

## 1 Identification

### Product identifier

**Product name:** Trichloroethylene, ACS

**Stock number:** 19401

**CAS Number:**

79-01-6

**EC number:**

201-167-4

**Index number:**

602-027-00-9

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

**Identified use:**

SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

SU24 Scientific research and development

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

**Manufacturer/Supplier:**

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

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

**Emergency telephone number:**

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

**Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)**



GHS08 Health hazard

Muta. 2 H341 Suspected of causing genetic defects.

Carc. 1B H350 May cause cancer.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

STOT SE 3 H336 May cause drowsiness or dizziness.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

### Hazard pictograms



GHS07 GHS08

### Signal word

**Danger**

### Hazard statements

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H341 Suspected of causing genetic defects.

H350 May cause cancer.

H336 May cause drowsiness or dizziness.

### Precautionary statements

P201 Obtain special instructions before use.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

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

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### WHMIS classification

D1B - Toxic material causing immediate and serious toxic effects

D2A - Very toxic material causing other toxic effects



### Classification system

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

**(Hazardous Materials Identification System)**

HEALTH 2 Health (acute effects) = 2

FIRE 0 Flammability = 0

REACTIVITY 1 Physical Hazard = 1

### Other hazards

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

Product name: **Trichloroethylene, ACS**

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**3 Composition/information on ingredients**

**Chemical characterization: Substances**

**CAS# Description:**

79-01-6 Trichloroethylene

**Concentration:** ≤100%

**Identification number(s):**

**EC number:** 201-167-4

**Index number:** 602-027-00-9

**4 First-aid measures**

**Description of first aid measures**

**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 medical treatment.

**Information for doctor**

**Most important symptoms and effects, both acute and delayed**

Causes skin irritation.

Causes serious eye irritation.

May cause cancer.

May cause drowsiness or dizziness.

**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

**5 Fire-fighting measures**

**Extinguishing media**

**Suitable extinguishing agents** Use carbon dioxide, extinguishing powder or foam. Water may be ineffective but may be used for cooling exposed containers.

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

If this product is involved in a fire, the following can be released:

Carbon monoxide and carbon dioxide

Hydrogen chloride (HCl)

**Advice for firefighters**

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures**

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

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Environmental precautions:** Do not allow product to reach sewage system or any water course.

**Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose of contaminated material as waste according to section 13.

**Prevention of secondary hazards:** No special measures required.

**Reference to other sections**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**Protective Action Criteria for Chemicals**

**PAC-1:** 130 ppm

**PAC-2:** 450 ppm

**PAC-3:** 3,800 ppm

**7 Handling and storage**

**Handling**

**Precautions for safe handling**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

**Information about protection against explosions and fires:** No information known.

**Conditions for safe storage, including any incompatibilities**

**Storage**

**Requirements to be met by storerooms and receptacles:** No special requirements.

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

Store away from strong bases.

Store away from oxidizing agents.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**Specific end use(s)** No further relevant information available.

**8 Exposure controls/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.

**Control parameters**

**Components with limit values that require monitoring at the workplace:**

**79-01-6 Trichloroethylene (100.0%)**

PEL (USA)	Long-term value: 100 ppm Ceiling limit value: 200; 300* ppm *5-min peak in any 2 hrs
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(Contd. on page 3)  
USA

**Product name: Trichloroethylene, ACS**

(Contd. of page 2)	
REL (USA)	See Pocket Guide Apps. A and C
TLV (USA)	Short-term value: 135 mg/m <sup>3</sup> , 25 ppm Long-term value: 54 mg/m <sup>3</sup> , 10 ppm BEI
EL (Canada)	Short-term value: 25 ppm Long-term value: 10 ppm ACGIH A2, IARC 1
EV (Canada)	Short-term value: 25 ppm Long-term value: 10 ppm

**Ingredients with biological limit values:**  
**79-01-6 Trichloroethylene (100.0%)**

BEI (USA)	15 mg/L Medium: urine Time: end of shift at end of workweek Parameter: Trichloroacetic acid (nonspecific)
	0.5 mg/L Medium: blood Time: end of shift at end of workweek Parameter: Trichloroethanol without hydrolysis (nonspecific)
-	Medium: blood Time: end of shift at end of workweek Parameter: Trichloroethylene (semi-quantitative)
-	Medium: end-exhaled air Time: end of shift at end of workweek Parameter: Trichloroethylene (semi-quantitative)

