Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

Product Identifier:

Identification as on the label/Trade name: Thallium(iii) Oxide, Enriched Thallium Oxide.
Molecular weight: 456.74
Chemical formula: Tl_2O_3
Synonyms: Dithallium trioxide, RCRA waste number P113, Thallium oxide (8CI,9CI), Thallium(111) oxide, Thallium(3+) oxide, Thallium peroxide, Thallium sesquioxide.

Details of the supplier of the Safety Data Sheet:

Neonest AB
Storgatan 70C, Solna
SE-17152
Sweden

Contact details:

+46-76-219-9731

24-hour Emergency Contact:

Swedish Poisons Centre
Phone: 112 - Ask for Poisons Information, 112 – begär Giftinformation.

Other International Contacts:

CHEMTREC 24-hour: +1-703-741-5500 (US + Worldwide)
NHS: 111 (UK)
Charite: +49 30 450 531 000 (Netherlands)
INTCF: +34 917689800 (Spain)
CapTv: +33 1 40 05 48 48 (France)

Section 2: Hazards Identification

Classification of the substances or mixture:

The mixture is classified according to: Regulation EC 1272/2008 [EU-GHS/CLP]

Hazard classes/Hazard categories:	Hazard statement:
Acute Toxicity, Oral (Category 2)	H300
Acute Toxicity, Inhalation (Category 2)	H330
STOT RE (Category 2)	H373
Aquatic Chronic (Category 2)	H411

Label elements:

Hazard pictograms:

Signal Words: Danger.

Hazard Statements:

H300 Fatal if swallowed.
H330 Fatal if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements:

P260 Do not breathe dust.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing.
P284 Wear respiratory protection.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P310 Immediately call a POISON CENTER/doctor.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local and national regulations.

Other hazards: None known.

Section 3: Composition/Information on Ingredients

Substance/Mixture: Substance.

Ingredients:

Substance name (IUPAC/EC)	**CAS-No.** / **EC-No.**	**Molecular weight**	**Concentration % by weight**	**Classification** EC1272/2008
Dithallium trioxide	1314-32-5 / 215-229-3	456.74	>99%	Acute Tox. 2 H300 Acute Tox. 2 H330 STOT RE 2 H373 Aquatic Chronic 4 H411

For explanation of abbreviations see Section 16.

Section 4: First-Aid Measures

Description of first aid measures:

In case of inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

In case of skin contact: Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
In case of eye contact: Flush eyes with water as a precaution.
In case of ingestion: If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

Most important symptoms and effects, both acute and delayed:

Skin Contact: May cause skin irritation.
Eye Contact: Can cause blindness. May cause eye irritation.
Inhalation: Material may be irritating to mucous membranes and upper respiratory tract.
Ingestion: Multiple routes. May be fatal if inhaled, swallowed, or absorbed through skin.
Indication of any immediate medical attention and special treatment needed: For thallium antidote, see Eur. J. Pharmacol., 6, 340 (1969).

Section 5: Fire-Fighting Measures

Extinguisher media:

Suitable extinguisher media: Use extinguishing media appropriate to surrounding fire conditions.
Unsuitable extinguishing media: None known.
Special hazards arising from the mixture: Emits toxic fumes under fire conditions.
Advice for fire-fighters: Wear self-contained breathing apparatus and protective clothing for firefighting.
Further information: Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Section 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

Personal precautions: Evacuate area. Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.
Environmental precautions: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained.

Methods for containment and cleaning up:

Methods for cleaning up: 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.

Reference to other sections:
Treat recovered material as described in the section "Disposal considerations".

Section 7: Handling and Storage

Precautions for safe handling:

Advice on safe handling: 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.
Hygiene measures: Do not eat, drink or smoke when using this product.

Conditions for safe storage, including incompatibilities:

Requirements for storage areas and containers: Keep tightly closed. Store in a cool, dry and well-ventilated place.

Section 8: Exposure Controls/Personal Protection

Control parameters:

Occupational exposure limits:

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

Exposure controls:

Appropriate engineering controls: Safety shower and eye bath. Use only in a chemical fume hood.

Individual protection measures, such as personal protective equipment:

Eye/face protection: Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Hand protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body protection: Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator type N100 (US) or type P3 (EN 143) as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Section 9: Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance (form): Solid (powder).
Colour: Brown.
Odour: No data available.
Odour threshold: No data available.
Molecular Weight: 456.74
pH (concentration): No data available.
Melting point/range (°C): 717 °C
Boiling point/range (°C): No data available.
Freezing point (°C): No data available.
Flash point (°C): No data available.
Evaporation rate: No data available.
Flammability (solid, gas): No data available.
Ignition temperature (°C): No data available.
Upper/lower flammability/explosive limits: No data available.
Vapour pressure (20 °C): No data available.
Vapour density: No data available.

