Product Safety Summary Sheet

DuPont™ Chlorodifluoromethane

Chemical Identification, Product Identification or Common Name:
CAS number: 75-45-6
CAS name: Chlorodifluoromethane
EC Number: 200-871-9
IUPAC name: chloro(difluoro)methane

Product Uses and Applications:
Chlorodifluoromethane (R-22) is generally used in stationary refrigeration and air conditioning systems primarily as a component of refrigerant blends. R-22 is also used as an intermediate in the production of fluoropolymers.

Physical Properties of the Chemical or Product:
Chlorodifluoromethane (R-22) is a colorless, non-flammable liquid with a boiling point of -160°C and a melting point of -40.8°C and a slightly ether-like odor. Chlorodifluoromethane is not flammable, not explosive, and not corrosive at ambient temperatures and atmospheric pressure.

Exposure Potential:

Workplace exposure:
Air conditioning, refrigeration and chiller maintenance technicians are the main workplace population with potential for exposure to R-22. In the workplace, R-22 is produced in closed-systems, thus significant exposures to workers is unlikely. Exposure can come from the transfer of refrigerant, the accidental spillage of refrigerant from cylinders, and leaks that can be caused by equipment malfunction. The use of sufficient ventilation to minimize employee exposure is recommended.
Workers should follow the recommended safety measures contained within the (Material) Safety Data Sheet ((M)SDS) and on any product packaging. Employees should be trained in the appropriate work processes and safety equipment to limit exposure to chemical substances. Occupational use of this substance is considered to be safe provided the recommended safety measures given in the (M)SDS are followed.

**Consumer exposure:**
Under normal conditions, opportunities for exposure to the public are low. Therefore, associated health risks to the public are also low. Leakage from air conditioning, refrigeration and chiller systems can occur but emissions are usually low, and large scale leakage is often confined and not a hazard to the public. Leaks will quickly vaporize due to the very low boiling point of chlorodifluoromethane, allowing for quick dilution through normal ventilation of indoor or outdoor spaces.

There is potential for minor leakage or spillage of R-22 during routine home-use chiller and air conditioner maintenance. However, given that air conditioning equipment is usually serviced by professionally-trained technicians, it is not anticipated that any significant public exposure will arise from such activities. There is a small possibility that a major failure of a large air conditioning system could lead to a significant, temporary exposure of the building occupants. It is unlikely under any scenario that there would be routine, continuous exposure of the public to this chemical.

**Environmental exposure:**
Release into the environment may occur during the transport, storage, recycling and disposal of R-22 refrigerant, during operations of chillers, through leaks during line disconnects, during maintenance of chillers, and during recycling operations. R-22 has a low ozone depletion potential, is a global warming gas, and is not considered a contributor to ground level smog.

**Health Information**
*Note: The information contained in this section may be useful to someone handling the pure undiluted substance such as a manufacturer or transporter. Consumers are not likely to come in contact with the pure substance. For more information on health hazards and recommended protective equipment, please refer to the (M)SDS.*

Exposures may affect human health as follows:

<table>
<thead>
<tr>
<th>Effect Assessment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity</td>
<td>Inhalation: Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects. Other symptoms potentially related to misuse or inhalation abuse are anesthetic effects, light-headedness, dizziness, confusion, incoordination, drowsiness, or unconsciousness, irregular heartbeat with a strange sensation in the chest, heart thumping, apprehension, feeling of fainting, dizziness or weakness. Vapors are heavier than air and can cause suffocation by reducing available oxygen for breathing.</td>
</tr>
<tr>
<td>Irritation</td>
<td>Skin: Not expected to cause skin irritation. Contact with liquid or...</td>
</tr>
</tbody>
</table>
refrigerated gas can cause cold burns or frostbite.
Eye: Not expected to cause eye irritation. Contact with liquid or refrigerated gas can cause cold burns or frostbite.

<table>
<thead>
<tr>
<th>Sensitization</th>
<th>Not expected to cause skin sensitization.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutagenicity</td>
<td>Not mutagenic.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not carcinogenic.</td>
</tr>
<tr>
<td>Toxicity after repeated exposure</td>
<td>No toxicologically significant effects were found.</td>
</tr>
<tr>
<td>Toxicity for reproduction</td>
<td>No reproductive/developmental toxicity.</td>
</tr>
</tbody>
</table>

### Environmental Information

*Note: The information in this section is intended to provide brief and general information of this chemical substance’s potential environmental impact. The results in the table below refer to testing performed with the non-formulated, undiluted substance. The data does not replace the data given in the (M)SDS. For more information and recommended protective measures, please refer to the (M)SDS.*

<table>
<thead>
<tr>
<th>Effect Assessment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Toxicity</td>
<td>Low toxicity to aquatic organisms.</td>
</tr>
<tr>
<td>Biodegradability</td>
<td>Not readily biodegradable.</td>
</tr>
<tr>
<td>Persistence</td>
<td>Persistent in the atmosphere. It is expected to rapidly volatilize from aquatic and soil compartments.</td>
</tr>
<tr>
<td>Bioaccumulation potential</td>
<td>Not expected to bioaccumulate.</td>
</tr>
</tbody>
</table>

### Risk Management

**Workplace Management:**
Risk management measures for industrial site use include containment through engineering controls and the use of personal protective equipment (PPE) as appropriate.

Engineering controls include the use of storage and shipping containers that are rated for the pressures and temperatures to which the refrigerant may be subjected, use of appropriate recycle and recovery equipment, and adequate ventilation at both storage and use locations.

Safe work practices include minimizing the opening of sealed refrigerant containers indoors, and proper storage of refrigerant containers at safe temperatures and away from building air ventilation intake locations. Always refer to the (Material) Safety Data Sheet ((M)SDS) for guidance on the appropriate personal protective equipment to be used and on the safe handling of this material.

**Consumer Risk Management:**
Consumer exposure to Chlorodifluoromethane is unlikely. Chlorodifluoromethane has potential to cause frostbite upon contact with skin.
**Regulatory Information:**
Always refer to the (Material) Safety Data Sheet ((M)SDS) for guidance on regulatory restrictions that may govern the manufacture, sale, transportation, use and/or disposal of this chemical or product. Regulations may vary by region, country, state, county, city, or local government.

**First Aid Information:**
For all First Aid or Emergency information, consult the (Material) Safety Data Sheet ((M)SDS).

**Information Sources:**
Data is compiled from a variety of sources, including publicly available documents, internal data and other sources such as, but not limited to, Chemical Safety Reports and (Material) Safety Data Sheets ((M)SDS).

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