

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Thallium(iii) Oxide, Enriched Thallium Oxide
Chemical Formula	Tl ₂ O ₃
Molecular Weight	456.74 amu
CAS No.	1314-32-5
RTECS No.	XG2975000
Synonyms	Dithallium trioxide, RCRA waste number P113, Thallium oxide (8Cl,9Cl), Thallium(111) oxide, Thallium(3+) oxide, Thallium peroxide, Thallium sesquioxide
Supplier Address*	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview: Highly Toxic (USA). Very Toxic (EU). Very toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Readily absorbed through skin.
Target organ(s): Kidneys, eyes.

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 4 Flammability = 0 Reactivity = 0



HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 3 Flammability = 0 Physical Hazard = 0

HEALTH HAZARD	3
FLAMMABILITY	0
PHYSICAL HAZARD	0

Potential Health Effects

<i>Skin Contact</i>	May cause skin irritation.
<i>Eye Contact</i>	Can cause blindness. May cause eye irritation.
<i>Inhalation</i>	Material may be irritating to mucous membranes and upper respiratory tract.
<i>Ingestion</i>	Multiple routes. May be fatal if inhaled, swallowed, or absorbed through skin.

For additional information on toxicity, please refer to Section 11.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name:	Thallium Oxide
CAS No.:	1314-32-5
Chemical Formula:	Tl ₂ O ₃
Molecular Weight:	456.74 amu

4. FIRST AID MEASURES

<i>Oral Exposure</i>	If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.
<i>Inhalation Exposure</i>	If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.
<i>Eye Exposure</i>	Flush eyes with water as a precaution.
<i>Dermal Exposure</i>	Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
<i>Information for Physician</i>	For thallium antidote, see <i>Eur. J. Pharmacol.</i> , 6, 340 (1969).

5. FIREFIGHTING MEASURES

<i>Flash Point</i>	N/A
<i>Autoignition Temperature</i>	N/A
<i>Flammability</i>	N/A
<i>Suitable Extinguishing Media</i>	Noncombustible. Use extinguishing media appropriate to surrounding fire conditions.

Firefighting

<i>Protective Equipment</i>	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
<i>Specific Hazard(s)</i>	Emits toxic fumes under fire conditions

6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Evacuate area. Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.
<i>Environmental Precautions</i>	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
<i>Methods for Cleaning Up</i>	Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

<i>Handling</i>	Do not breathe dust. Avoid formation of dust and aerosols. Do not get in eyes, on skin, on clothing. Provide appropriate exhaust ventilation at places where dust is formed.
<i>Storage</i>	Keep tightly closed. Store in a cool, dry and well-ventilated place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls Safety shower and eye bath. Use only in a chemical fume hood.

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	0.1 mg(TI)/m ³
New Zealand	OEL		

Personal Protective Equipment

<i>Respirator</i>	Wear appropriate government approved respirator
<i>Hand</i>	Wear chemical-resistant gloves
<i>Eyes</i>	Wear safety goggles
<i>Body</i>	Wear other protective clothing
<i>General Hygiene Measures</i>	Wash thoroughly after handling. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

<i>Physical State</i>	Solid
<i>Form</i>	Powder
<i>Color</i>	Deep brown

Safety Data

Molecular Weight:	456.74 amu	pH:	N/A
BP/BP Range:	N/A	MP/MP Range:	717 °C
Freezing Point:	N/A	Vapor Pressure:	N/A
Vapor Density:	N/A	Saturated Vapor Concentration:	N/A
SG/Density:	N/A	Bulk Density:	N/A
Odor Threshold:	N/A	Volatile%:	N/A
VOC Content:	N/A	Water Content:	N/A
Solvent Content:	N/A	Evaporation Rate:	N/A
Viscosity:	N/A	Surface Tension:	N/A

Partition Coefficient:	N/A	Decomposition Temperature:	N/A
Flash Point:	N/A	Explosion Limits:	N/A
Flammability:	N/A	Autoignition Temperature:	N/A
Refractive Index:	N/A	Optical Rotation:	N/A
Miscellaneous Data:	N/A	Solubility:	N/A

N/A = not available

10. STABILITY AND REACTIVITY

<i>Reactivity</i>	No data available
<i>Chemical Stability</i>	Stable under recommended storage conditions
<i>Possibility of Hazardous Reactions</i>	No data available
<i>Conditions to Avoid</i>	No data available
<i>Materials to Avoid</i>	Strong oxidizing agents
<i>Hazardous Decomposition Products</i>	Thallium

11. TOXICOLOGICAL INFORMATION

<i>RTECS Number</i>	XG2975000
Route of Exposure	
<i>Skin Contact</i>	May cause skin irritation.
<i>Eye Contact</i>	Can cause blindness. May cause eye irritation.
<i>Inhalation</i>	Material may be irritating to mucous membranes and upper respiratory tract.
<i>Multiple Routes</i>	May be fatal if inhaled, swallowed, or absorbed through skin.
<i>Target Organ(s) or System(s)</i>	Skin, liver, kidneys, male reproductive system, eyes, cardiovascular system, nerves
<i>Signs and Symptoms of Exposure</i>	To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. The most characteristic symptom of thallium exposure is alopecia (loss of hair). Cutaneous effects may include dry, scaly skin and impairment of nail growth, often resulting in the appearance of crescent-shaped strips across fingernails and toenails ("Mees' line"). Other symptoms in acute poisoning relate chiefly to the gastrointestinal tract, nervous system, skin, eyes, and cardiovascular system. Acute poisoning results in swelling of the feet and legs, arthralgia, vomiting, insomnia, hyperesthesia and paresthesia of the hands and feet, mental confusion, polyneuritis with severe pain in the legs and loins, partial paralysis of the legs, angina-like pains, nephritis, wasting and weakness, and lymphocytosis and eosinophilia. In chronic poisoning, central and peripheral nervous system abnormalities may persist including ataxia, tremor, incoordination, paralysis of extremities, endocrine disorders, memory loss, and psychoses may develop.

