the eyes, skin, and mucous membranes of the upper respiratory tract. Keep material away from sodium nitrite and metal nitrates. Product is not combustible. Use extinguishing media appropriate for surrounding fire. Thermal decomposition of this product produces irritating vapors and toxic gases (e.g. sulfur oxides). At 100 degrees C, highly irritating sulfur dioxide gas is given off. Sulfur dioxide is toxic, corrosive, flammable and a strong oxidizer. Emergency responders should wear proper personal protective equipment for the releases to which they are responding.

Hazard Statements
WARNING! MAY CAUSE EYE AND SKIN IRRITATION. RELEASES TOXIC, IRRITATING GAS AT HIGH TEMPERATURES (100 deg. C). MAY CAUSE ALLERGIC SKIN REACTIONS. Avoid contact with eyes and skin. Avoid breathing dusts. Avoid exposure of material to high temperatures. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation.
**Section 4 - First Aid Measures Continued**

### Potential Health Effects: Eyes
Exposure to particulates or solution of this product may cause irritation of the eyes with symptoms such as stinging, tearing, redness and pain.

### Potential Health Effects: Skin
This product can cause irritation of the skin, especially after prolonged exposures. Repeated skin contact may lead to dermatitis (red, cracked skin). In sensitive individuals, exposure to this product can cause allergic reaction.

### Potential Health Effects: Ingestion
Ingestion of this product (especially in large volumes) can irritate the tissues of the mouth, esophagus, and other tissues of the digestive system. Symptoms of exposure can include vomiting, diarrhea, and nausea and systemic effects of cyanosis. Large doses by ingestion can also have a cathartic action, causing diarrhea.

### Potential Health Effects: Inhalation
Breathing dusts or particulates generated by this product can lead to irritation of the nose, throat or respiratory system. Symptoms of such exposure could include coughing, sneezing, and chest discomfort. Inhalation of vapors and fumes given off when Sodium Thiosulfate Pentahydrate is heated above 100 degrees C, (sulfur dioxide gas) will cause significant irritation.

### First Aid: Eyes
In case of contact with eyes, rinse immediately with plenty of water for at least 20 minutes. Seek immediate medical attention.

### First Aid: Skin
Remove all contaminated clothing. For skin contact, wash thoroughly with soap and water for at least 20 minutes. Seek immediate medical attention if irritation develops or persists.

### First Aid: Ingestion
DO NOT INDUCE VOMITING. If swallowed, wash out mouth with water provided person is conscious. Never give anything by mouth to a victim who is unconscious or having convulsions. Contact a physician or poison control center immediately.

### First Aid: Inhalation
Remove source of contamination or move victim to fresh air. Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult. Get immediate medical attention.

### First Aid: Notes to Physician
Provide general supportive measures and treat symptomatically.

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**Section 5 - Fire Fighting Measures**

### General Fire Hazards
Heating this product above 100 degrees C will release hazardous sulfur dioxide gas. Explosion hazard with sodium nitrite and metal nitrates.

### Hazardous Combustion Products
Sulfur dioxide gas.

### Extinguishing Media
Use methods for the surrounding fire and other materials involved in the fire.

### Fire Fighting Equipment/Instructions
Firefighters should wear full protective clothing including self-contained breathing apparatus. If possible control runoff from fire control or dilution water to prevent environmental contamination.
**Section 6 - Accidental Release Measures**

**Containment Procedures**
Stop the flow of material, if this can be done without risk. Contain the discharged material. If sweeping of a contaminated area is necessary use a dust suppressant agent, which does not react with product (see Section 10 for incompatibility information).

**Clean-Up Procedures**
Small releases can be cleaned-up wearing gloves, goggles and suitable body protection. In case of a large spill (in which excessive dusts can be generated), clear the affected area, protect people, and respond with trained personnel. Do not allow the spilled product to enter public drainage system or open water courses. Place all spill residues in an appropriate container and seal. Thoroughly wash the area after a spill or leak clean-up. Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater.

**Evacuation Procedures**
Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. In case of large spills, follow all facility emergency response procedures.

**Special Procedures**
Remove soiled clothing and launder before reuse. Avoid all skin contact with the spilled material. Have emergency equipment readily available.

**Section 7 - Handling and Storage**

**Handling Procedures**
All employees who handle this material should be trained to handle it safely. Do not breathe dust. Avoid all contact with skin and eyes. Avoid accumulation of dusts of this product. Use this product only with adequate ventilation. Wash thoroughly after handling.

**Storage Procedures**
Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Storage areas should be made of corrosion- and fire-resistant materials. Post warning and “NO SMOKING” signs in storage and use areas, as appropriate. Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area. Floors should be sealed to prevent absorption of this material. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers).