Relative density (25 °C): No data available.
Water solubility (g/L) at 20 °C: No data available.
n-Octanol/Water partition coefficient: No data available.
Auto-ignition temperature: No data available.
Decomposition temperature: No data available.
Viscosity, dynamic (mPa s): No data available.
Explosive properties: The substance or mixture is not classified as explosive.
Oxidising properties: The substance or mixture is not classified as oxidizing.

Section 10: Stability and Reactivity

Reactivity: No dangerous reaction known under conditions of normal use.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use.
Conditions to avoid: None known.
Incompatible materials: Strong oxidizing agents.
Hazardous decomposition products: Thallium.

Section 11: Toxicological Information

Information on toxicological effects:

Acute Toxicity: Oral LD_{50} (Rat) 44 mg/kg. Intraperitoneal LD_{50} (Mouse) 40 mg/kg

Classification according to GHS (1272/2008/EG, CLP)

Skin corrosion/irritation:
Not classified based on available information.
Serious eye damage/eye irritation:
Not classified based on available information.
Respiratory or skin sensitisation:
Not classified based on available information.
Germ cell mutagenicity:
Not classified based on available information.
Carcinogenicity:
IARC: 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.
ACGIH: 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.
NTP: 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.
OSHA: 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.
Reproductive toxicity:
Not classified based on available information.
Specific target organ toxicity – single exposure (STOT):
Not classified based on available information.
Specific target organ toxicity (STOT) – repeated exposure:
May cause damage to organs through prolonged or repeated exposure.
Aspiration toxicity:

Not classified based on available information.

Section 12: Ecological Information

Toxicity: No data available.
Persistence and degradability: No data available.
Bioaccumulative potential: No data available.
Mobility in soil: No data available.
Results of PBT& vPvB assessment: Not relevant.
Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13: Disposal Considerations

Waste treatment methods: Contact a licensed professional waste disposal service to dispose of this material. Observe all local and national environmental regulations.

Section 14: Transport Information

DOT:

Proper Shipping Name: THALLIUM COMPOUNDS, N.O.S.
Hazard Class: 6.1
UN Number: 1707
Packing Group: II
Hazard Labels:

IATA:

Proper Shipping Name: THALLIUM COMPOUNDS, N.O.S.
Hazard Class: 6.1
UN Number: 1707
Packing Group: II

Section 15: Regulatory Information

EU regulations:

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended
Not listed.
Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I
Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended
Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended
Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended
Not listed.
Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry
Not listed.
Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA
Not listed.

Authorisations:
Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended
Not listed.

Restrictions on use:
Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use
Not regulated.
Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended
Not listed.
Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work
Not regulated.
Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding.
Not regulated.

Other EU regulations:
Directive 2012/18/EU on major accident hazards involving dangerous substances
Not listed.
Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.
Always applicable.
Directive 94/33/EC on the protection of young people at work
Not listed.

Other regulations: The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.
EU Directives Classification
Symbol of Danger: T+-N
Indication of Danger: Very toxic. Dangerous for the environment.
R: 26/28-33-51/53
Risk Statements: 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.

S: 13-28-45-61
Safety Statements: 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
Indication of Danger: Highly Toxic (USA). Very Toxic (EU).
Risk Statements: Very toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects.
Safety Statements: 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).
US Statements: Readily absorbed through skin. Target organ(s): Kidneys, eyes.
United States Regulatory Information
SARA Listed: No.
Notes: This product is subject to SARA section 313 reporting requirements.
TSCA Inventory Item: Yes.
Canada Regulatory Information
WHMIS Classification: 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.
DSL: No.
NDSL: Yes.
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.
National regulations: Follow national regulation for work with chemical agents.
Chemical safety assessment: No Chemical Safety Assessment has been carried out.

Section 16: Other Information

List of abbreviations:
ACGIH American Conference of Governmental Industrial Hygienists
ADR European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA As Low As Is Reasonably Achievable
AMU Atomic Mass Unit
ANSI American National Standards Institute
BLS Basic Life Support
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)
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
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
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
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
RTECS Registry of Toxic Effects of Chemical Substances
SARA Superfund Amendments and Reauthorization Act (USA)
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 Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS Workplace Hazardous Materials Information System

References:

Not available.

Full text of any H-statements not written out in full under Sections 2 to 15:

H300 Fatal if swallowed.
H330 Fatal if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

evision information:

None.

Training information:

Follow training instructions when handling this material.

Further Information:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.