SAFETY DATA SHEET

ISCEON 89

Date: 01/08/2003

1 Product and company identification.

PRODUCT NAME: ISCEON 89
Use: Refrigerant.
SUPPLIER Name: Rhodia Organique Fine Limited.
Address: PO Box 46 - St Andrews Road - Avonmouth - BRISTOL - BS11 9YF - England
Telephone number: (44) 0117 948 4242
Telefax number: (44) 0117 948 4249.
EMERGENCY TELEPHONE NUMBER: 00 44 117 938 1289 (UK: 0117 938 1289)

2 Composition / information on ingredients

>> PREPARATION
Chemical nature: Predominantly hydrofluoroalkane mixture.

3 Hazards identification

MOST IMPORTANT HAZARDS
Adverse human health effects:
- Contains a liquefied gas. Contact of liquid may cause frostbite and injury to the cornea.
- May have a narcotic effect at high concentrations.

Main symptoms:
- Heating will cause a rise in pressure with a risk of bursting.
  On combustion, toxic gases are released.

Physical and chemical hazards:
- Fire or explosion

Classification/Specific hazards:
- According to EC criteria, this product is not classified as a "hazardous preparation".

Rhodia Organique Fine Limited, PO Box 46, St. Andrews Road, Avonmouth, Bristol, BS11 9YF
Registered in England Number 3611077, Registered Office: Oak House, Reeds Crescent, Watford, Herts, WD17 4DP
4 First-aid measures

**Inhalation**
- Move the affected person away from the contaminated area and into the fresh air.
- Make the affected person rest.
- If breathing stops, give artificial respiration.
- Call a doctor immediately.

**Skin contact**
- Contact of liquid with the skin:
  - Rinse immediately with plenty of warm water.
  - Immediately remove contaminated clothing or footwear.
  - If it sticks, do not pull it off.
  - Cover the affected area with a sterile dressing.
  - Transfer to hospital immediately.

**Eye contact**
- Contact of liquid with the eyes:
  - Rinse with water whilst keeping the eyes wide open.
  - Consult an eye specialist immediately.

**Ingestion**
- Not specifically applicable (gas).

**Notes to the physician**
- Avoid administering adrenaline or any other similar products.

5 Fire - fighting measures

**Extinguishing media**
- **Suitable**: All extinguishing agents can be used.
- **Not suitable**: None. If there is a fire close by, use suitable extinguishing agents.

**Specific hazards**
- Pressurized container. On heating there is a risk of bursting due to internal pressure build-up.
- NOT flammable. However, it may present a risk in the event of a fire.
- Toxic vapours (halogen compounds) are released.
- Vapour / air mixture may be flammable under specific conditions.

**Specific fire fighting methods**
- Stay upwind.
- Evacuate the personnel away from the fumes.
- Cool down the containers/equipment exposed to heat with a water spray.

**Protection of fire-fighters**
- Self-contained breathing apparatus.
6 Accidental release measures

Personal precautions

- Avoid contact with skin and eyes.
- Do not breathe gas.
- NO naked flames.
- Do NOT smoke.
- For further information refer to section 8 "Exposure-controls/personal protection".
- Heavy vapours. Shut off low-level openings in the vicinity (ventilation shafts, drains...).
- Prevent the product from entering cellars, basements or pits.
- Stop the leak.
- Ventilate spillage area.
- Ventilate basements.

Environmental precautions

- Prevent the product from spreading into the environment.
- Contain the spilled material by bunding.

Methods for cleaning up

- Recovery
  - Recover as much of the product as possible.
- Cleaning/Decontamination
  - Allow residual product to evaporate.
- Disposal
  - For disposal of contaminated materials refer to section 13: "Disposal considerations".

7 Handling and storage

HANDLING

Technical measures

- Ventilation.
- Use in a closed system.

Measures

- Avoid contact with hot surfaces.
- Avoid high temperatures.
- Smoking is forbidden.

STORAGE

Technical measures

- Storage facilities should be:
  - equipped with ventilation at low level.
- Take all necessary precautions to avoid the accidental release of the product outside, due to the rupture of containers or transfer systems.

Storage conditions
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- Recommended
  - Keep:
    - the container tightly closed and dry.
    - in a cool, well-ventilated area.
    - at temperatures not exceeding 45°C.
    - away from any source of heat.
    - away from any source of ignition.

Incompatible products
  Refer to the detailed list of incompatible materials (section 10 "Stability/Reactivity").

Packaging
  - Steel cylinders.

Packaging materials
  - Recommended: Steel.
  - Not suitable: Magnesium and its alloys. Zinc and its alloys. Aluminium alloys containing more than 2% magnesium.

8 Exposure controls / personal protection

Engineering measures
  Ensure good ventilation of the work station.

Control parameters

Occupational exposure limits
  - Limits (UK)
    No specific limits.

