

## Decamethylcyclopentasiloxane (D5)

*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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### Substance Name and Chemical Identity

Chemical Name:  
Decamethylcyclopentasiloxane

Common name:  
D5

CAS Number:  
541-02-6

Molecular formula:  
 $C_{10}H_{30}O_5Si_5$

### Uses and Applications

D5 is a cyclic organic silicon substance that 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 organic silicon substances.
- Use in electronics applications.
- Use in textiles applications.
- Use in personal care products.
- Use in household care products.
- Use in dry cleaning.

The majority of these applications take place in industrial settings; however, personal care and household care products containing D5 may be used by professionals and consumers.

In personal care products, D5 is used as a base fluid or solvent for other larger molecules because it is odorless, easy to spread, tasteless, non-greasy and non-stinging. D5 has been used in a wide variety of products including antiperspirants, deodorants, hair sprays, hair conditioners, cleansing creams, skin creams, lotions, bath oils, suntan and shaving products, make-up and nail polishes.

In household care products, much like personal care products, D5 is used as a base fluid or solvent for other larger molecules. Typically, it is used in products such as washing and cleaning products, solid and spray polishes, wax blends, and in automotive aesthetic products.

## Physical/Chemical Properties

D5 is an odorless, high-boiling liquid which is very poorly soluble in water and moderately volatile. The substance is not classified for physical hazards under the Globally Harmonized System (GHS).

D5 creates many of the positive qualities we associate with personal care products. For example, it acts as a vehicle that enables efficient and easy spreading of the protective ingredients in sunscreens and other skin care products. In addition, D5 has unique properties that improve the quality, reliability and functionality of many different kinds of consumer products.

Property	Value
Physical state	Liquid
Color	Clear
Odor	Odorless
Molecular weight	370.8 g/mol
Melting/boiling point	-38°C / 210°C
Density	0.96 g/cm <sup>3</sup> at 20°C
Vapor pressure	33 Pa at 25°C
Flammability	Not flammable
Flash point	82.7°C (closed cup)
Self-ignition temperature	372°C
Explosive properties	Not explosive

## Health Information

No adverse health effects were observed at exposure levels relevant to use of D5. D5 is not classified for human health hazards under the Globally Harmonized System (GHS).

## Environmental Information

D5 is not classified for environmental effects under the GHS. D5 is emitted into the air and discharged in wastewater as a result of consumer, commercial, and industrial processing and use. Most of the D5 emitted from processing and use is discharged to the air. The remainder of D5 entering the environment is discharged to wastewater. Municipal wastewater treatment processes remove most of the D5 from the wastewater. Any residual D5 discharged to surface water will degrade, evaporate into the air, and bind to solids and be deposited into aquatic sediment. D5 degrades at varying rates in air, water, and aquatic sediment. Various government agencies are assessing the environmental persistence and bioaccumulative potential of D5. Environmental monitoring has detected D5 in aquatic sediment. Toxicity testing and modeling indicates that the levels of D5 in the environment do not pose a significant risk to plants or animals.

## Exposure Potential

### Consumer use of products

**containing D5:** Consumers will come into contact with D5 while using personal care or household products containing the substance. D5 concentrations in personal care products are usually less than 10%, but can range from 0.5% in perfumes to 50% in antiperspirants. In household care products, D5 is commonly present at 0.1% to 2%.

Professional cleaners and salon workers who use these products will also be exposed to D5.

**Workplace exposure:** People working in locations where products containing D5 are made or used may be exposed to D5 through contact with the skin and inhalation of D5 that evaporates during processing or use. As with most substances present in the workplace, because of the potential for continuous daily long-term exposure, employers should use appropriate protective measures, such as adequate ventilation and protective clothing, to reduce the potential for exposure to this substance.

## Risk Management Recommendations

**Consumer and professional risk management:** Consumers and professionals do not need to take any special precautions when using the substance as intended.

**Industrial risk management:** Please refer to the Safety Data Sheet for information on protecting workers and limiting environmental exposure at industrial sites, and information on formulating products that are safe for professionals and consumers to use.

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