Empty containers may contain residual particulates; therefore, empty containers should be handled with care. Do not cut, grind, weld, or drill near this container. Never store food, feed, or drinking water in containers that held this product. Keep this material away from food, drink and animal feed. Do not store this material in open or unlabeled containers. Limit quantity of material stored.
Exposure Guidelines

A: General Product Information
Sulfur dioxide, which may be released at high temperatures, has an OSHA established exposure limit of 2 ppm TWA and 5 ppm STEL (15 minutes). NIOSH has recommended an exposure limit of 2 ppm TWA and has established a level of 100 ppm as Immediately Dangerous to Life and Health (IDLH).

B: Component Exposure Limits
ACGIH, OSHA, and NIOSH have not developed exposure limits for any of this product's components.
The exposure limits given are for Particulates Not Otherwise Classified.

OSHA:
- 15 mg/m$^3$ TWA (Total dust)
- 5 mg/m$^3$ TWA (Respirable fraction)

DFG MAKs:
- 4 mg/m$^3$ TWA (Inhalable fraction)
- 1.5 mg/m$^3$ TWA (Respirable fraction)

Engineering Controls
Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement.

PERSONAL PROTECTIVE EQUIPMENT

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132). Please reference applicable regulations and standards for relevant details.

Personal Protective Equipment: Eyes/Face
Wear safety glasses (or goggles). If necessary, refer to U.S. OSHA 29 CFR 1910.133.

Personal Protective Equipment: Skin
Wear impervious gloves, boots and coveralls to avoid skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

Personal Protective Equipment: Respiratory
No specific guidelines are available. If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. An approved dust and mist air-purifying respirator may be adequate. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA’s Respiratory Protection Standard (1910.134-1998).

Personal Protective Equipment: General
Wash hands thoroughly after handling material. Do not eat, drink or smoke in work areas. Have a safety shower or eye-wash fountain available.

Protective Clothing Pictograms:
### Section 9 - Physical & Chemical Properties

**Physical Properties: Additional Information**
The data provided in this section are to be used for product safety handling purposes. Please refer to Product Data Sheets, Certificates of Conformity or Certificates of Analysis for chemical and physical data for determinations of quality and for formulation purposes.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>White crystalline or powder</td>
</tr>
<tr>
<td><strong>Physical State</strong></td>
<td>Solid</td>
</tr>
<tr>
<td><strong>Vapor Pressure</strong></td>
<td>Zero</td>
</tr>
<tr>
<td><strong>Boiling Point</strong></td>
<td>Decomposes above 100 deg C</td>
</tr>
<tr>
<td><strong>Solubility (H2O)</strong></td>
<td>42% by wt. @ 0 deg C</td>
</tr>
<tr>
<td><strong>Softening Point</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Flash Point</strong></td>
<td>Not flammable</td>
</tr>
<tr>
<td><strong>Auto Ignition</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Odorless</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>6.5-8.0 (1% solution)</td>
</tr>
<tr>
<td><strong>Vapor Density</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Freezing/Melting Point</strong></td>
<td>118 deg F (48 deg C)</td>
</tr>
<tr>
<td><strong>Specific Gravity</strong></td>
<td>1.69 (H2O = 1)</td>
</tr>
<tr>
<td><strong>Particle Size</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Bulk Density</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Method Used</strong></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Section 10 - Chemical Stability & Reactivity Information

**Chemical Stability**
Product is normally stable in solid form. May be unstable in solution. Sodium Thiosulfate is hygroscopic; on exposure to air it will absorb water.

**Chemical Stability: Conditions to Avoid**
Avoid high temperatures, exposure to air, moisture and incompatible materials.

**Incompatibility**
This material is incompatible with strong oxidizers and acids. Sodium Thiosulfate can react violently with Sodium Nitrite. Sodium Thiosulfate is also incompatible with mercury and iodine.

**Hazardous Decomposition**
Sulfur oxides and hydrogen sulfide.

**Hazardous Polymerization**
Will not occur.

### Section 11 - Toxicological Information

**Acute and Chronic Toxicity**

**A: General Product Information**
Poisonous by intravenous route. Mildly toxic by ingestion. Human systemic effects by ingestion, including cyanosis. Chronic: Long term skin overexposure to this product may lead to dermatitis (red, itchy skin).

**B: Component Analysis - LD50/LC50**
- **Sodium Thiosulfate:**
  - Intraperitoneal-Mouse LD₅₀: 5600 mg/kg; Intravenous-Mouse LD₅₀: 2350 mg/kg; Intravenous-Dog, adult LDLo: 3000 mg/kg; Intravenous-rat LD₅₀: >2500 mg/kg

**C: Component Analysis - TDLo/LDLo:**
- Oral-Human TDLo: 300 mg/kg/7 days: Pulmonary system effects

**Carcinogenicity**

**A: General Product Information**
Sodium Thiosulfate is not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**B: Component Carcinogenicity**
No information available.
*** Section 11 - Toxicological Information Continued ***

Epidemiology
Prolonged skin contact may cause allergic skin reactions (allergic dermatitis).

