

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Revision Date 20.07.2018

Version 4.0

---

**SECTION 1. Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST $\text{TlNO}_3$ in $\text{HNO}_3$ 0.5 mol/l 1000 mg/l TI Certipur®

REACH Registration Number This product is a mixture. REACH Registration Number see section 3.

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses	Reagent for analysis For additional information on uses please refer to the Merck Chemicals portal ( <a href="http://www.merckgroup.com">www.merckgroup.com</a> ).
-----------------	---

**1.3 Details of the supplier of the safety data sheet**

Responsible Department	LS-QHC * e-mail: <a href="mailto:prodsafe@merckgroup.com">prodsafe@merckgroup.com</a>
Regional representation	Merck Chemicals Ltd * Boulevard Industrial Park * Padge Road * Beeston * Nottingham * NG9 2JR * Tel. 01159 430840 * <a href="mailto:information@merckchem.co.uk">information@merckchem.co.uk</a> .

<b>1.4 Emergency telephone number</b>	+49 (0) 6151 722440
---------------------------------------	---------------------

---

**SECTION 2. Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST TlNO <sub>3</sub> in HNO <sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

Corrosive to metals, Category 1, H290

Skin irritation, Category 2, H315

Eye irritation, Category 2, H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 Label elements

### Labelling (REGULATION (EC) No 1272/2008)

#### *Hazard pictograms*



#### *Signal word*

Warning

#### *Hazard statements*

H290 May be corrosive to metals.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

#### *Precautionary statements*

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

### Reduced labelling (≤125 ml)

#### *Hazard pictograms*



#### *Signal word*

Warning

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TINO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l TI Certipur®

---

## 2.3 Other hazards

None known.

---

## SECTION 3. Composition/information on ingredients

Chemical nature Aqueous solution

### 3.1 Substance

Not applicable

### 3.2 Mixture

#### Hazardous components (REGULATION (EC) No 1272/2008)

*Chemical name (Concentration)*

CAS-No. Registration number Classification

nitric acid ( $\geq 1\%$  -  $< 5\%$ )

*Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.*

7697-37-2	01-2119487297-23-XXXX	Oxidizing liquid, Category 2, H272 Corrosive to metals, Category 1, H290 Acute toxicity, Category 1, H330 Skin corrosion, Category 1A, H314
-----------	-----------------------	--

Thallium(I) nitrate ( $\geq 0.1\%$  -  $< 0.25\%$ )

10102-45-1	*)	Acute toxicity, Category 2, H300 Acute toxicity, Category 2, H330 Specific target organ toxicity - repeated exposure, Category 2, H373 Chronic aquatic toxicity, Category 2, H411
------------	----	--

\*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST TlNO <sub>3</sub> in HNO <sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

For the full text of the H-Statements mentioned in this Section, see Section 16.

---

## SECTION 4. First aid measures

### 4.1 Description of first aid measures

After inhalation: fresh air.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower.

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed

irritant effects

The following applies to nitrites/nitrates in general: methaemoglobinaemia after the uptake of large quantities.

The following applies to thallium compounds in general: latency period until onset of effect; constipation, peripheral nervous disorders (neuralgias, formication) with severe pain; tremor, spasms; sleeplessness, thirst, fever; CNS disorders/damage with psychic alterations; impaired speech and vision - grey cataract; rise in blood pressure, cyanosis, respiratory paralysis; changes in the blood picture. If the victim survives intoxication, lasting damage may remain.

### 4.3 Indication of any immediate medical attention and special treatment needed

No information available.

---

## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

*Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST TlNO <sub>3</sub> in HNO <sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

## *Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

## **5.2 Special hazards arising from the substance or mixture**

Not combustible.

Ambient fire may liberate hazardous vapours.

## **5.3 Advice for firefighters**

### *Special protective equipment for firefighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### *Further information*

Prevent fire extinguishing water from contaminating surface water or the ground water system.

Suppress (knock down) gases/vapours/mists with a water spray jet.

---

## **SECTION 6. Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains.

### **6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent and neutralising material (e.g. Chemisorb® H<sup>+</sup>, Merck Art. No. 101595). Dispose of properly. Clean up affected area.

### **6.4 Reference to other sections**

Indications about waste treatment see section 13.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TlNO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

---

## SECTION 7. Handling and storage

### 7.1 Precautions for safe handling

#### *Advice on safe handling*

Observe label precautions.

