

Australian statement of hazardous nature : Classified as hazardous according to criteria of Safe Work Australia

Section 1 - Identification

Product Name Thionyl chloride

CAS No 7719-09-7

Synonyms Thionyl dichloride

Product Code 41868

Address ThermoFisher Scientific Australia Pty Ltd
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VICTORIA 3179, Australia

Emergency Tel. **CHEMTREC®**
03 9757 4559 or +613 9757 4559

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Recommended Use Laboratory chemicals.

Uses advised against This product contains one or more substance(s) on the Illicit Drug Precursors/Reagents list. Verify requirements related to using, handling and storing these substances. This product does not contain any substance(s) subject to Prohibition, Authorization or Restriction. This product contains one or more substance(s) listed on the voluntary National Code of Practice for Chemicals of Security Concern.

Section 2 - Hazard(s) Identification

Classification under Safe Work Australia

Classified as hazardous according to criteria of Safe Work Australia

Physical hazards
No hazards identified

Health hazards

| | |
|--|--------------|
| Acute Oral Toxicity | Category 4 |
| Acute Inhalation Toxicity - Vapors | Category 3 |
| Skin Corrosion/Irritation | Category 1 A |
| Serious Eye Damage/Eye Irritation | Category 1 |
| Specific target organ toxicity - (single exposure) | Category 3 |

Environmental hazards
No hazards identified

Label Elements



Skull and Crossbones



Corrosion

Signal Word**Danger****Hazard Statements**

H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H331 - Toxic if inhaled
H335 - May cause respiratory irritation
AUH014 - Reacts violently with water
AUH029 - Contact with water liberates toxic gas

Precautionary Statements

P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
P330 - Rinse mouth
P331 - Do NOT induce vomiting
P363 - Wash contaminated clothing before reuse
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/ container to an approved waste disposal plant

Other information

This product does not contain any known or suspected endocrine disruptors
Toxic to terrestrial vertebrates

Section 3 - Composition and Information on Ingredients

| Component | CAS No | Weight % |
|------------------|-----------|----------|
| Thionyl chloride | 7719-09-7 | <=100 |

Section 4 - First Aid Measures

Inhalation

If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove to fresh air. Immediate medical attention is required.

Ingestion

Do NOT induce vomiting. Call a physician or poison control center immediately.

Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

| | |
|--|---|
| Eye Contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. |
| General Advice | Show this safety data sheet to the doctor in attendance. Immediate medical attention is required. |
| Self-Protection of the First Aider | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. |
| First Aid Facilities | Eyewash, safety shower and washroom. |
| Most important symptoms and effects | Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation |
| Notes to Physician | Treat symptomatically. Symptoms may be delayed. After inhalation exposure, observe for 24 to 72 hours as pulmonary edema may be delayed. |

Section 5 - Fire Fighting Measures

Suitable Extinguishing Media

Carbon dioxide (CO₂). Dry chemical.

Extinguishing media which must not be used for safety reasons

Foam. Water. Contact with water liberates toxic gas.

Hazardous Decomposition Products

Chlorine, Sulfur oxides, Hydrogen chloride gas, Phosgene.

Decomposition Temperature

140 °C

Specific Hazards Arising from the Chemical

Reacts violently with water. Contact with water liberates toxic gas. The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors.

Special protective equipment and precautions for fire fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6 - Accidental Release Measures

Emergency procedures

Evacuate personnel to safe areas. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Wear self-contained breathing apparatus and protective suit.

Environmental Precautions

Should not be released into the environment. See Section 12 for additional Ecological Information.

Methods for Containment and Clean Up

Clean-up methods - small spillage

Do not expose spill to water. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

Clean-up methods - large spillage

Typically only supplied is small quantities as packaged goods.

If extremely toxic or used in larger quantities ensure a spillage action plan is in place. Evacuate area. Control the source and/or

contain the spill if safe and able to do so. Use temporary diking, sand bags, dry sand, earth or proprietary booms/absorbent pads if available. Obtain advice on containment, neutralisation and clean-up from local emergency responders.

Reference to Other Sections

Refer to protective measures listed in Sections 8 and 13.

