

# SAFETY DATA SHEET

Classified in accordance 29 CFR 1910.1200

## 1. Identification

**Product identifier:** VPS CHS

**Chemical name:**

Cyclohexasilane

**Other means of identification**

**CAS Number:** 291-59-8

**Recommended restrictions**

**Recommended use:** Sample, for research purposes only.

**Restrictions on use:** Not determined.

**Manufacturer/Importer/Distributor Information**

Company Name : Evonik Corporation  
299 Jefferson Road  
Parsippany, NJ 07054  
USA

Telephone : +1 973 929 8000

Fax : +1 973 929 8040

E-mail : product-regulatory-services@evonik.com

**Emergency telephone number:**

24-Hour Health : +1 800 424 9300 (CHEMTREC - US & CANADA)

Emergency 800 681 9531 (CHEMTREC MEXICO)

+1 703 527 3887 (CHEMTREC WORLD)

## 2. Hazard(s) identification

**Hazard Classification**

**Physical Hazards**

Pyrophoric liquids

Category 1

**Label Elements**

**Hazard Symbol:**



**Signal Word:**

Danger

**Hazard Statement:**

Catches fire spontaneously if exposed to air.

**Precautionary Statements**
**Prevention:**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not allow contact with air. Wear protective gloves/protective clothing/eye protection/face protection.

**Response:**

IF ON SKIN: Immerse in cool water or wrap in wet bandages. In case of fire: Use... to extinguish.

**Storage:**

Store contents under

**Hazard(s) not otherwise classified (HNOC):**

None.

**3. Composition/information on ingredients**
**Chemical name:**

Cyclohexasilane

**Substances**

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%) <sup>*</sup>
Cyclohexasilane		291-59-8	>95%

<sup>\*</sup> All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

The exact concentration has been withheld as a trade secret.

**4. First-aid measures**
**Description of necessary first-aid measures**
**Inhalation:**

If aerosol or mists are inhaled, take affected persons out into the fresh air. In case of persistent discomfort or other symptoms, consult a physician immediately.

**Skin Contact:**

Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Obtain medical attention immediately if symptoms occur. Wash clothing before reuse.

**Eye contact:**

Rinse thoroughly with plenty of water keeping eyelid open. In case of persistent discomfort: Consult an ophthalmologist.

**Ingestion:**

Have the mouth rinsed with water. After absorbing large amounts of substance / In case of discomfort: Supply with medical care.

**Personal Protection for First-aid Responders:**

In case of fire: wear a self contained respiratory apparatus, Employ protective equipment commonly used in the event of fire. As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

**Most important symptoms/effects, acute and delayed****Symptoms:** None known.**Hazards:** None known.**Indication of immediate medical attention and special treatment needed****Treatment:** After absorbing large amounts of substance: administration of activated charcoal. Acceleration of gastrointestinal passage**5. Fire-fighting measures****Suitable (and unsuitable) extinguishing media****Suitable extinguishing media:** Dry sand. Dry chemicals.**Unsuitable extinguishing media:** Water. Halon.**Specific hazards arising from the chemical:** Spontaneously flammable in air. In case of fire, remove the endangered containers and bring to a safe place, if this can be done safely. In case of fire: wear a self contained respiratory apparatus**Special protective equipment and precautions for firefighters****Special fire fighting procedures:** Water used to extinguish fire should not enter drainage systems, soil or stretches of water. Ensure there are sufficient retaining facilities for water used to extinguish fire. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.**Special protective equipment for fire-fighters:** In case of fire: wear a self contained respiratory apparatus Employ protective equipment commonly used in the event of fire. As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.**6. Accidental release measures****Personal precautions, protective equipment and emergency procedures:** Use personal protective equipment. Avoid contact with skin and eyes. Do not breathe in vapours or aerosols. Keep unauthorized personnel away. Ensure adequate ventilation. Keep away from sources of ignition - No smoking.**Methods and material for containment and cleaning up:** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Transfer into suitable containers. To be disposed of in compliance with existing regulations.**Environmental Precautions:** Do not allow entrance in sewage water, soil stretches of water, groundwater, drainage systems. Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

## 7. Handling and storage

### Handling

**Technical measures (e.g. Local and general ventilation):** Handling under: inert gas. Take precautionary measures against static discharges. Earthing of equipment.

**Safe handling advice:** Handle under inert gas atmosphere. Do not breathe in vapours or aerosols. Absolutely avoid contact with the eyes and/or skin. Handle in accordance with good industrial hygiene and safety practice. The personal protective equipment used must meet the requirements of Regulation (EU) 2016/425 and amendments (CE certification). If workplace exposure limits are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used. If there is the possibility of skin/eye contact, the indicated hand/eye/body protection should be used. Do not breathe in vapours or aerosols. Avoid contact with skin and eyes.

**Contact avoidance measures:** No data available.

### Storage

**Safe storage conditions:** Normal measures for preventive fire protection. Take action to prevent static discharges. Keep away from sources of ignition - No smoking. Keep containers tightly closed in a cool, well-ventilated place. Store in original container. Beware of pressure build-up when stored in tightly closed containers. Store in a dark place. Recommended storage temperature: < 5 °C. Do not store at temperatures > 25°C ! Material should be stored under an inert atmosphere. Keep away from moisture.

