

## SAFETY DATA SHEET

**Creation Date** 21-September-2009

**Revision Date** 18-September-2024

**Revision Number** 4

### 1. Identification

**Product Name** Thionyl chloride

**Cat No. :** L14708

**CAS-No** 7719-09-7  
**Synonyms** Thionyl dichloride

**Recommended Use** Laboratory chemicals.  
**Uses advised against** All other uses.

#### Details of the supplier of the safety data sheet

##### Company

##### **Importer/Distributor**

Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

##### **Emergency Telephone Number**

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11

Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99

**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

### 2. Hazard(s) identification

#### Classification

##### **WHMIS 2015 Classification**

Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

<b>Acute oral toxicity</b>	Category 4	
<b>Acute Inhalation Toxicity</b>	Category 3	(based on evolved HCl gas)
<b>Skin Corrosion/Irritation</b>	Category 1 A	
<b>Serious Eye Damage/Eye Irritation</b>	Category 1	
<b>Specific target organ toxicity (single exposure)</b>	Category 3	
Target Organs - Respiratory system.		
<b>Physical Hazards Not Otherwise Classified</b>	Category 1	
Reacts violently with water		
<b>Health Hazards Not Otherwise Classified</b>	Category 1	
In contact with water, releases gases which are toxic if inhaled		

#### Label Elements

##### **Signal Word**

Danger

**Hazard Statements**

Harmful if swallowed

Toxic if inhaled

Causes severe skin burns and eye damage

May cause respiratory irritation

Reacts violently with water

In contact with water, releases gases which are toxic if inhaled

**Precautionary Statements****Prevention**

Do not allow contact with water

Do not breathe dust/fumes/gas/mist/vapours/spray

Use only outdoors or in a well-ventilated area

Keep container tightly closed

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Wear protective gloves/protective clothing/eye protection/face protection

**Response**

IF INHALED: Remove person to fresh air and keep comfortable for breathing

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower

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

Immediately call a POISON CENTER/doctor

Rinse mouth

Do NOT induce vomiting

Wash contaminated clothing before reuse

**Storage**

Store in a well-ventilated place. Keep container tightly closed

Store locked up

Store in a dry place

**Disposal**

Dispose of contents/container to an approved waste disposal plant

### 3. Composition/Information on Ingredients

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

### 4. First-aid measures

**General Advice**

Show this safety data sheet to the doctor in attendance. 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.

<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
<b>Inhalation</b>	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.
<b>Ingestion</b>	Do NOT induce vomiting. Call a physician or poison control center immediately.
<b>Most important symptoms/effects</b>	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
<b>Notes to Physician</b>	Treat symptomatically

## 5. Fire-fighting measures

**Suitable Extinguishing Media** Carbon dioxide (CO<sub>2</sub>). Dry chemical.

**Unsuitable Extinguishing Media** Do not use water or foam

**Flash Point** No information available  
**Method -** No information available

**Autoignition Temperature** No information available

**Explosion Limits**

**Upper** No data available

**Lower** No data available

**Sensitivity to Mechanical Impact** No information available

**Sensitivity to Static Discharge** No information available

### 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.

### Hazardous Combustion Products

Chlorine. Sulfur oxides. Hydrogen chloride gas. Phosgene.

### Protective Equipment and Precautions for Firefighters

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

### NFPA

**Health**  
3

**Flammability**  
1

**Instability**  
0

**Physical hazards**  
W

## 6. Accidental release measures

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

## 7. Handling and storage

**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.

**Storage.**

Corrosives area. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from water or moist air. Incompatible Materials. Acids. Bases. Water. Strong oxidizing agents. Alcohols. Amines.