**Additional information:** No data

**Exposure controls**  
**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.  
Store protective clothing separately.  
Avoid contact with the eyes and skin.  
Maintain an ergonomically appropriate working environment.  
**Breathing equipment:** Use suitable respirator when high concentrations are present.  
**Recommended filter device for short term use:**  
Use a respirator with multi-purpose combination (US) or type ABEK (EN 14387) as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).  
**Protection of hands:**  
Impervious gloves  
Check protective gloves prior to each use for their proper condition.  
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.  
**Material of gloves** Fluorocarbon rubber (Viton)  
**Penetration time of glove material (in minutes)** 480

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**Glove thickness:** 0.7 mm  
**Eye protection:** Safety glasses with side shields / NIOSH (US) or EN 166(EU)  
**Body protection:** Protective work clothing.

**9 Physical and chemical properties**

<b>Information on basic physical and chemical properties</b>	
<b>General Information</b>	
<b>Appearance:</b>	
Form:	Liquid
Odor:	Chloroform-like
Odor threshold:	Not determined.
pH-value:	Not determined.
<b>Change in condition</b>	
Melting point/Melting range:	-85 °C (-121 °F)
Boiling point/Boiling range:	87 °C (189 °F)
Sublimation temperature / start:	Not determined
Flammability (solid, gaseous)	Not determined.
Ignition temperature:	410 °C (770 °F)
Decomposition temperature:	Not determined
Auto igniting:	Not determined.
<b>Danger of explosion:</b>	
<b>Explosion limits:</b>	
Lower:	8 Vol %
Upper:	12.5 Vol %
Vapor pressure at 20 °C (68 °F):	77 hPa (58 mm Hg)
Density at 20 °C (68 °F):	1.46 g/cm <sup>3</sup> (12.184 lbs/gal)
Relative density	Not determined.
Vapor density	Not determined.
Evaporation rate	Not determined.
<b>Solubility in / Miscibility with</b>	
Water at 20 °C (68 °F):	1 g/l
Partition coefficient (n-octanol/water):	Not determined.
<b>Viscosity:</b>	
dynamic:	Not determined.
kinematic:	Not determined.

Product name: **Trichloroethylene, ACS**

Other information No further relevant information available. (Contd. of page 3)

10 Stability and reactivity  
**Reactivity** No information known.  
**Chemical stability** Stable under recommended storage conditions.  
**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.  
**Possibility of hazardous reactions** Reacts with strong oxidizing agents  
**Conditions to avoid** No further relevant information available.  
**Incompatible materials:**  
Bases  
Oxidizing agents  
**Hazardous decomposition products:**  
Carbon monoxide and carbon dioxide  
Hydrogen chloride (HCl)

11 Toxicological information  
**Information on toxicological effects**  
**Acute toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.  
**LD/LC50 values that are relevant for classification:**  

Oral	LD50	2402 mg/kg (mouse)
Dermal	LD50	>20000 mg/kg (rabbit)
Inhalative	LC50/4H	8450 ppm/4H (mouse)

  
**Skin irritation or corrosion:** Causes skin irritation.  
**Eye irritation or corrosion:** Causes serious eye irritation.  
**Sensitization:** No sensitizing effects known.  
**Germ cell mutagenicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.  
**Carcinogenicity:**  
May cause cancer.  
IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.  
NTP-R: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals.  
EPA-CaH: Carcinogenic to humans.  
ACGIH A2: Suspected human carcinogen: Agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. Available epidemiologic studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans.  
The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.  
**Reproductive toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.  
**Specific target organ system toxicity - repeated exposure:** No effects known.  
**Specific target organ system toxicity - single exposure:**  
May cause respiratory irritation.  
May cause drowsiness or dizziness.  
**Aspiration hazard:** No effects known.  
**Subacute to chronic toxicity:** The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.  
**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.




12 Ecological information  
**Toxicity**  
**Aquatic toxicity:** No further relevant information available.  
**Persistence and degradability** No further relevant information available.  
**Bioaccumulative potential** No further relevant information available.  
**Mobility in soil** No further relevant information available.  
**Ecotoxical effects:**  
**Remark:** Harmful to aquatic organisms  
**Additional ecological information:**  
**General notes:**  
Do not allow product to reach ground water, water course or sewage system, even in small quantities.  
Danger to drinking water if even extremely small quantities leak into the ground.  
May cause long lasting harmful effects to aquatic life.  
Avoid transfer into the environment.  
Harmful to aquatic organisms  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.  
**Other adverse effects** No further relevant information available.