**Safe packaging materials:** No data available.

## 8. Exposure controls/personal protection

### Control Parameters

#### Occupational Exposure Limits

None of the components have assigned exposure limits.

#### Biological Limit Values

No biological exposure limits noted for the ingredient(s).

**Appropriate Engineering Controls** Handling under: inert gas. Take precautionary measures against static discharges. Earthing of equipment.

### Individual protection measures, such as personal protective equipment

**Eye/face protection:** Safety glasses with side-shields conforming to EN166 When handling larger quantities: basket-shaped glasses

### Skin Protection

<b>Hand Protection:</b>	Material: Nitrile rubber/Nitrile latex (NBR) Break-through time: >= 480 min Guideline: Source: KCL GmbH Additional Information: Dermatril 740 Additional Information: Selection of protective gloves to meet the requirements of specific workplaces., Suitability for specific workplaces should be clarified with protective glove manufacturers., The information is based on our own tests, references from the literature and information from glove manufacturers, or derived by analogy with similar materials., Be aware that in daily use the durability of a chemical resistant protective glove can be notably shorter than the break through time measured according to EN 374, due to the numerous outside influences (e.g. temperature). Additional Information: The above mentioned hand protection is based on special knowledge of the chemical and the intended handling of this product, however, it still may not be suited for all workplaces. A qualified hazard assessment should be made prior to the onset of work in order to determine the suitability of gloves for specific working environments and processes.
<b>Skin and Body Protection:</b>	suitable protective clothing When handling larger quantities: Wear chemical protective suit made from non-flammable fibres. A safety shower and eye wash fountain should be readily available. To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.
<b>Respiratory Protection:</b>	In case of dusts/vapours/aerosols being formed or if the limit values like TLV are exceeded: use respiratory equipment with suitable filter (filter type ABEK) or wear a self contained respiratory apparatus Use only respiratory protection equipment with CE-symbol including four digit test number. The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used. Note time limit for wearing respiratory protective equipment. A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.
<b>Hygiene measures:</b>	When using, do not eat, drink or smoke. Wash face and/or hands before break and end of work. Immediately remove contaminated clothing. Wash contaminated clothing before reuse. Apply adequate skin protection agents before handling the product. Assure skin cleaning and skin care after work. Preventive skin protection is recommended.

## 9. Physical and chemical properties

### Information on basic physical and chemical properties

#### Appearance

<b>Physical state:</b>	liquid
<b>Form:</b>	liquid
<b>Color:</b>	Colorless

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<b>Odor:</b>	Slight
<b>Odor Threshold:</b>	No data available.
<b>Freezing point:</b>	61.7 - 64 °F/16.5 - 18 °C
<b>Boiling Point:</b>	176 °F/80 °C (13 - 20 mbar) literature
<b>Flammability:</b>	Not applicable
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Explosive limit - upper:</b>	No data available.
<b>Explosive limit - lower:</b>	No data available.
<b>Flash Point:</b>	Not applicable
<b>Self Ignition Temperature:</b>	No data available.
<b>Decomposition Temperature:</b>	No data available.
<b>pH:</b>	No data available.
<b>Viscosity</b>	
<b>Dynamic viscosity:</b>	No data available.
<b>Kinematic viscosity:</b>	No data available.
<b>Flow Time:</b>	Not applicable
<b>Solubility(ies)</b>	
<b>Solubility in Water:</b>	No data available.
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>Vapor pressure:</b>	No data available.
<b>Relative density:</b>	No data available.
<b>Density:</b>	No data available.
<b>Bulk density:</b>	Not applicable
<b>Relative vapor density:</b>	Not applicable
<b>Particle characteristics</b>	
<b>Particle Size Distribution:</b>	Not applicable
<b>Specific surface area:</b>	Not applicable
<b>Surface charge/Zeta potential:</b>	Not applicable
<b>Assessment:</b>	Not applicable
<b>Shape:</b>	Not applicable
<b>Crystallinity:</b>	Not applicable
<b>Surface treatment:</b>	Not applicable

**Other information**

<b>Minimum ignition temperature:</b>	The substance or mixture is pyrophoric with the category 1.
<b>Peroxides:</b>	Not applicable
<b>Evaporation Rate:</b>	No data available.
<b>Molecular weight:</b>	180.61 g/mol

**10. Stability and reactivity**

<b>Reactivity:</b>	No dangerous reaction known under conditions of normal use.
<b>Chemical Stability:</b>	Stable under recommended storage conditions.

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<b>Possibility of hazardous reactions:</b>	Spontaneously flammable in air. Vigorous reaction with alkaline solutions. Contact with water liberates toxic, extremely flammable gas.
<b>Conditions to avoid:</b>	Prevent entrance of air/oxygen. sun rays, heat, heat effect
<b>Incompatible Materials:</b>	Avoid contact with air, water and alkaline solutions.
<b>Hazardous Decomposition Products:</b>	Monosilane. Hydrogen.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation:</b>	No data available.
<b>Skin Contact:</b>	No data available.
<b>Eye contact:</b>	No data available.
<b>Ingestion:</b>	No data available.