Neurotoxicity
No information available.

Mutagenicity
No information available.

Teratogenicity
No information available.

Other Toxicological Information
Thiosulfate occurs naturally in the body.

*** Section 12 - Ecological Information ***

Ecotoxicity
A: General Product Information
This compound may be harmful to aquatic life in high concentrations.

B: Aquatic Toxicity
No information available.

Environmental Fate
No potential for food chain concentration.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions
A: General Product Information
As shipped, this product is not considered a hazardous waste.

B: Component Waste Numbers
No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions
All wastes must be handled in accordance with local, state and federal regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

*** Section 14 - Transportation Information ***

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under I.M.O., I.C.A.O. (I.A.T.A.) and 49 CFR to assure regulatory compliance.

US DOT Information
Shipping Name: Not applicable.
Hazard Class: Not applicable
UN/NA #: Not applicable
Packing Group: Not applicable
Required Label(s): Not applicable  RQ Quantity: Not applicable

56th Edition International Air Transport Association (IATA) For Shipments by Air transport: Not considered hazardous.

37-14 International Maritime Organization (I.M.O.) Classification I.M.O. Classification: Not considered hazardous under IMDG.I.M.O. regulations
US Federal Regulations

A: General Product Information
Sodium Thiosulfate (CAS # 10102-17-7) is not on the TSCA Inventory. As Sodium Thiosulfate is a hydrate, it is exempt from TSCA Inventory requirements per 40 CFR 720.3 (u)(2)).

B: Component Analysis
Sodium Thiosulfate is not listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).
SARA 302: There are no specific Threshold Planning Quantities for Sodium Thiosulfate. The default Federal MSDS submission (EHS TPQ) and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.

C: Sara 311/312 Tier II Hazard Ratings:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Fire Hazard</th>
<th>Reactivity Hazard</th>
<th>Pressure Hazard</th>
<th>Immediate Health Hazard</th>
<th>Chronic Health Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Thiosulfate</td>
<td>10102-17-7</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

State Regulations

A: General Product Information
California Proposition 65
Sodium Thiosulfate is not on the California Proposition 65 chemical lists.

B: Component Analysis - State

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>CA</th>
<th>FL</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
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<tr>
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<td>10102-17-7</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Other Regulations

A: General Product Information
Not determined.

B: Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>TSCA</th>
<th>DSL</th>
<th>EINECS</th>
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<tbody>
<tr>
<td>Sodium Thiosulfate</td>
<td>10102-17-7</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

C: Component Information (Canada)
The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Minimum Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Thiosulfate</td>
<td>10102-17-7</td>
<td>No disclosure limit</td>
</tr>
</tbody>
</table>

Canadian WHMIS Classification: D2B

ANSI LABELING (Z129.1):
CAUTION! MAY CAUSE SKIN AND EYE IRRITATION. HARMFUL IF INGESTED OR INHALED. MAY CAUSE ALLERGIC REACTION IN SENSITIVE INDIVIDUALS. Avoid contact with skin, eyes, or clothing. Do not taste or swallow. Avoid breathing dusts and particulates. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, faceshields, suitable body protection, and NIOSH-approved respiratory protection, as appropriate. FIRST-AID: In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. IN CASE OF FIRE: Use water fog, dry chemical, CO₂, or “alcohol” foam. IN CASE OF SPILL: Absorb spill with inert material. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.
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Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

Contact: Sue Palmer- Koleman Contact Phone: (713) 896-9966

Revision Log

09/19/00 3:10 PM SEP Changed company name, Sect 1 and 16, from Corporation to Ltd.
06/02/01 9:31 AM Checked exposure limits; made changes to Section 9; overall review, add SARA 311/312 Hazard Ratings.
09/30/03 11:00 PM HDF General review of entire MSDS. Up-graded Section 3 Health Hazard information, HMIS categories. Update of PNOC exposure limits to Section 8. Up-Dated Section 14 Transportation Information.
08/26/04 11:23 AM HDF Revised Section 5 regarding reactivity with Sodium Nitrite
06/22/05 1:52 PM SEP Update IATA Section 14
10/22/07 4:37 PM SEP Updated IATA Section 14
10/15/08 10:26 AM DLY Changed Chem One Physical Address, Section 1
12/27/2010 2:58 PM SEP Updated IATA
02/09/2015 GHS Revision all sections
This is the end of SDS # C1-153

Revised By:
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