#### *Hygiene measures*

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

### 7.2 Conditions for safe storage, including any incompatibilities

#### *Requirements for storage areas and containers*

No metal or light-weight-metal containers.

#### *Storage conditions*

Tightly closed.

Recommended storage temperature see product label.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

---

## SECTION 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Components with workplace control parameters

#### *Components*

Basis	Value	Threshold limits	Remarks
<i>nitric acid (7697-37-2)</i>			
EU ELV	Short Term Exposure	1 ppm	
	Limit (STEL):	2.6 mg/m <sup>3</sup>	
EH40 WEL	Short Term Exposure	1 ppm	
	Limit (STEL):	2.6 mg/m <sup>3</sup>	

---

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TlNO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

## *Thallium(I) nitrate (10102-45-1)*

EH40 WEL	Time Weighted Average (TWA):	0.1 mg/m <sup>3</sup>	Expressed as: as Tl
	Skin designation:		Can be absorbed through the skin. Expressed as: as Tl
	Skin designation:		Can be absorbed through the skin. Expressed as: as Tl
	Time Weighted Average (TWA):	0.1 mg/m <sup>3</sup>	Expressed as: as Tl

### **Derived No Effect Level (DNEL)**

#### *nitric acid (7697-37-2)*

Worker DNEL, longterm	Local effects	inhalation	1.3 mg/m <sup>3</sup>
-----------------------	---------------	------------	-----------------------

### **Recommended monitoring procedures**

Methods for measurement of the workplace atmosphere have to correspond to the requirements of norms DIN EN 482 and DIN EN 689.

### **Predicted No Effect Concentration (PNEC)**

#### *nitric acid (7697-37-2)*

PNEC no data available

## **8.2 Exposure controls**

### **Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

### **Individual protection measures**

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TlNO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

## *Eye/face protection*

Safety glasses

## *Hand protection*

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm
Break through time:	480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

## *Other protective equipment*

protective clothing

## *Respiratory protection*

required when vapours/aerosols are generated.

Recommended Filter type: filter E-(P2)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST TlNO <sub>3</sub> in HNO <sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

## Environmental exposure controls

Do not let product enter drains.

---

## SECTION 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Form	liquid
Colour	colourless
Odour	odourless
Odour Threshold	Not applicable
pH	ca. 0.5 at 20 °C
Melting point	No information available.
Boiling point	No information available.
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapour pressure	No information available.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST TlNO <sub>3</sub> in HNO <sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

Relative vapour density No information available.

Density 1.02 g/cm<sup>3</sup>  
at 20 °C

Relative density No information available.

Water solubility at 20 °C  
soluble

Partition coefficient: n-octanol/water No information available.

Auto-ignition temperature No information available.

Decomposition temperature No information available.

Viscosity, dynamic No information available.

Explosive properties Not classified as explosive.

Not classified as explosive.

Oxidizing properties none

none

## 9.2 Other data

Corrosion May be corrosive to metals.

---

## SECTION 10. Stability and reactivity

### 10.1 Reactivity

See section 10.3

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST TlNO <sub>3</sub> in HNO <sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

## 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

## 10.3 Possibility of hazardous reactions

Violent reactions possible with:

The generally known reaction partners of water.

Generates dangerous gases or fumes in contact with:

Metals, metal alloys

Release of:

nitrous gases, Hydrogen

## 10.4 Conditions to avoid

no information available

## 10.5 Incompatible materials

Metals, metal alloys

Cellulose

(generation of hydrogen)

## 10.6 Hazardous decomposition products

no information available

---

## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

#### Mixture

#### *Acute oral toxicity*

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute toxicity estimate: > 2,000 mg/kg

Calculation method

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST TlNO <sub>3</sub> in HNO <sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

## *Acute inhalation toxicity*

Symptoms: Possible damages: , mucosal irritations

Acute toxicity estimate: > 5 mg/l; 4 h ; dust/mist

Calculation method

## *Acute dermal toxicity*

This information is not available.

## *Skin irritation*

Mixture causes skin irritation.

## *Eye irritation*

Mixture causes serious eye irritation.

## *Sensitisation*

This information is not available.

## *Germ cell mutagenicity*

This information is not available.

## *Carcinogenicity*

This information is not available.

## *Reproductive toxicity*

This information is not available.

## *Teratogenicity*

This information is not available.

## *Specific target organ toxicity - single exposure*

This information is not available.

## *Specific target organ toxicity - repeated exposure*

This information is not available.