Section 7 - Handling and Storage

Precautions for Safe Handling

Use only under a chemical fume hood. Wear personal protective equipment/face protection. Do not allow contact with water. Do not breathe mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not ingest. If swallowed then seek immediate medical assistance.

Conditions for Safe Storage, Including any Incompatibilities

Corrosives area. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from water or moist air.

AS/NZS 2243.10:2004, Safety in laboratories - Storage of chemicals

Section 8 - Exposure Controls and Personal Protection

Exposure limits

UK - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

ACGIH - Threshold Limit Values - Ceiling (TLV-C) guidelines by the American Conference of Governmental Industrial Hygienists (ACGIH) for controlling worker exposure to airborne chemical concentrations in the workplace.

NZ - Workplace Exposure Standards and Biological Exposure Indices (6th edition). New Zealand Department of Labor

| Component | Australia | New Zealand WEL | ACGIH TLV | The United Kingdom | Germany |
|------------------|-----------|--|------------------|--|---------|
| Thionyl chloride | | Ceiling: 1 ppm Ceiling: 4.9 mg/m ³ | Ceiling: 0.2 ppm | STEL: 1 ppm 15 min STEL: 4.9 mg/m ³ 15 min | |

Biological limit values

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

Exposure Controls**Engineering Measures**

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment**Eye Protection**

Goggles (Australian/New Zealand Standard AS/NZS 1337 - Eye protectors for Industrial applications)

Hand Protection

Protective gloves

| Glove material | Breakthrough time | Glove thickness | AUS/NZ Standard | Glove comments |
|----------------|-------------------|-----------------|-----------------|-----------------------|
| Butyl rubber | > 120 minutes | 0.7 mm | AS/NZS 2161 | (minimum requirement) |
| Viton (R) | > 480 minutes | 0.7 mm | | |

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

| | |
|--|---|
| Skin and body protection | Wear appropriate protective gloves and clothing to prevent skin exposure |
| Respiratory Protection | Use an AS/NZS 1716 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained in line with AS/NZS 1715 on the use and maintenance of respiratory protective devices |
| Recommended Filter type: | Organic gases and vapours filter Type A Brown conforming to EN14387 (or AUS/NZ equivalent) |
| Recommended half mask:- | Valve filtering: EN405 or Half mask: EN140 plus filter, EN 141 (or AUS/NZ equivalent) When RPE is used a face piece Fit Test should be conducted |
| Hygiene Measures | Handle in accordance with good industrial hygiene and safety practice. |
| Environmental exposure controls | No information available. |

Section 9 - Physical and Chemical Properties

Information on basic physical and chemical properties

| | | |
|--|--------------------------|--|
| Appearance | Light yellow | |
| Physical State | Liquid | |
| Odor | Strong, pungent | |
| Odor Threshold | 0.9 ppm | |
| pH | Strongly acidic | |
| Melting Point/Range | -105 °C / -157 °F | |
| Softening Point | No data available | |
| Boiling Point/Range | 76 °C / 168.8 °F | @ 760 mmHg |
| Flash Point | No information available | Method - No information available |
| Evaporation Rate | No data available | |
| Flammability (solid,gas) | Not applicable | Liquid |
| Explosion Limits | No data available | |
| Vapor Pressure | 124 mbar @ 20 °C | |
| Vapor Density | 4.1 | (Air = 1.0) |
| Specific Gravity / Density | 1.640 | |
| Bulk Density | Not applicable | Liquid |
| Water Solubility | Reacts with water | |
| Solubility in other solvents | No information available | |
| Partition Coefficient (n-octanol/water) | | |
| Autoignition Temperature | No data available | |
| Decomposition Temperature | 140 °C | |
| Viscosity | 0.6 mPa.s at 20 °C | |
| Explosive Properties | No information available | |
| Oxidizing Properties | No information available | |
| <u>Other information</u> | | |
| Molecular Formula | Cl ₂ O S | |
| Molecular Weight | 118.97 | |

Section 10 - Stability and Reactivity

| | |
|----------------------------|--|
| Reactivity | Yes |
| Stability | May react with metals and lead to the formation of flammable hydrogen gas. Contact with water liberates toxic gas. Moisture sensitive. |
| Conditions to Avoid | Exposure to moist air or water, Exposure to light, Incompatible products. |

Incompatible Materials Acids, Bases, Water, Strong oxidizing agents, Alcohols, Amines.

