

THALLIUM SULFATE

TSU

CAUTIONARY RESPONSE INFORMATION

Common Synonyms		Solid	Colorless to white	Odorless
Ratox Sulfuric acid, thallium salt Thalious sulfate Zelio		Sinks and mixes with water.		
Keep people away. Avoid contact with solid. Notify local health and pollution control agencies. Protect water intakes.				
Fire	Not flammable.			
Exposure	CALL FOR MEDICAL AID. SOLID. Poisonous if swallowed or if skin is exposed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.			
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.			

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge
Collection Systems: Pump

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: Tl_2SO_4
2.3 IMO/UN Designation: 6.1/1707
2.4 DOT ID No.: 1707
2.5 CAS Registry No.: Currently not available
2.6 NAERG Guide No.: 151
2.7 Standard Industrial Trade Classification: 52349

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Currently not available
3.2 **Symptoms Following Exposure:** SKIN: Loss of hair and skin eruptions (keratinization, petechiae, ecchymoses). INGESTION OR SKIN ABSORPTION: Pain and tingling or numbness of the extremities, drooping eyelids, incoordination of muscular action, loss of hair, fever, inflamed and runny nose, conjunctivitis, abdominal pain, nausea and vomiting. Lethargy, jumbled speech, tremors, convulsions and cyanosis may follow. Pulmonary edema and pneumonia may precede death from respiratory failure.
3.3 **Treatment of Exposure:** Call a doctor. INHALATION: Remove from exposure. EYES: Flush with running water. SKIN: Wash with soap and water. INGESTION: Induce vomiting and perform gastric lavage with a solution of 1% sodium or potassium iodide. Activated carbon may be effective if administered early. Castor oil (1 oz.) as a cathartic.
3.4 **TLV-TWA:** 0.1 mg Tl/m^3
3.5 **TLV-STEL:** Not listed.
3.6 **TLV-Ceiling:** Not listed.
3.7 **Toxicity by Ingestion:** Grade 4; LD_{50} <50 mg/kg.
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Chronic exposure may cause hair loss, atrophic changes in skin and nails, salivation, pigmentation of the gums, and renal damage. Psychotic symptoms such as nervousness, anxiety, depression, impaired memory, sloppiness and deteriorating work performance indicate organic brain damage. Tetatogenic effects in laboratory animals.
3.10 **Vapor (Gas) Irritant Characteristics:** Not pertinent
3.11 **Liquid or Solid Characteristics:** Currently not available
3.12 **Odor Threshold:** Odorless
3.13 **IDLH Value:** 15 mg Tl/m^3
3.14 **OSHA PEL-TWA:** 0.1 mg Tl/m^3
3.15 **OSHA PEL-STEL:** Not listed.
3.16 **OSHA PEL-Ceiling:** Not listed.
3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:** Not pertinent
4.2 **Flammable Limits in Air:** Not flammable
4.3 **Fire Extinguishing Agents:** Not pertinent
4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
4.5 **Special Hazards of Combustion Products:** Not pertinent
4.6 **Behavior in Fire:** Not pertinent
4.7 **Auto Ignition Temperature:** Not flammable
4.8 **Electrical Hazards:** Not pertinent
4.9 **Burning Rate:** Not pertinent
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** Not pertinent.
4.12 **Flame Temperature:** Currently not available
4.13 **Combustion Molar Ratio (Reactant to Product):** Not pertinent.
4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
5.2 **Reactivity with Common Materials:** No reaction
5.3 **Stability During Transport:** Stable
5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
5.5 **Polymerization:** Not pertinent
5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**
0.03 ppm/Atlantic Salmon/LC₅₀
10 ppm/96-hour/Brown Shrimp/LC₅₀
6.2 **Waterfowl Toxicity:** Currently not available
6.3 **Biological Oxygen Demand (BOD):** Currently not available
6.4 **Food Chain Concentration Potential:** Probably high-is a cumulative poison.
6.5 **GESAMP Hazard Profile:** Not listed

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available
7.2 **Storage Temperature:** Currently not available
7.3 **Inert Atmosphere:** Currently not available
7.4 **Venting:** Currently not available
7.5 **IMO Pollution Category:** Currently not available
7.6 **Ship Type:** Currently not available
7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Poison
8.2 **49 CFR Class:** 6.1
8.3 **49 CFR Package Group:** II
8.4 **Marine Pollutant:** No
8.5 **NFPA Hazard Classification:** Not listed
8.6 **EPA Reportable Quantity:** 100 pounds
8.7 **EPA Pollution Category:** B
8.8 **RCRA Waste Number:** P115
8.9 **EPA FWPCA List:** Yes

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid
9.2 **Molecular Weight:** 504.85.
9.3 **Boiling Point at 1 atm:** Currently not available
9.4 **Freezing Point:** 1169.5°F = 632°C = 905.2°K
9.5 **Critical Temperature:** Not pertinent
9.6 **Critical Pressure:** Not pertinent
9.7 **Specific Gravity:** 6.77 at 20°C.
9.8 **Liquid Surface Tension:** Not pertinent
9.9 **Liquid Water Interfacial Tension:** Not pertinent
9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
9.12 **Latent Heat of Vaporization:** Not pertinent
9.13 **Heat of Combustion:** Not pertinent
9.14 **Heat of Decomposition:** Not pertinent
9.15 **Heat of Solution:** (Absorbs heat), 29.5 Btu/lb = 16.4 cal/g = 6.86 X 10⁵ J/kg
9.16 **Heat of Polymerization:** Not pertinent
9.17 **Heat of Fusion:** 10.9 cal/g
9.18 **Limiting Value:** Currently not available
9.19 **Reid Vapor Pressure:** Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
	N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
40	3.009		N		N		N
50	3.901		O		O		O
60	4.792		T		T		T
70	5.684		P		P		P
80	6.576		E		E		E
90	7.468		R		R		R
100	8.360		T		T		T
110	9.252		I		I		I
120	10.144		N		N		N
130	11.036		E		E		E
140	11.927		N		N		N
150	12.819		T		T		T
160	13.711		P		P		P
170	14.603		E		E		E
180	15.495		R		R		R
190	16.387		T		T		T
200	17.279		I		I		I
210	18.170		N		N		N