## *Aspiration hazard*

This information is not available.

## **11.2 Further information**

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TINO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l TI Certipur®

---

The following applies to thallium compounds in general: latency period until onset of effect; constipation, peripheral nervous disorders (neuralgias, formication) with severe pain; tremor, spasms; sleeplessness, thirst, fever; CNS disorders/damage with psychic alterations; impaired speech and vision - grey cataract; rise in blood pressure, cyanosis, respiratory paralysis; changes in the blood picture. If the victim survives intoxication, lasting damage may remain.

The following applies to nitrites/nitrates in general: methaemoglobinaemia after the uptake of large quantities.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

## Components

### *nitric acid*

#### *Acute inhalation toxicity*

LC50 Rat: > 2.65 mg/l; 4 h ; vapour

OECD Test Guideline 403

#### *Germ cell mutagenicity*

#### *Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

### *Thallium(I) nitrate*

#### *Acute oral toxicity*

Acute toxicity estimate: 5.1 mg/kg

Expert judgement

#### *Acute inhalation toxicity*

Acute toxicity estimate: 0.051 mg/l; dust/mist

Expert judgement

---

## SECTION 12. Ecological information

### Mixture

#### 12.1 Toxicity

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TlNO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

No information available.

## 12.2 Persistence and degradability

No information available.

## 12.3 Bioaccumulative potential

No information available.

## 12.4 Mobility in soil

No information available.

## 12.5 Results of PBT and vPvB assessment

Substance(s) in the mixture do(es) not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII, or a PBT/vPvB assessment was not conducted.

## 12.6 Other adverse effects

### *Additional ecological information*

Depending on the concentration, phosphorus and/or nitrogen compounds may contribute to the eutrophication of drinking- water supplies.

Discharge into the environment must be avoided.

## Components

### *nitric acid*

#### *Biodegradability*

The methods for determining the biological degradability are not applicable to inorganic substances.

#### *Partition coefficient: n-octanol/water*

log Pow: -2.3

OECD Test Guideline 107

Bioaccumulation is not expected.

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

#### *Henry constant*

2482 Pa·m<sup>3</sup>/mol

Method: (calculated)

(Lit.) Distribution preferentially in air.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TINO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l TI Certipur®

---

*Thallium(I) nitrate*

*Partition coefficient: n-octanol/water*

log Pow: 0.21

(calculated)

Bioaccumulation is not expected. (Lit.)

---

## SECTION 13. Disposal considerations

### *Waste treatment methods*

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

Notice Directive on waste 2008/98/EC.

---

## SECTION 14. Transport information

### Land transport (ADR/RID)

14.1 UN number	UN 3264
14.2 Proper shipping name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)
14.3 Class	8
14.4 Packing group	III
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
Tunnel restriction code	E

### Inland waterway transport (ADN)

---

The Safety Data Sheets for catalogue items are available at [www.merckgroup.com](http://www.merckgroup.com)

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TlNO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

Not relevant

## Air transport (IATA)

14.1 UN number UN 3264  
14.2 Proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID SOLUTION)  
14.3 Class 8  
14.4 Packing group III  
14.5 Environmentally hazardous --  
14.6 Special precautions for user no

## Sea transport (IMDG)

14.1 UN number UN 3264  
14.2 Proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID NOT MORE THAN 5%)  
14.3 Class 8  
14.4 Packing group III  
14.5 Environmentally hazardous --  
14.6 Special precautions for user yes  
EmS F-A S-B

## 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant

---

## SECTION 15. Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### *EU regulations*

Major Accident Hazard SEVESO III  
Legislation Not applicable



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TlNO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of  $\geq 0.1$  % (w/w).

## *National legislation*

Storage class 8B

## 15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 119801  
Product name Thallium standard solution traceable to SRM from NIST TINO<sub>3</sub> in HNO<sub>3</sub> 0.5 mol/l 1000 mg/l TI Certipur®

---

## SECTION 16. Other information

### Full text of H-Statements referred to under sections 2 and 3.

H272	May intensify fire; oxidizer.
H290	May be corrosive to metals.
H300	Fatal if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

Warning

*Hazard statements*

H290 May be corrosive to metals.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.

*Precautionary statements*

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	119801
Product name	Thallium standard solution traceable to SRM from NIST TlNO <sub>3</sub> in HNO <sub>3</sub> 0.5 mol/l 1000 mg/l Tl Certipur®

---

## Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P313 Get medical advice/ attention.

## Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

---

*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*