Safety Data Sheet.

Sodium Thiosulfate Pentahydrate - Technical Grade

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

Chemical Name: Sodium Thiosulfate Pentahydrate, Technical Grade

Product Use: For Commercial Use

Manufacturer Information
Pan-Chem Corporation (Exporter of record) Phone : 91-22-22078362
Kapur Mahal, Flat No. 18-B, 2nd Floor, Fax : 91-22-22814079
65, Marine Drive, Mumbai – 400 0020. (India).
Emergency Contact No. +91-9820000114.

General Comments
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 ***

<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;98.5</td>
</tr>
</tbody>
</table>

Synonyms: Declor-it, Disodium Thiosulfate, Sodium Hyposulfite, Antichor, Ametox.

*** Section 3-Hazards Identification ***

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

Classification of the Substance or Mixture: Not hazardous substance or mixture.

Label elements, including Precautionary: Not 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.
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 (100DEG.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.

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

Hazardous Combustion Products
Sulfur dioxide gas.

Extinguishing Media
Use methods for 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.

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*** Section 6 - Accidental Release Measures ***
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Containment Procedures
Stop the flow of material, if this is 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 in 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 reinstatement 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.

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**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, area (i.e. sprinkler system, portable fire extinguishers).

Empty containers may contain residual particulate; 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.

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**Section 8 - Exposure Controls / Personal protection**
**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 establishes 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 impervious gloves, boots and coveralls to avoid skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

**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 full-face piece pressure / demand SCBA or a full face piece, 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 is 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.

- **Appearance:** White Crystalline or powder
- **Odor:** Odorless
- **Physical State:** Solid
- **pH:** 6.5-8.0 (1% Solution)
- **Vapor Pressure:** Zero
- **Vapor Density:** Not applicable
- **Boiling Point:** Decomposes above 100 deg C
- **Freezing/Melting Point:** 118 deg F (48 deg C)
- **Solubility (H₂O):** 42% by wt. @ 0 deg C
- **Specific Gravity:** 1.69 (H₂O = 1)
- **Softening Point:** Not applicable
- **Particle Size:** Not determined
- **Flash Point:** Not Flammable
- **Bulk Density:** Not Applicable
- **Auto Ignition:** Not Applicable
- **Method Used:** Not Applicable

**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.

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*** Section 11 - Toxicological Information ***

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**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: >2500mg/kg

**C : Component Analysis - TDLo/LDLo;**
Oral-Human TDLo:300mg/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

**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: Ecotoxicity
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 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 of I.M.O. Classification:** Not considered hazardous under IMDG.I.M.O. regulations.

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*** Section 15 - Regulatory Information ***

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**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>
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<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>
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**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>
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<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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</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 Ingredients 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, face shields, 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 Safety Data Sheet for additional Information.

*** Section 16 - Regulatory Information ***

Other Information
Pan-Chem Corporation. (“Pan-Chem”) shall not be responsible for the use of any information, Product, Method, or apparatus herein presented (“Information”), and you must make your own determination as to its suitability and completeness for your own use, for the protection of the environment, and for health and safety purposes. You assume the entire risk of relying on this information. In no event shall Pan-Chem be responsible for damages of any nature whatsoever resulting from the use of this product or products, or reliance upon this Information. By providing this Information, Pan-Chem neither can nor intends to control the method or manner by which you use, handle, store, or transport Pan-Chem Products. If any materials are mentioned that are not Pan-Chem Products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed. Pan-Chem makes no representations or warranties, either express or implied of merchantability, fitness for a particular purpose or of any other nature regarding this information, and nothing herein waives any of Pan-Chem’s conditions of sale. This information could include technical inaccuracies or typographical errors. Pan-Chem may make improvements and/or changes in the product (s) and/or the program (s) described in this information at any time. If you have any questions, please contact us at Tel. 91-22-22078362 or E-mail us at kshah@panchemcorp.com

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: MR. KIRIT P. SHAH       Contact Phone: 91-22-22078362