

Safety Data Sheet
according to 1907/2006/EC, Article 31

Revision: 23.08.2010

Printing date 23.08.2010

1 Identification of substance**Product details**

Trade name

1-Chloro-2,3,3-trifluorocyclobutene

Stock number:

L12904

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG
Benzstrasse 3
D-76185 Karlsruhe / GermanyE-mail: gcat@matthey.com
www.alfa-chemcat.com

Informing department:

Product safety department.

Emergency information:

Giftnotruf Universität Mainz / Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telefon:+49(0)6131/19240**2 Hazards identification**

Hazard designation:



 Xn Harmful
F Highly flammable

Information pertaining to particular dangers for man and environment

 R 11 Highly flammable.
 R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
 R 36/37 Irritating to eyes and respiratory system.

GHS label elements


Danger

H225 - Highly flammable liquid and vapour.


Warning

 H302 - Harmful if swallowed.
 H312 - Harmful in contact with skin.
 H332 - Harmful if inhaled.
 H319 - Causes serious eye irritation.
 H335 - May cause respiratory irritation.

Prevention:

 P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P243 Take precautionary measures against static discharge.
 P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 P280 Wear protective gloves/clothing.

Response:

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

3 Composition/information on ingredients

Chemical characterization:

Designation: (CAS#)

1-Chloro-2,3,3-trifluorocyclobutene (CAS# 694-62-2)

4 First aid measures

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact

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

After eye contact

Seek immediate medical advice.
Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing

Seek immediate medical advice.

5 Fire fighting measures

Suitable extinguishing agents

CO₂, sand, extinguishing powder. Do not use water.

For safety reasons unsuitable extinguishing agents

Water.

Special hazards caused by the material, its products of combustion or flue gases:

 Can be released in case of fire:
 Carbon monoxide and carbon dioxide
 Hydrogen chloride (HCl)
 Hydrogen fluoride (HF)

Protective equipment:

 Wear self-contained breathing apparatus.
 Wear full protective suit.
6 Accidental release measures

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Measures for environmental protection:

Ensure adequate ventilation

Keep away from ignition sources

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).

Dispose of contaminated material as waste according to item 13.

Ensure adequate ventilation.

Keep away from ignition sources.

See Section 7 for information on safe handling

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

Additional information:

7 Handling and storage

Handling

Information for safe handling:

 Keep containers tightly sealed.
 Store in cool, dry place in tightly closed containers.
 Ensure good ventilation/exhaustion at the workplace.

Information about protection against explosions and fires:

 Keep ignition sources away - Do not smoke.
 Protect against electrostatic charges.
 Fumes can combine with air to form an explosive mixture.

Storage

Requirements to be met by storerooms and containers:

Store in cool location.

Information about storage in one common storage facility:

Store away from oxidizing agents.

Further information about storage conditions:

 Keep container tightly sealed.
 Store in cool, dry conditions in well sealed containers.

Trade name **1-Chloro-2,3,3-trifluorocyclobutene**

(Contd. of page 1)

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 critical values that require monitoring at the workplace:	Not required.
Additional information:	No data
Personal protective equipment	The usual precautionary measures should be adhered to in handling the chemicals. Keep away from foodstuffs, beverages and food. Instantly remove any soiled and impregnated garments. Wash hands during breaks and at the end of the work. Do not inhale gases / fumes / aerosols. Avoid contact with the eyes and skin. Use breathing protection with high concentrations. Check protective gloves prior to each use for their proper condition. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
General protective and hygienic measures	
Breathing equipment:	
Protection of hands:	
Material of gloves	Impervious gloves
Penetration time of glove material	Not determined
Eye protection:	Safety glasses
Body protection:	Face protection Protective work clothing.

9 Physical and chemical properties:**General Information**

Form:	Liquid
Colour:	Colourless
Smell:	Not determined

Change in condition	
Melting point/Melting range:	Not determined
Boiling point/Boiling range:	51-52°C
Sublimation temperature / start:	Not determined

Flash point: -15°C**Ignition temperature:** Not determined**Decomposition temperature:** Not determined

Critical values for explosion:	
Lower:	Not determined
Upper:	Not determined

Steam pressure: Not determined**Density at 20°C** 1.355 g/cm³**Solubility in / Miscibility with Water:** Not miscible or difficult to mix**10 Stability and reactivity**

Thermal decomposition / conditions to be avoided:	No decomposition if used and stored according to specifications.
Materials to be avoided:	Oxidizing agents Alkali metals Alkaline earth metals
Dangerous reactions:	No dangerous reactions known
Dangerous products of decomposition:	Carbon monoxide and carbon dioxide Hydrogen chloride (HCl) Hydrogen fluoride

11 Toxicological information

Acute toxicity:	
Primary irritant effect:	
on the skin:	May cause irritation
on the eye:	Irritant effect.
Sensitization:	No sensitizing effect known.
Additional toxicological information:	To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. Danger by skin resorption. No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

12 Ecological information:

Additional ecological information:	
General notes:	Water hazard class 1 (Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system. Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

Product:	
Recommendation	Hand over to disposers of hazardous waste. Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.
Uncleaned packagings:	
Recommendation:	Disposal must be made according to official regulations.

Trade name **1-Chloro-2,3,3-trifluorocyclobutene**

(Contd. of page 2)

14 Transport information**Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)**

ADR/RID-GGVS/E Class: 3 (F1) Flammable liquids.
Kemler Number: 336
UN-Number: 1993
Packaging group: II
Label: 3
Designation of goods: 1993 FLAMMABLE LIQUID, N.O.S. (vapor pressure at 50°C at most 110 kPa) (1-Chloro-2,3,3-trifluorocyclobutene)
Limited quantities (LQ): LQ4
Transport category: 2
Tunnel restriction code: D/E

Maritime transport IMDG/GGVSea:

IMDG/GGVSea Class: 3
UN Number: 1993
Label: 3
Packaging group: II
EMS Number: F-E, S-E
Marine pollutant: No
Correct technical name: FLAMMABLE LIQUID, N.O.S. (1-Chloro-2,3,3-trifluorocyclobutene)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 3
UN/ID Number: 1993
Label: 3
Packaging group: II
Correct technical name: FLAMMABLE LIQUID, N.O.S. (1-Chloro-2,3,3-trifluorocyclobutene)

UN "Model Regulation":

UN1993, FLAMMABLE LIQUID, N.O.S., 3, II

15 Regulatory information**Designation according to EC guidelines:****Code letter and hazard designation of product:**Xn Harmful
F Highly flammable**Risk phrases:**

11 Highly flammable.
 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
 36/37 Irritating to eyes and respiratory system.

Safety phrases:

16 Keep away from sources of ignition - No smoking.
 23 Do not breathe fumes.
 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 33 Take precautionary measures against static discharges.
 36/37 Wear suitable protective clothing and gloves.

National regulations**Information about limitation of use:**

For use only by technically qualified individuals.
 Employment restrictions concerning young persons must be observed.

Water hazard class:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

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 data specification sheet: Health, Safety and Environmental Department.**Contact:** Zachariah Holt**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)
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
 IMDG: International Maritime Code for Dangerous Goods
 IATA: International Air Transport Association
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
 ICAO: International Civil Aviation Organization
 ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals
 CAS: Chemical Abstracts Service (division of the American Chemical Society)