Personal protective equipment
  - Respiratory protection
    In the event of insufficient ventilation:
    Self-contained breathing apparatus.
  - Hand protection
    Handling refrigerated product:
    Protective gloves insulated against the cold.
  - Eye protection
    Handling refrigerated product:
    Goggles.
  - Skin and body protection
    Handling refrigerated product:
    Impermeable clothing.
  - Hygiene measures
    Do NOT drink, eat or smoke in the workplace.

9 Physical and chemical properties

APPEARANCE
  - Physical state
    Compressed liquefied gas.
  - Colour
    Colourless.
  - Odour
    Slightly ethereal.
  - pH
    Not applicable
  - Specific temperatures

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- **Boiling**  
  -54°C.

**Flammability characteristics**

- **Flash point**: Not applicable.
- **Oxidizing properties**: Non oxidizing material according to EC criteria.
- **Vapour pressure**: 1555 kPa, at 25°C.
- **Specific gravity**: 1180 kg/m³ at 25°C.
- **Solubility**
  - in water: Slightly soluble.
  - in organic solvents: Soluble in:
    - common solvents.

**Stability and reactivity.**

**Stability**  
Stable at ambient temperature and under normal conditions of use.

**Hazardous reactions**

- **Conditions to avoid**: May decompose:
  - on contact with hot surfaces and flames.
- **Materials to avoid**: Reacts violently with:
  - alkali metals.
  - alkaline earth metals.
  - magnesium.
  - powdered metals.

- **Hazardous decomposition products**: On combustion or on thermal decomposition (pyrolysis) releases: toxic gases.  
  (Halogenated compounds) (Hydrofluoric acid).

**Toxicological information**

**Acute toxicity**

**Acute symptoms**

Effects following high level exposure:
- Headaches.
- Dizziness.
- Loss of consciousness.

Possible effects, following high level exposure:
- Cardiac disorders.
- Possibility of cardiac arrest.

**Local effects**

Contact with liquefied gas causes frostbite.
Contact with liquefied gas causes injury to the cornea.

**Further information**

Not classified as hazardous according to EEC criteria.
12 Ecological information

Behaviour in the environment
Mobility : Product is volatile when in aqueous solution.
Persistence/Degradability : No information available.
Bioaccumulation : No information available.
Destination of the product : Ultimate destination of the product: AIR.
Ecotoxicity - Effects on the aquatic environment : No information available.

13 Disposal considerations

WASTE FROM RESIDUES
Prohibition : Do not allow the product to be released into the environment.
Destruction/Disposal : Consult the manufacturer or supplier for information regarding recovery and recycling of the product. If recovery is not possible: Incinerate at a licensed installation.

CONTAMINATED PACKAGING
Decontamination/cleaning : De-gas.
Destruction/Disposal : Re-usable containers: Return to the supplier. Disposable containers: Dispose of at an authorised land-fill site.

NOTE : The user's attention is drawn to the possible existence of local regulations regarding disposal.

14 Transport information

INTERNATIONAL REGULATIONS
Land - Rail/road (RID/ADR) : UN number: 3163.
Class: 2.2.
Hazard identification number: 20.
Labelling: 2.2.
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Sea (IMO/IMDG)
- Class: 2.2.
- UN Number: 3163.
- Labelling: 2 NON-FLAMMABLE GAS.
- Marine pollutant: NO.

Air (ICAO-IATA)
- Class: 2.2.
- UN number: 3163.
- Labelling: 2 NON-FLAMMABLE GAS.
- Cargo aircraft: Packing instruction: 200 Quantity: 150 kg.
- Passenger aircraft: Packing instruction: 200 Quantity: 75 kg.

OTHER REGULATIONS
- United Kingdom: Rail/road
  - Substance identification number: 3163.
  - Classification for conveyance: 2.2.
  - Emergency action code: 2RE.

NOTE
The above regulatory prescriptions are those valid on the date of publication of this sheet.
Given the possible evolution of transport regulations for hazardous materials, it would be advisable to check their validity with your sales office.

15 Regulatory information

LABELLING
EC regulations: Mandatory labelling (self-classification) of hazardous preparations: Not applicable.
- R phrases: No R phrases.
- S phrases: S 24/25: Avoid contact with skin and eyes. S 41: In case of fire and/or explosion do not breathe fumes.

>>Further regulations
United Kingdom: Handle in accordance with relevant British legislation:
- Environmental Protection Act
- Carriage of Dangerous Goods by Road Regulations
- Carriage of Dangerous Goods by Rail Regulations
- Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labelling) and use of Transport Pressure Receptacles Regulations

NOTE
The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the Safety Data Sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.
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16 Other information

* Update

- European inventory (EINECS, ELINCS)
- American inventory (TSCA)

This sheet was updated (refer to the date at the top of this page). Subheadings and text which have been modified since the previous version are indicated with an asterisk (*).

All the constituents of this preparation are registered in the EINECS inventory.

All the components of this preparation are registered in the TSCA inventory.

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfil his obligations regarding the use of hazardous products. This information is not exhaustive. This does not exonerate the user from ensuring that legal obligations, other than those mentioned, relating to the use and storage of the product, do not exist. This is solely his responsibility.