Toxicity Data

<i>Oral LD50 (Rat)</i>	44 mg/kg
Remarks:	Nutritional and Gross Metabolic: Weight loss or decreased weight gain. Skin and Appendages: Other: Hair.
<i>Intraperitoneal LD50 (Mouse)</i>	40 mg/kg
<i>Skin Corrosion/Irritation</i>	No data available
<i>Serious Eye Damage/Eye Irritation</i>	No data available
<i>Respiratory or Skin Sensitization</i>	No data available
<i>Germ Cell Mutagenicity</i>	No data available

Carcinogenicity

<i>IARC</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible or confirmed human carcinogen by IARC.
<i>ACGIH</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
<i>NTP</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
<i>OSHA</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
<i>Reproductive Toxicity</i>	No data available
<i>Specific Target Organ Toxicity / Single Exposure</i>	No data available
<i>Specific Target Organ Toxicity / Repeated Exposure</i>	May cause damage to organs through prolonged or repeated exposure
<i>Aspiration Hazard</i>	No data available

12. ECOLOGICAL INFORMATION

<i>Toxicity</i>	No data available
<i>Persistence and Degradability</i>	Not readily biodegradable
<i>Bioaccumulative Potential</i>	No data available
<i>Mobility in Soil</i>	No data available
<i>Results of PBT vPvB assessment</i>	PBT/vPvB assessment not available as chemical safety assessment and not required/not conducted
<i>Other Adverse Effects</i>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

<i>Product</i>	Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.
<i>Contaminated Packaging</i>	Dispose of as unused product.

14. TRANSPORT INFORMATION**DOT**

<i>Proper Shipping Name</i>	Thallium compounds, n.o.s.
<i>UN No.</i>	1707
<i>Class</i>	6.1
<i>Packing Group</i>	Packing Group II
<i>Hazard Label</i>	Toxic substances.
<i>PIH</i>	Not PIH

IATA

<i>Proper Shipping Name</i>	THALLIUM COMPOUND, N.O.S.
<i>IATA UN No.</i>	1707
<i>Hazard Class</i>	6
<i>Packing Group</i>	II

15. REGULATORY INFORMATION**EU Directives Classification**

<i>Symbol of Danger</i>	T+-N
<i>Indication of Danger</i>	Very toxic. Dangerous for the environment.
<i>R</i>	26/28-33-51/53
<i>Risk Statements</i>	Very toxic by inhalation and if swallowed. Danger of cumulative effects. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
<i>S</i>	13-28-45-61
<i>Safety Statements</i>	Keep away from food, drink, and animal feed. After contact with skin, wash immediately with plenty of soap suds. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.

US Classification and Label Text

<i>Indication of Danger</i>	Highly Toxic (USA). Very Toxic (EU).
<i>Risk Statements</i>	Very toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects.
<i>Safety Statements</i>	Do not breathe dust. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
<i>US Statements</i>	Readily absorbed through skin. Target organ(s): Kidneys, eyes.

United States Regulatory Information

<i>SARA Listed</i>	No
<i>Notes</i>	This product is subject to SARA section 313 reporting requirements.
<i>TSCA Inventory Item</i>	Yes

Canada Regulatory Information

<i>WHMIS Classification</i>	This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
<i>DSL</i>	No
<i>NDSL</i>	Yes
<i>REACH No.</i>	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
SARA 311/312 Hazards	Acute Health Hazard, Chronic Health Hazard
Massachusetts Right to Know Components	Dithallium trioxide / CAS No. 1314-32-5 / Revision Date 1993-04-24
Pennsylvania Right to Know Components	Dithallium trioxide / CAS No. 1314-32-5 / Revision Date 1993-04-24
New Jersey Right to Know Components	Dithallium trioxide / CAS No. 1314-32-5 / Revision Date 1993-04-24
California Prop. 65	This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

<i>Prepared By</i>	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
<i>Issuing Date</i>	December 17, 2014
<i>Revision Date</i>	July 29, 2021
<i>Revision Number</i>	2
<i>Revision Note</i>	Required review and updates

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
BOD5	Biochemical Oxygen Demand
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
COD	Chemical Oxygen Demand
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)

DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
ECL	Korean Existing Chemicals List
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
SNUR	Significant New Use Rule (TSCA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

General Disclaimer

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between ISOFLEX USA (or any of its affiliates and subsidiaries) and the purchaser.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. ISOFLEX shall not be held liable for any damage resulting from handling or from contact with the above product.

