

## Trichloro(ethyl)silane

This document is a high-level summary intended to provide the general public with an overview of product safety for this substance. It is not intended to replace the Material Safety Data Sheet (MSDS), which is available from suppliers and should be referred to for full details of recommended safety procedures for each type of use. It is not intended to replace or supersede manufacturer's instructions and warnings for their consumer products containing this substance.

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An additional document for the safe handling of chlorosilanes can be found at:  
<http://www.silicones-safety.eu/files/Chlorosilanes%20Manual%202022082003.pdf>

### Substance Name and Chemical Identity

Chemical Name:  
Trichloro(ethyl)silane

CAS Number:  
115-21-9

Molecular formula:  
C2H5Cl3Si

### Uses and Applications

Trichloro(ethyl)silane is a linear organic silicon substance that is used in the following applications:

- Use as an intermediate (starting material) in the production of other organosilicon substances.
- Use as a laboratory chemical in research and development activities.

The substance is not suitable for use by the general public. The applications described generally take place in industrial settings under highly controlled conditions. Although the end uses of products made from trichloro(ethyl)silane will vary, it is expected that due to its highly reactive nature, no residual unreacted material will be present in any of the final products.

Organochlorosilanes such as trichloro(ethyl)silane are used as reagents in both industrial and academic laboratories. In most instances, use is as an intermediate in the synthesis of other silicon-based materials. These uses are generally of low volume, a few kilograms at most.

## **Physical/Chemical Properties**

Trichloro(ethyl)silane is a corrosive, highly flammable and moderately volatile liquid with a low boiling point. It reacts violently with water, rapidly breaking down to ethylsilanetriol and hydrochloric acid. The substance is classified for hazardous physico-chemical properties under the EU Globally Harmonized System (GHS) as:

- Flammable Liquid Category 2; 'H225:  
Highly flammable liquid and vapor'

In the EU an additional hazard statement also applies:

- 'EUH014: Reacts violently with water'

<b>Property</b>	<b>Value</b>
Physical state	Liquid
Color	Colorless
Odor	Stinging
Molecular weight	163.51 g/mol
Melting/boiling point	-105.6°C/97.9°C
Density	1.24 g/cm <sup>3</sup>
Vapor pressure	4780 Pa at 20°C
Flammability	Highly flammable
Flash point	14.6 at 101.3 kPa
Self-ignition temperature	405°C at 101.3 kPa
Explosive properties	Not explosive

## **Health Information**

Trichloro(ethyl)silane is classified for human health hazards under the EU Globally Harmonized System (GHS) as:

- Acute Toxic Category 4 (Oral); 'H302: Harmful if swallowed'
- Acute Toxic Category 3 (Vapor); 'H331: Toxic if inhaled'
- Skin Corrosion Category 1A; 'H314: Causes severe skin burns and eye damage'

In the EU an additional hazard statement also applies:

- 'EUH071: Corrosive to the respiratory tract'

## **Environmental Information**

Trichloro(ethyl)silane is not classified for environmental effects under the EU Globally Harmonized System (GHS).

## **Exposure Potential**

**Consumer exposure:** There are no recommended consumer uses of trichloro(ethyl)silane. There is no residual trichloro(ethyl)silane in end-products manufactured using the substance.

**Workplace exposure:** This refers to potential for worker exposure at manufacturing sites or industrial workplaces and laboratories. Due to the corrosive and highly flammable nature of the substance, all aspects of trichloro(ethyl)silane handling, including on-site storage and transfer, should be subject to highly controlled conditions. Further details are given in the Safety Data Sheet and CES Guidance Document on safe handling.

## **Environmental releases:**

Manufacturing usually occurs under controlled conditions, with only very small releases to air and wastewater. Environmental exposure is minimized by applying air and wastewater abatement technologies to remove unreacted substance and reaction products. The use of appropriate measures to manage environmental release is described in the Safety Data Sheet and CES Guidance Document on safe handling.

## **Risk Management Recommendations**

**Consumer risk management:** There are no recommended consumer uses of this substance. In a recommended laboratory setting, local exhaust ventilation must be in place and personal protective equipment must be worn with adherence to good laboratory practice.

**Industrial risk management:** For more detailed information please refer to the Safety Data Sheet and the chlorosilanes safe handling document for information on protecting workers and limiting environmental exposure at industrial sites. In summary, when using this chemical, there must be adequate ventilation. Suitable respiratory protection must be worn if the product is handled in large quantities in confined spaces. Chemical-resistant clothing and gloves, and safety glasses or other suitable eye protection must be worn. Avoid sources of ignition and keep containers tightly closed, in a dry and cool place.

## **Conclusions**

Trichloro(ethyl)silane is used under highly controlled conditions at industrial sites and in the laboratory. The manufacturing and use of trichloro(ethyl)silane does not pose a significant risk to humans or the environment if instructions in the Safety Data Sheet and applicable legal requirements are followed.

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