

# THALLIUM CARBONATE

THB

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Carbonic acid, thallium (1+) salt Dithallous carbonate Thallous carbonate		Solid (Crystals)      White
		Sinks and mixes with water.
<p><b>KEEP PEOPLE AWAY. AVOID CONTACT WITH SOLID AND DUST.</b>  Wear self-contained positive pressure breathing apparatus and full protective clothing.  Notify local health and pollution control agencies.  Protect water intakes.</p>		
<b>Fire</b>	Nonflammable. Poisonous and irritating fumes are produced in a fire or when heated. Wear self-contained positive pressure breathing apparatus and full protective clothing. Extinguish small adjacent fires: dry chemical, carbon dioxide, water spray, or foam; large fires: water spray, fog, or foam.	
<b>Exposure</b>	CALL FOR MEDICAL AID. POISONOUS. MAY BE FATAL IF INHALED, SWALLOWED OR ABSORBED THROUGH SKIN. ONSET OF SYMPTOMS MAY BE DELAYED 12 TO 24 HOURS. DUST Irritating to eyes and skin. If in eyes or on skin, flush with running water for at least 15 minutes; hold eyelids open periodically, if appropriate. Remove and isolate contaminated clothing and shoes at the site. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.  <b>SOLID</b> If swallowed, may cause nausea, vomiting, diarrhea, abdominal pain and bleeding from the gut. IF IN EYES OR ON SKIN, flush with running water for at least 15 minutes, hold eyelids open periodically, if appropriate. Remove and isolate contaminated clothing and shoes at the site. IF SWALLOWED and victim is CONSCIOUS, have victim drink water and induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.	
<b>Water Pollution</b>	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

Stop discharge  
Collection Systems: Pump; Dredge

### 2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: Not listed.
- 2.2 Formula:  $Tl_2CO_3$
- 2.3 IMO/UN Designation: Not listed
- 2.4 DOT ID No.: 1707
- 2.5 CAS Registry No.: 6533-73-9
- 2.6 NAERG Guide No.: 151
- 2.7 Standard Industrial Trade Classification: 52379

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Wear self-contained positive pressure breathing apparatus and full protective clothing.
- 3.2 **Symptoms Following Exposure:** Thallium is one of the more toxic elements, both as an acute and a chronic poison. Effects of exposure are cumulative and onset of symptoms may be delayed 12 to 24 hours. May be fatal if inhaled, ingested or absorbed through the skin. Readily absorbed through the skin and digestive tract. Digestion of soluble thallium compounds has caused many deaths. Ingestion of sublethal quantities may cause nausea, vomiting, diarrhea, abdominal pain, and bleeding from the gut accompanied or followed by drooping eyelids, crossed eyes, weakness, numbness, tingling of arms and legs, trembling, tightness and pain in the chest. Loss of hair may occur in two to three weeks. Severe intoxication may cause prostration, rapid heartbeat, convulsions, and psychosis. Some effects may be permanent.
- 3.3 **Treatment of Exposure:** INHALATION: Move victim to fresh air; call emergency medical care. If breathing has stopped, give artificial respiration. EYES OR SKIN: Immediately flush with running water for at least 15 minutes, lifting the upper and lower lids occasionally, if appropriate. Speed in removing material from skin is important. Remove and isolate contaminated clothing and shoes at the site. INGESTION: If conscious, have victim drink large quantities of water and induce vomiting by touching back of throat with a finger. If unconscious or having convulsions, do nothing except keep victim warm.
- 3.4 **TLV-TWA:** 0.1 mg/m<sup>3</sup> as thallium
- 3.5 **TLV-STEL:** Not listed.
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 4; LD<sub>50</sub> = 21 mg/kg (mouse)
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Thallous ion causes mutagenic effects (chromosomal aberrations) in animals and plants, and teratogenic effects (detrimental to the sexual behavior, reproductive organs, egg and fetal development, and survival of the chicken). It also causes liver and kidney damage, hair loss and permanent effects such as staggering, visual difficulties, trembling and mental abnormalities. Chronic oral or cutaneous exposure of mice to thallium caused cancer of the female genital tract.
- 3.10 **Vapor (Gas) Irritant Characteristics:** Not pertinent
- 3.11 **Liquid or Solid Characteristics:** Currently not available
- 3.12 **Odor Threshold:** Currently not available
- 3.13 **IDLH Value:** 15 mg/m<sup>3</sup> (as thallium)
- 3.14 **OSHA PEL-TWA:** 0.1 mg/m<sup>3</sup> as thallium
- 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 pertinent
- 4.3 **Fire Extinguishing Agents:** Extinguish adjacent fires with dry chemical, carbon dioxide, water spray, fog or foam.
- 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:** When heated to decomposition, it emits toxic fumes of thallium.
- 4.7 **Auto Ignition Temperature:** Not pertinent
- 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:**  
1,800 ppm (Tl)/48 hr/fathead minnow/LC<sub>50</sub>/fresh water  
20.9 ppm (Tl)/sheepshead minnow/LC<sub>50</sub>/salt water
- 6.2 **Waterfowl Toxicity:** Approximate oral mean lethal dose in domestic mallards and wild white geese: 28 mg/kg (dry thallous carbonate); 14 mg/kg (in solution or coated on grain). Toxicity estimates are based on approximate values for water soluble thallous sulfate.
- 6.3 **Biological Oxygen Demand (BOD):** None
- 6.4 **Food Chain Concentration Potential:** Plants growing in soils or water with very high thallium content may accumulate sufficient thallium to be toxic to organisms that feed on them. Algae from contaminated water exhibited a thallium bioconcentration factor of >430. Other bioconcentration factors that have been reported include 130 for atlantic salmon mussel and 18 for the edible portions of softshell clams. Thallium is a cumulative poison four times as toxic as arsenious oxide.
- 6.5 **GESAMP Hazard Profile:** Not listed

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99.99%
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** Not listed
- 7.4 **Venting:** Not pertinent
- 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:**  

Category	Classification
Health Hazard (Blue).....	3
Flammability (Red).....	-
Instability (Yellow).....	-
- 8.6 **EPA Reportable Quantity:** 100 pounds
- 8.7 **EPA Pollution Category:** B
- 8.8 **RCRA Waste Number:** U215
- 8.9 **EPA FWPCA List:** Not listed

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid
- 9.2 **Molecular Weight:** 468.75
- 9.3 **Boiling Point at 1 atm:** Not pertinent
- 9.4 **Freezing Point:** 521.6°F = 272°C = 545°K
- 9.5 **Critical Temperature:** Not pertinent
- 9.6 **Critical Pressure:** Not pertinent
- 9.7 **Specific Gravity:** 7.11 at 25°C (room temperature)
- 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:** Currently not available
- 9.16 **Heat of Polymerization:** Not pertinent
- 9.17 **Heat of Fusion:** Currently not available
- 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
68	5.300		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