

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 06/14/2004

Reviewed on 05/20/2004

- **1 Identification of substance:**

- **Product details:**

- **Product name:** Thionyl chloride

- **Stock number:** 41868

- **Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

- **Information Department:** Health, Safety and Environmental Department

- **Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

- **2 Composition/Data on components:**

- **Chemical characterization:**

Description: (CAS#)

Thionyl chloride (CAS# 7719-09-7): 100%

- **Identification number(s):**
- **EINECS Number:** 231-748-8
- **EU Number:** 016-015-00-0
- **3 Hazards identification**
- **Hazard description:** C Corrosive
- **Information pertaining to particular dangers for man and environment**

R 14 Reacts violently with water.
R 20/22 Harmful by inhalation and if swallowed.
R 29 Contact with water liberates toxic gas.
R 35 Causes severe burns.

- **Classification system**
- **HMIS ratings (scale 0-4)**

(Hazardous Materials Identification System)

Health (acute effects) = 3

Flammability = 0

Reactivity = 2

- **4 First aid measures**
- **General information**

Immediately remove any clothing soiled by the product.

- **After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.

- **After skin contact**

Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.

- **After eye contact**

Rinse opened eye for several minutes under running water.
Then consult a doctor.

- **After swallowing** Seek immediate medical advice.

- **5 Fire fighting measures**

- **Suitable extinguishing agents**

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

- **For safety reasons unsuitable extinguishing agents** Water

- **Special hazards caused by the material, its products of combustion or**

- resulting gases:**

- Reacts violently with water

- In case of fire, the following can be released:

- Sulfur oxides (SO_x)

- Reacts with water forming hydrochloric acid (HCl)

- **Protective equipment:**

- Wear self-contained respirator.

- Wear fully protective impervious suit.

- **6 Accidental release measures**

- **Person-related safety precautions:**

Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation

- **Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

- **Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents

- **Additional information:**

See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

- **7 Handling and storage**

- **Handling**

- **Information for safe handling:**

Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.

- **Information about protection against explosions and fires:**

The product is not flammable

- **Storage**

- **Requirements to be met by storerooms and receptacles:**

No special requirements.

- **Information about storage in one common storage facility:**

Store away from water/moisture.
Do not store together with acids.
Do not store together with alkalies (caustic solutions).
Store away from metals.

- **Further information about storage conditions:**

Protect from humidity and water.
Store under dry inert gas.
This product is moisture sensitive.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Store under lock and key and with access restricted to technical experts or their assistants only.

- **8 Exposure controls and personal protection**

- **Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Thionyl chloride

	ppm
ACGIH TLV	1
Belgium	1-STEL

Denmark TWA	1
Ireland TWA	1
Korea TLV	1
Netherlands MAC-TGG K (skin)	0.05 mg(Hg)/m ³ ; 0.15 mg(Hg)/m ³ -MAC-
Switzerland MAK-W	1
United Kingdom	1-STEL

- **Additional information:** No data

- **Personal protective equipment**

- **General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

- **Breathing equipment:**

Use suitable respirator when high concentrations are present.

- **Protection of hands:**

Impervious gloves

Check protective gloves prior to each use for their proper condition.

- **Material of gloves**

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

- **Eye protection:**

Safety glasses

Tightly sealed goggles
Full face protection

- **Body protection:** Protective work clothing.

- **9 Physical and chemical properties:**

- **General Information**

- **Form:** Liquid

- **Color:** Yellow

- **Odor:** Acrid

- | <u>Method</u> | <u>Value/Range</u> | <u>Unit</u> |
|---------------|--------------------|-------------|
|---------------|--------------------|-------------|

- **Change in condition**

- **Melting point/Melting range:** -104.5 ° C

- **Boiling point/Boiling range:** 76 ° C

- **Sublimation temperature / start:** Not determined

- **Flash point:** Not determined

- **Ignition temperature:** Not determined

- **Decomposition temperature:** Not determined

- **Danger of explosion:**

Product does not present an explosion hazard.

- **Explosion limits:**

- **Lower:** Not determined

- **Upper:** Not determined

- **Vapor pressure:** Not determined

- **Density:** at 20 ° C 1.638 g/cm³

- **Solubility in / Miscibility with**

- **Water:** Reacts violently

- **10 Stability and reactivity**

- **Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

- **Materials to be avoided:**

Water/moisture

Acids

Bases

- **Dangerous reactions**

Contact with water releases toxic gases

Contact with acids releases toxic gases

Reacts violently with water

Reacts with water forming hydrochloric acid (HCl)

- **Dangerous products of decomposition:**

Sulfur oxides (SO_x)

Hydrogen chloride (HCl)

- **11 Toxicological information**

- **Acute toxicity:**

LD/LC50 values that are relevant for classification:

Inhalative: LC50/1H: 500 ppm/1H (rat)

- **Primary irritant effect:**

- **on the skin:**

Strong corrosive effect on skin and mucous membranes.

Irritant to skin and mucous membranes.

- **on the eye:**

Strong corrosive effect.

Irritating effect.

- **Sensitization:** No sensitizing effects known.

- **Subacute to chronic toxicity:**

Thionyl chloride will cause severe pain and burns in the

digestive tract if swallowed. Will burn skin and eyes on contact. Eye damage may be severe. Inhalation may cause coughing, choking, and inflammation. Corrosive and reactive nature of the material limits long term exposures.

Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract. Eye contact may result in permanent damage and complete vision loss. Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

Ingestion may cause damage to the mouth, throat and esophagus. May cause skin burns or irritation depending on the severity of the exposure.

- **Additional toxicological information:**

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

- **12 Ecological information:**

- **General notes:**

Do not allow material to be released to the environment without proper governmental permits.

- **13 Disposal considerations**

- **Product:**

- **Recommendation**

Consult state, local or national regulations to ensure proper disposal.

- **Uncleaned packagings:**

- **Recommendation:**

Disposal must be made according to official regulations.

- **14 Transport information**

- **DOT regulations:**

- **Hazard class:** 8

- **Identification number:** UN1836

- **Packing group:** I

- **Proper shipping name (technical name):**

Thionyl chloride

- **Label:** 8

- **Land transport ADR/RID (cross-border)**

- **ADR/RID class:** 8 Corrosive substances

- **Item:** 12a

- **Danger code (Kemler):** X88

- **UN-Number:** 1836
- **Description of goods:** Thionyl chloride
- **Maritime transport IMDG:**
- **IMDG Class:** 8
- **Page:** 8155
- **UN Number:** 1836
- **Packaging group:** I
- **EMS Number:** F-A, S-B
- **MFAG:** 635
- **Proper shipping name:** Thionyl chloride
- **Air transport ICAO-TI and IATA-DGR:**
- **ICAO/IATA Class:** 8
- **UN/ID Number:** 1836

- **Label** 8
- **Packaging group:** I
- **Proper shipping name:** Thionyl chloride
- **15 Regulations**

- **Product related hazard informations:**

- **Hazard symbols:** C Corrosive

- **Risk phrases:**

14 Reacts violently with water.
 20/22 Harmful by inhalation and if swallowed.
 29 Contact with water liberates toxic gas.
 35 Causes severe burns.

- **Safety phrases:**

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
 45 In case of accident or if you feel unwell, seek medical advice immediately.

- **National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
 All components of this product are listed on the Canadian Domestic Substances List (DSL).

- **Information about limitation of use:**

For use only by technically qualified individuals.

- **16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

- **Department issuing MSDS:** Health, Safety and Environmental Department.

- **Contact:** Darrell R. Sanders

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