

Trichloro(phenyl)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(phenyl)silane

CAS Number:
98-13-5

Molecular formula:
 $C_6H_5Cl_3Si$

Uses and Applications

Trichloro(phenyl)silane is an organic silicon substance containing an aromatic ring. The substance has been used in the following applications:

- Use as a monomer ('building block') in the production of silicone polymers. Silicone polymers may be oils, greases, rubbers and, resins and have a wide range of uses.
- Use as an intermediate (starting material) in the production of other organosilicon substances.

The substance is not suitable for use by the general public. The applications described generally take place in industrial settings or laboratories under highly controlled conditions. Although the end uses of products made from trichloro(phenyl)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.

In most instances, use is as an intermediate in the synthesis of other silicon-based materials. Alternatively, as more of a facilitative role such as use as a "blocking agent" in organic synthesis or as a surface modifying agent is common. In any event, these uses are generally of low volume, a few kilograms at most.

Physical/Chemical Properties

Trichloro(phenyl)silane is a non-volatile and non-flammable liquid with a high boiling point. It reacts violently with water, rapidly breaking down to phenylsilanetriol and hydrochloric acid. The substance is not classified for hazardous physicochemical properties under the EU Globally Harmonized System (GHS). However, in the EU an additional hazard statement applies as follows:

- 'EUH014: Reacts violently with water'

| Property | Value |
|---------------------------|--------------------------------|
| Physical state | Liquid |
| Color | Colorless |
| Odor | Hydrochloric acid odor |
| Molecular weight | 211.55 g/mol |
| Melting/boiling point | -40°C/201.8°C |
| Density | 1.25 g/cm ³ at 20°C |
| Vapor pressure | 44.3 Pa at 20°C |
| Flammability | Non flammable |
| Flash point | 91.6°C at 101.3 kPa |
| Self-ignition temperature | 544°C at 101.3 kPa |
| Explosive properties | Not explosive |

Health Information

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

- Acute Toxic Category 4 (Dermal); 'H312: Harmful in contact with skin'
- Skin Corrosion Category 1A'; 'H314: Causes severe burns and eye damage'
- Eye irritation Category 1A; 'H318: Causes serious eye damage'

In the EU an additional hazard statement also applies:

- 'EUH071: Corrosive to the respiratory tract'

Environmental Information

Trichloro(phenyl)silane is not classified for environmental effects under the GHS.

Exposure Potential

Consumer exposure: There are no consumer uses of trichloro(phenyl)silane. It is expected that there is no residual trichloro(phenyl)silane in end-products manufactured using the substance.

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

Environmental releases:

Manufacturing generally occurs under controlled conditions and is typically subject to stringent regulations, with only very small releases to air and wastewater. Environmental exposure can be 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 consumer uses of this substance. In a 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. Keep containers tightly closed, in a dry and cool place.

Conclusions

Trichloro(phenyl)silane is used under highly controlled conditions at industrial sites and in the laboratory. The manufacturing and use of trichloro(phenyl)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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