## 8. Exposure controls / personal protection

**Exposure Guidelines**

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH
Thionyl chloride	Ceiling: 1 ppm Ceiling: 4.9 mg/m <sup>3</sup>	Ceiling: 1 ppm	CEV: 0.2 ppm	Ceiling: 1 ppm Ceiling: 4.9 mg/m <sup>3</sup>	Ceiling: 0.2 ppm	(Vacated) Ceiling: 1 ppm (Vacated) Ceiling: 5 mg/m <sup>3</sup>	Ceiling: 1 ppm Ceiling: 5 mg/m <sup>3</sup>

**Legend**

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

**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

**Hand Protection**

Protective gloves

Glove material	Breakthrough time	Glove thickness	Glove comments
Butyl rubber	> 120 minutes	0.7 mm	Splash protection only

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, 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. gloves with care avoiding skin contamination.

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 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 properly

**Recommended Filter type:** Organic gases and vapours filter Type A Brown conforming to EN14387

When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls**

No information available.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

## 9. Physical and chemical properties

**Physical State**

Liquid

Appearance	Light yellow
Odor	Strong, pungent
Odor Threshold	0.9 ppm
pH	Strongly acidic.
Melting Point/Range	-105 °C / -157 °F
Boiling Point/Range	76 °C / 168.8 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	124 mbar @ 20 °C
Vapor Density	4.1
Specific Gravity	1.640
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	140 °C
Viscosity	0.6 mPa.s at 20 °C
Molecular Formula	Cl <sub>2</sub> O S
Molecular Weight	118.97

## 10. Stability and reactivity

Reactive Hazard	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.
Hazardous Reactions	None under normal processing. Reacts violently with water.

## 11. Toxicological information

### Acute Toxicity

#### Product Information

##### Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Thionyl chloride	LD50 = 324 mg/kg ( Rat )	Not listed	LC50 = 2.717 mg/L ( Rat ) 4 h

**Toxicologically Synergistic Products** No information available

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation	No information available
Sensitization	No information available
Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Thionyl chloride	7719-09-7	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects	No information available
Reproductive Effects	No information available.
Developmental Effects	No information available.
Teratogenicity	No information available.
STOT - single exposure	Respiratory system
STOT - repeated exposure	None known
Aspiration hazard	No information available
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
Endocrine Disruptor Information	No information available
Other Adverse Effects	The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

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

Persistence and Degradability	Persistence is unlikely based on information available.
Bioaccumulation/ Accumulation	No information available.
Mobility	Will likely be mobile in the environment due to its volatility.

## 13. Disposal considerations

Waste Disposal Methods	Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.
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## 14. Transport information

### DOT

UN-No	UN1836
Hazard Class	8
Packing Group	I

### TDG

UN-No	UN1836
Hazard Class	8
Packing Group	I

### IATA

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

### IMDG/IMO

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

## 15. Regulatory information

### International Inventories

Component	CAS-No	DSL	NDSL	TSCA	TSCA Inventory notification - Active-Inactive	EINECS	ELINCS	NLP
Thionyl chloride	7719-09-7	X	-	X	ACTIVE	231-748-8	-	-

Component	CAS-No	IECSC	KECL	ENCS	ISHL	TCSI	AICS	NZIoC	PICCS
Thionyl chloride	7719-09-7	X	KE-33794	X	X	X	X	X	X

**Legend:**

X - Listed '-' - Not Listed

**KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**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**IECSC** - Chinese Inventory of Existing Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**ENCS** - Japanese Existing and New Chemical Substances**AICS** - Australian Inventory of Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**Canada**

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

**Other International Regulations****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)	-

**REACH links**<https://echa.europa.eu/substances-restricted-under-reach>**Safety, health and environmental regulations/legislation specific for the substance or mixture**

Component	CAS-No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Thionyl chloride	7719-09-7	Listed	Not applicable	Not applicable	Not applicable

Component	CAS-No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Thionyl chloride	7719-09-7	Not applicable	Not applicable	Not applicable	Not applicable

**16. Other information****Prepared By**

Product Safety Department  
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[www.thermofisher.com](http://www.thermofisher.com)

**Creation Date**

21-September-2009

<b>Revision Date</b>	18-September-2024
<b>Print Date</b>	18-September-2024
<b>Revision Summary</b>	New emergency telephone response service provider.

**Disclaimer**

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**End of SDS**