13 Disposal considerations  
**Waste treatment methods**  
**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  

UN-Number	UN1710
DOT, IMDG, IATA	
UN proper shipping name	Trichloroethylene
DOT	1710 Trichloroethylene
ADR	TRICHLOROETHYLENE
IMDG, IATA	

Product name: **Trichloroethylene, ACS**

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<b>Transport hazard class(es)</b> <b>DOT</b> 	
<b>Class Label ADR</b> 	6.1 Toxic substances 6.1
<b>Class Label IMDG, IATA</b> 	6.1 (T1) Toxic substances 6.1
<b>Class Label</b>	6.1 Toxic substances 6.1
<b>Packing group DOT, ADR, IMDG, IATA</b>	III
<b>Environmental hazards:</b>	Not applicable.
<b>Special precautions for user</b> <b>EMS Number:</b> <b>Segregation groups</b> <b>Stowage Category</b> <b>Stowage Code</b>	Warning: Toxic substances F-A,S-A Liquid halogenated hydrocarbons A SW2 Clear of living quarters.
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>Transport/Additional information:</b>	
<b>DOT</b> <b>Quantity limitations</b>	On passenger aircraft/rail: 60 L On cargo aircraft only: 220 L
<b>Hazardous substance:</b> <b>Marine Pollutant (DOT):</b>	100 lbs, 45.4 kg No
<b>IMDG</b> <b>Limited quantities (LQ)</b> <b>Excepted quantities (EQ)</b>	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
<b>UN "Model Regulation":</b>	UN 1710 TRICHLOROETHYLENE, 6.1, III

<b>15 Regulatory information</b>	
<b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	
<b>GHS label elements</b> The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)	
<b>Hazard pictograms</b>  	
GHS07 GHS08	
<b>Signal word</b> Danger	
<b>Hazard statements</b> H315 Causes skin irritation. H319 Causes serious eye irritation. H341 Suspected of causing genetic defects. H350 May cause cancer. H336 May cause drowsiness or dizziness.	
<b>Precautionary statements</b> P201 Obtain special instructions before use. P261 Avoid breathing dust/fume/gas/mist/vapors/spray P280 Wear protective gloves/protective clothing/eye protection/face protection. P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P405 Store locked up. P501 Dispose of contents/container in accordance with local/regional/national/international regulations.	
<b>National regulations</b> 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).	
<b>SARA Section 313 (specific toxic chemical listings)</b>	
79-01-6 Trichloroethylene	
<b>California Proposition 65</b>	
<b>Prop 65 - Chemicals known to cause cancer</b>	
79-01-6 Trichloroethylene	
<b>Prop 65 - Developmental toxicity</b>	
79-01-6 Trichloroethylene	
<b>Prop 65 - Developmental toxicity, female</b> Substance is not listed.	
<b>Prop 65 - Developmental toxicity, male</b>	
79-01-6 Trichloroethylene	
<b>Information about limitation of use:</b> Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases. For use only by technically qualified individuals.	



**Product name:** *Trichloroethylene, ACS*

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*This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.*  
**Other regulations, limitations and prohibitive regulations**  
**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.**  
*This substance is included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH).*  
**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**  
Substance is not listed.  
**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is listed.  
**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**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 Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.*  
**Department issuing SDS:** Global Marketing Department  
**Date of preparation/Revision:** Print date, revision date and version number are in the header of each page.  
**Abbreviations and acronyms:**  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
HMS: Hazardous Materials Identification System (USA)  
WHMIS: Workplace Hazardous Materials Information System (Canada)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
SVHC: Substances of Very High Concern  
vPvB: very Persistent and very Bioaccumulative  
ACGIH: American Conference of Governmental Industrial Hygienists (USA)  
OSHA: Occupational Safety and Health Administration (USA)  
NTP: National Toxicology Program (USA)  
IARC: International Agency for Research on Cancer  
EPA: Environmental Protection Agency (USA)  
Skin Irrit. 2: Skin corrosion/irritation – Category 2  
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A  
Muta. 2: Germ cell mutagenicity – Category 2  
Carc. 1B: Carcinogenicity – Category 1B  
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

USA