SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

**DuPont™ ISCEON® MO89 refrigerant**

Version 2.3
Revision Date 23.06.2008   Ref. 130000027357

This SDS adheres to the standards and regulatory requirements of Great Britain and may not meet the regulatory requirements in other countries.

1. **IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**

   **Product information**
   - **Product name**: DuPont™ ISCEON® MO89 refrigerant
   - **Use of the Substance/Preparation**: Refrigerant
   - **Company**: Du Pont de Nemours (Nederland) B.V.
     Baanhoekweg 22
     NL-3313 LA Dordrecht
     The Netherlands
   - **Telephone**: +31-78-630.1011
   - **Emergency telephone**: +44-(0)8456-006.640
   - **E-mail address**: sds-support@che.dupont.com

2. **HAZARDS IDENTIFICATION**

   Rapid evaporation of the liquid may cause frostbite.
   Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
   May cause cardiac arrhythmia.

3. **COMPOSITION/INFORMATION ON INGREDIENTS**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Classification</th>
<th>Concentration [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentafluoroethane</td>
<td>354-33-6</td>
<td>206-557-8</td>
<td></td>
<td>86</td>
</tr>
<tr>
<td>Octafluoropropane</td>
<td>76-19-7</td>
<td>200-941-9</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>200-827-9</td>
<td>F+; R12</td>
<td>5</td>
</tr>
</tbody>
</table>

   For the full text of the R-phrases mentioned in this Section, see Section 16.

4. **FIRST AID MEASURES**

   **General advice**: If unconscious, place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person. If breathing is irregular or stopped, administer artificial respiration. If symptoms persist, call a physician.

   **Inhalation**: Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary.

   **Skin contact**: Wash off with warm water. Take off all contaminated clothing immediately.

   **Eye contact**: Rinse thoroughly with plenty of water, also under the eyelids. Consult a physician.
Notes to physician
Treatment : Do not give adrenaline or similar drugs.

5. FIRE-FIGHTING MEASURES

Specific hazards during fire fighting : pressure build-up
Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.
Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Evacuate personnel to safe areas. Ventilate the area. Refer to protective measures listed in sections 7 and 8.
Environmental precautions : Should not be released into the environment.
Methods for cleaning up : Evaporates.

7. HANDLING AND STORAGE

Handling
Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8.
Advice on protection against fire and explosion : No special protective measures against fire required.

Storage
Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Store in original container.
Advice on common storage : No materials to be especially mentioned.
German storage class : 2A : Compressed, liquefied or pressurised gas

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment
Respiratory protection: For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Hand protection: Heat insulating gloves

Eye protection: Safety glasses

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Liquefied gas,

Colour: Colourless,

Odour: Slight, ether-like,

pH: Neutral

Boiling point/boiling range: -54 °C at 1013 hPa

Flash point: Does not flash

Upper explosion limit: Not applicable

Vapour pressure: 15550 hPa at 25 °C

Density: 1180 g/cm3 at 25 °C, (as liquid)

10. STABILITY AND REACTIVITY

Conditions to avoid: The product is not flammable in air under ambient conditions of temperature and pressure. When pressurised with air or oxygen the mixture may become flammable. Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive under certain conditions.

Materials to avoid: Alkali metals, Alkaline earth metals, Powdered metals, Powdered metal salts

Hazardous decomposition products: Hydrogen halides, Carbon dioxide (CO2), Carbon monoxide, Fluorocarbons, Carbonyl halides

11. TOXICOLOGICAL INFORMATION

Acute inhalation toxicity
- Pentfluoroethane: LC50/4 h/mouse: 556 329 ppm
- Octafluoropropane: LC50/1 h/rat: 6 151 mg/l

Repeated dose toxicity
- Pentfluoroethane:
No toxicologically significant effects were found.

Mutagenicity assessment
- Pentafluoroethane: Did not cause genetic damage in cultured bacterial cells.
- Octafluoropropane: Evidence suggests this substance does not cause genetic damage in cultured bacterial cells. Evidence suggests this substance does not cause genetic damage in animals.
- Propane: Did not cause genetic damage in cultured bacterial cells.

Carcinogenicity assessment: Animal testing did not show any carcinogenic effects.

Toxicity to reproduction assessment: Did not show mutagenic or teratogenic effects in animal experiments.

Human experience: Excessive exposures may affect human health, as follows:
- Inhalation
- Severe shortness of breath, Irregular cardiac activity, narcosis

Further information: Rapid evaporation of the liquid may cause frostbite.

12. ECOLOGICAL INFORMATION

Further information on ecology
- Ozone depletion potential: 0
- Global warming potential (GWP): 3 698
- Additional ecological information: No information on ecology is available.

13. DISPOSAL CONSIDERATIONS

Product: Can be used after re-conditioning.

Contaminated packaging: Empty pressure vessels should be returned to the supplier.

14. TRANSPORT INFORMATION

ADR
- Class: 2
- Classification Code: 2A
- HI No.: 20
- UN-Number: 1078
- Labelling No.: 2.2
- Proper shipping name: Refrigerant gas, n.o.s. (Pentafluoroethane, Perfluoropropane)
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**IATA_C**
- Class: 2.2
- UN-Number: 1078
- Labelling No.: 2.2
- Proper shipping name: Refrigerant gas, n.o.s. (Pentafluoroethane, Perfluoropropane)

**IMDG**
- Class: 2.2
- UN-Number: 1078
- Labelling No.: 2.2
- Proper shipping name: Refrigerant gas, n.o.s. (Pentafluoroethane, Perfluoropropane)

15. REGULATORY INFORMATION

Labelling according to EC Directives

Special labelling of certain preparations: Safety data sheet available for professional user on request. Contains fluorinated greenhouse gas covered by the Kyoto Protocol.

Not a hazardous substance or preparation according to EC-directives 67/548/EEC or 1999/45/EC. The product does not need to be labelled in accordance with EC directives or respective national laws.

16. OTHER INFORMATION

Text of R-phrases mentioned in Section 2

R12 Extremely flammable.

Further information

Before use read DuPont's safety information. For further information contact the local DuPont office or DuPont's nominated distributors. ® DuPont's registered trademark

Significant change from previous version is denoted with a double bar.

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