Product Safety Summary on Perchloroethylene
Perchloroethylene (Tetrachloroethylene)

This Product Safety Summary is intended to provide a general overview of the chemical substance in the context of ICCA Global Product Strategy. The information on the Summary is basic information and is not intended to provide emergency response, medical or treatment information. In-depth safety and health information can be found on the (extended) Safety Data Sheet (e)SDS for the chemical substance.

General Statement

Perchloroethylene is colourless liquid chlorocarbon. It is widely used for dry cleaning. It has a sweet odour. It is hazardous to human health, and is generally made and used in closed systems and by trained professionals with safety equipment. It is highly recommended that only workers with specific training be allowed to handle this substance. Perchloroethylene is well suited for recycling and constant re-used.

Chemical Identity

Name: Tetrachloroethylene
Synonyms: Perchloroethylene
CAS number: 127-18-4
Molecular formula: C2Cl4

Use and Applications

Perchloroethylene has a limited number of uses and applications. It is used as intermediate, as dry cleaning agent in the industrial and professional sector, as surface cleaning agent in industrial settings, as heat transfer medium in industrial settings and in film cleaning and copying by professionals.

Consumer use has not been assessed for REACH. Any consumer use IS NOT supported by ECSA members.

For more information on safe handling of the substance please visit ECSA Product & Application Toolbox:

Physical/Chemical Properties

Perchloroethylene is a colourless liquid with a slightly ethereal odour. The appearance of the substance and some physicochemical properties are mentioned in the table below.
Health Effects
The most likely route of human exposure (workers and consumers) to tetachloroethylene is through inhalation or to less extent dermal contact. Worker exposure can occur in Perchloroethylene manufacturing facilities or the industrial facilities where the substance is used as an intermediate. Since this type of activity is mainly undertaken in closed systems, exposure is fairly low. Higher worker exposures are likely in industrial or professional dry cleaning and surface cleaning. Releases to the environment occur mostly to the air compartment with minor emissions to the water.

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>ethereal</td>
</tr>
<tr>
<td>Density</td>
<td>1.61 g/cm³ (25 °C)</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>2.5 kPa at 25 °C</td>
</tr>
<tr>
<td>Melting temperature</td>
<td>-22 °C</td>
</tr>
<tr>
<td>Boiling temperature</td>
<td>121.4 °C (101.3245 kPa)</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>165.8334 g/mol</td>
</tr>
<tr>
<td>Flash point</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>Water solubility</td>
<td>150 mg/l at 25 °C</td>
</tr>
</tbody>
</table>

Environmental Effects
Perchloroethylene is toxic to aquatic organisms with long lasting effects. However, due to the pattern of use, Perchloroethylene is not released into the natural aquatic environment, indicating that the risk to the environment is low. The substance should be handled at all stages of manufacture and use with a minimal impact on the aquatic environment. Additionally, the substance is not bioaccumulative and will not persist in the environment.

<table>
<thead>
<tr>
<th>Effect assessment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic toxicity</td>
<td>Toxic to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>
Exposure

Consumer
Consumer use is not known by Industry and should not take place as it is not supported by ECSA members.

Worker
Perchloroethylene is the primary solvent used in industrial and professional dry cleaning. It is furthermore used as a chemical intermediate (e.g. production of fluorinated compounds) and in industrial surface cleaning (metal degreasing). Minor applications in Europe are the use as a film copying and cleaning agent and as a heat transfer solvent (although this use has stopped; at end of service life, systems are dismantled).

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The bioaccumulation potential of this substance is very low, therefore secondary poisoning can be considered negligible.

Environment
Releases to the environment occur mostly to the air compartment with minor emissions to the water. Release to the environment, also accidentally, must be avoided by applying special ground protection in areas, where Perchloroethylene is loaded, unloaded, used.

State Agency Review
In 2005 a European Union Risk Assessment Report was published for Perchloroethylene which was prepared in the context of Regulation 793/93 on the evaluation and control of the risks of existing substances. In 2010 Perchloroethylene has been registered under the European Union REACH Regulation EC/1907/2006 and the substance was found to be safe for the uses identified.

Regulatory Information / Classification and Labelling

Classification
The substance is subject to harmonised classification and labelling under the EU Classification Labelling and Packaging (CLP) Regulation EC/1272/2008. The European industry has decided to classify the substance as follows:
Conclusion
Due to its unique combination of properties Perchloroethylene is a beneficial solvent for a variety of applications, stretching from industry to professionals. The properties and hazards of Perchloroethylene are well known based on numerous animal and human studies as well as by decades of practical use in large volumes around the globe. Use has been shown to be safe when appropriate technical or personal protection measures are taken, i.e. the safety instructions provided are followed.

<table>
<thead>
<tr>
<th>Hazard class</th>
<th>Hazard No.</th>
<th>Pictogram</th>
<th>Hazard statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carc. 2</td>
<td>H351</td>
<td><img src="image" alt="Pictogram" /></td>
<td>Suspected of causing cancer &lt;state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard&gt;.</td>
</tr>
<tr>
<td>Aquatic Chronic 2</td>
<td>H411</td>
<td><img src="image" alt="Pictogram" /></td>
<td>Toxic to aquatic life with long lasting effects.</td>
</tr>
<tr>
<td>Skin Sens. 1</td>
<td>H315</td>
<td><img src="image" alt="Pictogram" /></td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>H317</td>
<td><img src="image" alt="Pictogram" /></td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>STOT Single Exp. 3</td>
<td>H336</td>
<td><img src="image" alt="Pictogram" /></td>
<td>May cause drowsiness or dizziness.</td>
</tr>
</tbody>
</table>

(Please note that specific labels may differ from the classification above. For complete details on the classification and labeling of Perchloroethylene, consult the SDS.)
Contact Information
Information about uses and application could be found at http://www.eurochlor.org/ecsa/toolbox

ECSA (www.eurochlor.org/ECSA), the European Chlorinated Solvent Association is a useful repository of information regarding Perchloroethylene and can be contacted at ECSA@cefic.be.

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ECSA – The European Chlorinated Solvent Association

ECSA represents the interests of the producers of chlorinated solvents in the EU that are organized under Euro Chlor.

Euro Chlor is the Brussels based business association representing chlor-alkali producers in the EU and EFTA regions, employing 39,000 people at nearly 70 manufacturing sites. Almost 2,000,000 jobs in Europe are related to chlorine and its co-product caustic soda. These two key chemical building blocks underpin 55% of the European chemical industry turnover. More than 90% of the European drinking water is made safe with chlorine and about 85% of all medicines are synthesized using chlorine chemistry.

Euro Chlor is an affiliate of Cefic – the European Chemical Industry Council.