

GPS Safety Summary

Cyclododecane

Substance name

Cyclododecane
 CAS-No. 294-62-2

General Statement

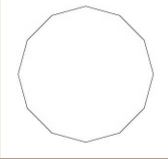
This Product Safety Summary is intended to provide a general overview of the chemical substance. The information on the summary is basic information and is not intended to provide emergency response information, medical information or treatment information. The summary should not be used to provide in-depth safety and health information.

The direct exposure of general population is very unlikely as this substance is intended to be manufactured and handled in industrial settings under strictly controlled conditions only and as the substance is not intended for consumer uses.

The environmental effects, ecotoxicology and toxicology information available for this chemical is provided based on experimental studies and/or a reliable evaluation of its hazardous properties. See Health and Environmental Effects.

This chemical should not enter surface water, groundwater water and soil. By implementing the Risk Management Recommendations (see below), the substance can be handled safely.

Chemical identity

| | |
|---------------------------|---|
| Name | Cyclododecane |
| Brand names | Cyclododecane, CDAN |
| Chemical name (IUPAC) | Cyclododecane |
| CAS number | 294-62-2 |
| Molecular formula | C ₁₂ H ₂₄ |
| Structural formula |  |
| Chemical characterization | Cycloaliphatic hydrocarbon |
| Synonyms | - |

Uses and application

Cyclododecane is used as a raw material in the manufacture of other chemicals, in particular monomers for polyamides and polyesters.

Physical/chemical properties

Cyclododecane is a colorless organic solidified melt with a musty odor. The relative density is 0.855 at 20 °C which is lower than that of water. The melting point of this substance is 60.4°C and the normal boiling point 244°C. The substance is poorly soluble and not highly flammable. Since the substance does not react with water or contain any groups that might oxidize or spontaneously ignite, it is not expected that cyclododecane would self-ignite, oxidize or explode at ambient conditions.

| Property | Value |
|-------------------------------------|--------------------------------|
| Physical state | Solidified melt |
| Color | Colorless |
| Odor | Musty |
| Density | 0.855 g/cm ³ (20°C) |
| Melting / boiling point | 60.4 °C / 244 °C (1013 hPa) |
| Flash Point | Not highly flammable |
| Explosive Properties | No Explosive Properties |
| Vapor pressure | 9.83 hPa (20 °C) |
| Water solubility | 16 µg/l (20 °C) |
| Molecular weight | 168.32 g/mol |
| Octanol–water partition coefficient | Log (Kow) = 7.6 (25 °C) |

Health effects

Health effects

| Effect Assessment | Result |
|--|--|
| Acute toxicity (oral, dermal and inhalation) | Practically non-toxic if swallowed. No data available regarding acute inhalation and dermal toxicity. |
| Eye / Skin irritation | Slightly irritating to eyes and to the skin |
| Sensitization | Not skin sensitizing in animals studies. |
| Toxicity after repeated exposure | Primarily reversible liver changes after repeated oral exposure. |
| Genotoxicity/mutagenicity | Not mutagenic / genotoxic |
| Carcinogenicity | No data available |
| Toxicity for reproduction | No data available |

Based on available studies cyclododecane is practically non-toxic if swallowed. Experimental data on acute toxicity via dermal and inhalation route are not available.

Cyclododecane is slightly irritating to eyes and to the skin.

The substance showed no skin sensitizing properties in animal studies.

The repeated oral exposure of cyclododecane caused primarily reversible liver changes.

Test conducted in bacteria and mammalian cells showed no mutagenic or genotoxic properties of the substance.

There are no data available regarding carcinogenicity or effects on reproduction and teratogenic effects.

Environmental effects

| Effect Assessment | Result |
|---------------------------|---|
| Aquatic toxicity | Not harmful to aquatic organisms (within the range of water solubility) |
| Fate and Behavior | Result |
| Biodegradation | Not readily biodegradable |
| Bioaccumulation potential | Significant bioaccumulation expected |
| PBT / vPvB conclusion | Suspected PBT |

Three trophic levels of aquatic species were tested. Based on available data, cyclododecane is not considered harmful to aquatic organisms within the range of its water solubility. Even though the substance is not readily biodegradable and the log Kow was determined as 7.6 distribution and bioaccumulation in the aquatic environment is not expected as due to its volatility the substance evaporates rapidly from aquatic systems.

Exposure

Human health

With regard to the production of the substance, the general population will not come in contact with cyclododecane via the environment as the substance is manufactured in a closed process under strictly controlled conditions minimizing also exposure potential to workers.

The direct exposure of general population is very unlikely as this substance is intended to be manufactured and handled in industrial settings under strictly controlled conditions only and as the substance is not intended for consumer uses.

Normal industrial practices assure limited workplace exposures. All workers have to be trained in the properties and safe practices of using chemicals including technical measurements to minimize exposure and using personal protective equipment.

Environment

The manufacture is a closed process under strictly controlled conditions and therefore no significant exposure to the environment is expected. Any exposures will generally be lower than concern levels. Direct use by the general population is not intended and thus environmental exposure via this route is unlikely to occur.

Risk management recommendations

When using chemicals make sure that there is adequate ventilation. Always use appropriate chemical resistant gloves to protect your hands and skin and always wear eye protection such as chemical goggles. Use a respirator if required to do so. Do not eat, drink or smoke where chemicals are handled, processed or stored. Wash hands and skin following contact. If the substance gets into your eyes, rinse eyes thoroughly for at least 15 minutes with water and seek medical attention. All releases that may include the substance must be directed to a wastewater treatment plant that removes the substance from the final releases to the receiving water. Releases to air are avoided by technical means and therefore no specific recommendations are required.

State agency review

- EU-GHS Regulation (EU) No. 1272/2008
- EU-Risk Assessment (Regulation 793/93): not a priority chemical substance
- IPCS International Chemical Safety Card

Regulatory information/classification and labelling

GHS-Labeling

| | |
|---|----------------|
| Statutory basis EU-GHS as per Regulation (EU) No. 1272/2008 | Cyclododecane |
| Symbol(s) | Not classified |
| Signal word | - |
| Hazard statement | - |

Disclaimer

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Performance of the chemical described herein should be verified by testing which should be carried out only by qualified experts.

Evonik reserves the right to make any changes to this GPS Safety Summary in accordance with technological progress or further developments. Reference to trade names used by other companies is neither a recommendation, nor does it imply, that similar products could not be used.

Glossary

| | |
|------------------|---|
| Acute toxicity | harmful effects after a single exposure |
| Biodegradable | breakdown of materials by bacteria or other organisms |
| Bioaccumulation | accumulation of substances in organisms |
| Carcinogenicity | effects causing cancer |
| Chronic toxicity | effects after repeated exposures |
| GHS | Global Harmonized System on Classification and Labeling |
| Mutagenicity | effects that change genes |
| PBT | Persistent Bioaccumulative Toxic |
| Reprotoxicity | effects on fertility and on development of the fetus |
| Sensitizing | allergic reaction |
| Teratogenic | effects on foetal morphology |
| vPvB | very Persistent very Bioaccumulative |

Contact information within company

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