### Information on toxicological effects

#### Acute toxicity (list all possible routes of exposure)

**Oral****Product:** Not classified for acute toxicity based on available data.**Dermal****Product:** Not classified for acute toxicity based on available data.**Inhalation****Product:** Not classified for acute toxicity based on available data.**Repeated dose toxicity****Product:** No data available.**Skin Corrosion/Irritation****Product:** No data available.**Serious Eye Damage/Eye Irritation****Product:** No data available.**Respiratory or Skin Sensitization****Product:** No data available.**Carcinogenicity****Product:** No data available.**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

No carcinogens present or none present in regulated quantities

**US. National Toxicology Program (NTP) Report on Carcinogens:**

No carcinogens present or none present in regulated quantities

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:**

No carcinogens present or none present in regulated quantities

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**Germ Cell Mutagenicity****In vitro****Product:** No data available.**In vivo****Product:** No data available.**Reproductive toxicity****Product:** No data available.**Specific Target Organ Toxicity - Single Exposure****Product:** No data available.**Specific Target Organ Toxicity - Repeated Exposure****Product:** No data available.**Aspiration Hazard****Product:** No data available.**Information on health hazards****Other hazards****Product:** No toxicological tests are available on the product.; An Expert Judgment stated that no classification is necessary based on present knowledge.;**12. Ecological information****Ecotoxicity:****Acute hazards to the aquatic environment:****Fish****Product:** No data available.**Aquatic Invertebrates****Product:** No data available.**Toxicity to Aquatic Plants****Product:** No data available.**Toxicity to microorganisms****Product:** No data available.**Chronic hazards to the aquatic environment:****Fish****Product:** No data available.**Aquatic Invertebrates****Product:** No data available.**Toxicity to Aquatic Plants****Product:** No data available.**Toxicity to microorganisms****Product:** No data available.**Persistence and Degradability**



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**Biodegradation****Product:** No data available.**BOD/COD Ratio****Product:** No data available.**Bioaccumulative potential****Bioconcentration Factor (BCF)****Product:** No data available.**Partition Coefficient n-octanol / water (log Kow)****Product:** Log Kow: No data available.**Mobility in soil:****Product** No data available.**Results of PBT and vPvB assessment:****Product** No data available.**Other adverse effects:****Other hazards****Product:** An Expert Judgment stated that no classification is necessary based on present knowledge.**Additional Information:** No ecotoxicological data is available for this product.**13. Disposal considerations****Disposal methods:** Waste must be disposed of in accordance with federal, state, provincial and local regulations.**Contaminated Packaging:** Packaging, that can not be reused after cleaning must be disposed or recycled in accordance with all federal, national and local regulations. Incorrect disposal or reuse of this container is illegal and can be dangerous. Other countries: observe the national regulations.**14. Transport information****Domestic regulation****49 CFR**UN/ID/NA number : UN 3194  
Proper shipping name : Pyrophoric liquid, inorganic, n.o.s.  
(Cyclohexasilane)  
Class : 4.2  
Packing group : I  
Labels : 4.2  
ERG Code : 135  
Marine pollutant : no**International Regulations**

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**IATA-DGR**

Not permitted for transport

**IMDG-Code**

UN number or ID number : UN 3194  
Proper shipping name : PYROPHORIC LIQUID, INORGANIC, N.O.S.  
(Cyclohexasilane)  
Class : 4.2  
Packing group : I  
Labels : 4.2  
EmS Code : F-G, S-M  
Marine pollutant : no

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

**15. Regulatory information****US Federal Regulations****TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

None present or none present in regulated quantities.

**US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)**

None present or none present in regulated quantities.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended**

None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

None present or none present in regulated quantities.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Hazard categories**

Pyrophoric (liquid or solid)

**US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances**

None present or none present in regulated quantities.

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required**

None present or none present in regulated quantities.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

None present or none present in regulated quantities.

**Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

None present or none present in regulated quantities.

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**US State Regulations**
**US. California Proposition 65**

No ingredient requiring a warning under CA Prop 65.

**US. New Jersey Worker and Community Right-to-Know Act**

No ingredient regulated by NJ Right-to-Know Law present.

**US. Massachusetts RTK - Substance List**

No ingredient regulated by MA Right-to-Know Law present.

**US. Pennsylvania RTK - Hazardous Substances**

No ingredient regulated by PA Right-to-Know Law present.

**US. Rhode Island RTK**

No ingredient regulated by RI Right-to-Know Law present.

**16. Other information, including date of preparation or last revision**
**HMIS Hazard ID**

<b>Health</b>	1
<b>Flammability</b>	3
<b>Physical Hazards</b>	0
<b>PERSONAL PROTECTION</b>	

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; \*Chronic health effect

**Issue Date:** 04/08/2021

**Version #:** 1.5

**Further Information:** No data available.

**Revision Information** Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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