Hazardous Decomposition Products Chlorine. Sulfur oxides. Hydrogen chloride gas. Phosgene.

Hazardous Polymerization Hazardous polymerization does not occur.

Section 11 - Toxicological Information

Information on Toxicological Effects

Product Information

(a) acute toxicity;

Oral

Category 4

Dermal

Based on available data, the classification criteria are not met

Inhalation

Category 3

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|------------------|--------------------------|-------------|-------------------------------|
| Thionyl chloride | LD50 = 324 mg/kg (Rat) | | LC50 = 2.717 mg/L (Rat) 4 h |

(b) skin corrosion/irritation; Category 1 A

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;

Respiratory

Based on available data, the classification criteria are not met

Skin

Based on available data, the classification criteria are not met

(e) germ cell mutagenicity;

Based on available data, the classification criteria are not met

(f) carcinogenicity;

Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity;

Based on available data, the classification criteria are not met

(h) STOT-single exposure;

Category 3

Results / Target organs

Respiratory system

(i) STOT-repeated exposure;

Based on available data, the classification criteria are not met

Target Organs

None known.

(j) aspiration hazard;

Based on available data, the classification criteria are not met

Symptoms / effects, both acute and delayed

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Section 12 - Ecological Information

Ecotoxicity effects

Reacts with water so no ecotoxicity data for the substance is available. Do not empty into drains.

Persistence and Degradability

| | |
|--|--|
| Persistence | Persistence is unlikely, based on information available. |
| Bioaccumulative Potential | Bioaccumulation is unlikely |
| Mobility | The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces. Will likely be mobile in the environment due to its volatility Disperses rapidly in air |
| Endocrine Disruptor Information | This product does not contain any known or suspected endocrine disruptors |
| Persistent Organic Pollutant | This product does not contain any known or suspected substance |
| Ozone Depletion Potential | This product does not contain any known or suspected substance |

Section 13 - Disposal Considerations

| | |
|--|--|
| Waste from Residues/Unused Products | Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes, including emptied containers, are controlled wastes and should be disposed of in accordance with all federal, E.P.A., state and local regulations. Assure conformity with all applicable regulations. |
| Contaminated Packaging | Dispose of this container to hazardous or special waste collection point. |
| Other Information | Chemical wastes should be disposed through a licensed commercial waste collection service. Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not flush to sewer. Large amounts will affect pH and harm aquatic organisms. |

Section 14 - Transport Information

IMDG/IMO

| | |
|-----------------------------|------------------|
| UN-No | UN1836 |
| Proper Shipping Name | THIONYL CHLORIDE |
| Hazard Class | 8 |
| Packing Group | I |

ADG

| | |
|-----------------------------|------------------|
| UN-No | UN1836 |
| Proper Shipping Name | THIONYL CHLORIDE |
| Hazard Class | 8 |
| Packing Group | I |

| Component | Hazchem Code |
|--|--------------|
| Thionyl chloride 7719-09-7 (≤100) | 4WE |

| | |
|--------------------|------------------------------|
| <u>IATA</u> | FORBIDDEN FOR IATA TRANSPORT |
|--------------------|------------------------------|

| | |
|-----------------------------|--|
| UN-No | UN1836 |
| Proper Shipping Name | THIONYL CHLORIDE, FORBIDDEN FOR IATA TRANSPORT |
| Hazard Class | 8 |
| Packing Group | I |

| | |
|-------------------------------|---------------------------------|
| Environmental hazards | No hazards identified |
| Special Precautions | No special precautions required |
| Additional information | None known |

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture**National Regulations****Australia**

See section 8 for national exposure control parameters.

Standard for the Uniform Scheduling of Medicines and Poisons

No poison schedule number allocated.

Australian Industrial Chemicals Introduction Scheme (AICIS)

| Component | Australian Industrial Chemicals Introduction Scheme (AICIS) | Additional information |
|------------------------------|---|------------------------|
| Thionyl chloride - 7719-09-7 | Present | - |

Australian - Illicit Drug Precursors/Reagents Substance List

This product contains one or more substance(s) on the Illicit Drug Precursors/Reagents list. Verify requirements related to using, handling and storing these substances.

