

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300

Gaithersburg, Maryland 20899-2300

SRM Number: 997
MSDS Number: 997
SRM Name: Isotopic Standard for
Thallium

Date of Issue: 09 March 2012

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Description: This Standard Reference Material (SRM) is intended primarily for use as an assay and isotopic standard for thallium. A unit of SRM 997 consists of 0.25 g of a commercial, high-purity thallium metal.

Substance: Thallium metal

Other Designations: Ramor; thallium elemental; Tl

2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0-4): Health = 1 Fire = 3 Reactivity = 0

Major Health Hazards: No major health hazards associated with this material.

Physical Hazards: Dust/air mixtures may ignite or explode.

Potential Health Effects (Acute and Chronic)

Inhalation: No information available on significant adverse effects.

Skin Contact: Exposure may cause severe irritation with possible burns. Repeated or prolonged exposure may result in contact dermatitis due to sensitization.

Eye Contact: Dust may cause irritation.

Ingestion: Ingestion of extreme large doses may cause gastrointestinal irritation with nausea, vomiting, and diarrhea. Thallium compounds are cumulative poisons. Indication of thallium poisoning may include pigmentation of the gum and nails, mental abnormalities, alopecia, polyneuropathy, liver and kidney damage.

Listed as a Carcinogen/Potential Carcinogen

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	_____	<u>X</u>
In the International Agency Report on Carcinogens (IARC) Monographs	_____	<u>X</u>
By the Occupational Safety and Health Administration (OSHA)	_____	<u>X</u>

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component	CAS Registry	EC Number (EINECS)	Nominal Concentration (%)
Thallium	7740-28-0	231-138-1	100

EC Classification: T+

EC Risk (R No.): 26/28, 33, 53

EC Safety (S No.): 13, 28, 45, 61

EC Risk/Safety Phrases: Refer to Section 15, "Regulatory Information".

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Seek immediate medical attention.

Eye Contact: Immediately flush eyes, including under the eyelids with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

Skin Contact: Wash affected area with soap and water for at least 15 minutes while removing contaminated clothing. Seek medical attention, if needed.

Ingestion: If a large amount is swallowed, seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Negligible fire hazard in bulk form. Dust/air mixtures may ignite or explode.

Extinguishing Media: Dolomite, dry powder for metal fires, dry sand, graphite, soda ash, sodium chloride. Do not get water directly on material.

Fire Fighting: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point: Not applicable.

Autoignition Temp: Not applicable.

Flammability Limits in Air

UPPER (Volume %): Not applicable.

LOWER (Volume %): Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Do not touch spilled material. Absorb with sand or other non-combustible material. Collect with absorbent into appropriate container for disposal. Keep unnecessary people away, isolate hazard area and deny entry.

Disposal: Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Handling and Storage: Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances.

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

ACGIH (TWA): 0.2 mg/m³ (inhalable fraction)

Skin – potential significant contribution to overall exposure by the cutaneous route.

Ventilation: Use local exhaust ventilation system. Ensure compliance with applicable exposure limits. Refer to the ACGIH document, *Industrial Ventilation, a Manual of Recommended Practices*.

Respirator: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29 CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye Protection: Wear chemical safety goggles. An eyewash station should be readily available near areas of use.

Personal Protection: Wear appropriate chemical resistant clothing and gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: White solid; odorless.
Molar Mass (g/mol): 204.4
Molecular Formula: Tl
Density: Not available.
Boiling Point (°C): 1447–1467 (2636–2672 °F)
Melting Point (°C): 304 (579 °F)
Specific Gravity (water = 1): 11.85
Water Solubility: Insoluble.
Solvent Solubility: Soluble in nitric acid and sulfuric acid.

10. STABILITY AND REACTIVITY

Stability: ☒ Stable ☐ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid generating dusts. Avoid heat, flames, sparks and other sources of ignition.

Incompatible Materials: Halogens.

Fire/Explosion Information: See Section 5, “Fire Fighting Measures”.

Hazardous Decomposition: Thallium

Hazardous Polymerization: ☐ Will Occur ☒ Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: ☒ Inhalation ☒ Skin ☐ Ingestion

Toxicity data: No data available.

Mutagen:

Thallium has been studied for mutagenic effects. The following endpoint is listed by Registry of Toxic Effects of Chemical Substances (RTECS).

Mutagenic effects: Rat, Intermittent: 0.12 mg/kg (240 d)

Health Effects (Acute and Chronic): See Section 2, “Hazards Identification” for potential health effects.

Target Organs: No information available.

Medical Conditions Aggravated by Exposure: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No ecotoxicity data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local requirements.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: This material is not regulated by DOT or IATA.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): 100 lb (454 kg) final RQ
(no reporting of releases of this hazardous substance is required if the diameter of the pieces of solid metal released is >100 µm)
SARA Title III Section 302 (40 CFR 355.30): Not regulated for this material.
SARA Title III Section 304 (40 CFR 355.40): Not regulated for this material.
SARA Title III Section 313 (40 CFR 372.65): Thallium (1 % de minimis concentration).
OSHA Process Safety (29 CFR 1910.119): Not regulated for this material.
SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE:	No
CHRONIC:	No
FIRE:	Yes
REACTIVE:	No
SUDDEN RELEASE:	No

STATE REGULATIONS

California Proposition 65: Not listed.

CANADIAN REGULATIONS

WHMIS Classification: Not provided for this material.

EUROPEAN REGULATIONS

EC Classification (assigned)

T+: Very Toxic

EC Risk Phrases

R26/28 – Very toxic by inhalation and if swallowed.
R33 – Danger of cumulative effects.
R53 – May cause long-term adverse effects in the aquatic environment.

EC Safety Phrases

S13 – Keep away from food, drink and animal feedingstuffs.
S28 – After contact with skin, wash immediately with plenty of water.
S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61 – Avoid release to the environment. Refer to special instructions/Safety data sheets.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Thallium is listed.

TSCA 12(b)

Export Notification: Not listed.

16. OTHER INFORMATION

Sources: ChemAdvisor, Inc., MSDS *Thallium*, 20 December 2011.

EC; European Chemical Substance Information System (ESIS), *Thallium*, CAS No. 7440-28-0; available at <http://esis.jrc.ec.europa.eu/> (accessed March 2012).

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.