Chemicals of Security Concern

This product contains one or more substance(s) listed on the voluntary National Code of Practice for Chemicals of Security Concern

| Component | Australian - Illicit Drug Precursors/Reagents Substance List | Chemicals of Security Concern |
|------------------------------|--|-------------------------------|
| Thionyl chloride - 7719-09-7 | Category 2 | Listed in Appendix A |

Legend

Category 2 - Chemicals and apparatus that require an End User Declaration when sold to non-account customers

Chemicals of Security Concern - for further information see <http://www.chemicalsecurity.gov.au/securityconcerns>

National pollutant inventory

Not applicable

Prohibition or notification/licensing requirements

Shown below are details of specific prohibition/notifications or licencing requirements when they apply.

This product does not contain any substance(s) subject to Prohibition, Authorization or Restriction.

International Inventories

| Component | AICS | NZIoC | EINECS | ELINCS | TSCA | DSL | NDSL | PICCS | ENCS | ISHL | IECSC | KECL |
|------------------|------|-------|-----------|--------|------|-----|------|-------|------|------|-------|----------|
| Thionyl chloride | X | X | 231-748-8 | - | X | X | - | X | X | X | X | KE-33794 |

Legend: X - Listed, '-' - Not Listed. **KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

International Regulations**Ozone Depletion Potential**

This product does not contain any known or suspected substance

Persistent Organic Pollutant

This product does not contain any known or suspected substance

Rotterdam Convention (PIC)

Not applicable

Basel convention on the control of transboundary movements of hazardous wastes and their disposal

Not applicable.

| Component | CAS No | OECD HPV | Restriction of Hazardous Substances (RoHS) | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements |
|------------------|-----------|----------|--|---|--|
| Thionyl chloride | 7719-09-7 | Listed | Not applicable | Not applicable | Not applicable |

Authorisation/Restrictions according to EU REACH

| Component | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|------------------|---|---|---|
| Thionyl chloride | - | Use restricted. See entry 75. (see link for restriction details) | - |

<https://echa.europa.eu/substances-restricted-under-reach>

Section 16 - Other Information

Legend

| | |
|--|--|
| AICS - Australian Inventory of Chemical Substances | NZIoC - New Zealand Inventory of Chemicals |
| TSCA - United States Toxic Substances Control Act Section 8(b) Inventory | EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances |
| DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List | ENCS - Japanese Existing and New Chemical Substances |
| IECSC - Chinese Inventory of Existing Chemical Substances | KECL - Korean Existing and Evaluated Chemical Substances |
| PICCS - Philippines Inventory of Chemicals and Chemical Substances | CAS - Chemical Abstracts Service |
| TWA - Time Weighted Average | ACGIH - American Conference of Governmental Industrial Hygienists |
| IARC - International Agency for Research on Cancer | Predicted No Effect Concentration (PNEC) |
| ICAO/IATA - International Civil Aviation Organization/International Air Transport Association | IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code |
| MARPOL - International Convention for the Prevention of Pollution from Ships | ADG - Australian Code for the Transport of Dangerous Goods by Road and Rail |
| NZS 5433:2020 - Transport of Dangerous Goods on Land | OECD - Organisation for Economic Co-operation and Development |
| LD50 - Lethal Dose 50% | LC50 - Lethal Concentration 50% |
| EC50 - Effective Concentration 50% | ATE - Acute Toxicity Estimate |
| WEL - Workplace Exposure Limit | RPE - Respiratory Protective Equipment |
| DNEL - Derived No Effect Level | NOEC - No Observed Effect Concentration |
| POW - Partition coefficient Octanol:Water | BCF - Bioconcentration factor |
| vPvB - very Persistent, very Bioaccumulative | PBT - Persistent, Bioaccumulative, Toxic |
| VOC - (Volatile Organic Compound) | |

Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Revision Date 18-Sep-2024

Revision Summary New emergency telephone response service provider.

This Safety Data Sheet (SDS) is prepared in accordance to and complies with the requirements of Safe Work Australia - Work Health and Safety Regulations (WHS Regulations).

Disclaimer

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

End of Safety Data Sheet