

# SAFETY DATA SHEET

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**ISCEON 134a**

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Date: 04/09/2003

Version: 5 UK

Cancels and replaces version: 4.00 UK

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## 1 Product and company identification.

PRODUCT NAME : ISCEON 134a  
Use : Refrigerant.  
SUPPLIER : Manufacturer :  
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)**

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## 2 Composition / information on ingredients

>> SUBSTANCE

Common chemical name : 1,1,1,2-TETRAFLUOROETHANE  
Synonyms : 1,1,1,2-tetrafluoroethane.  
HFA 134a.  
CAS number : 811-97-2.

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## 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.

Main symptoms

: May have a narcotic effect at high concentrations.

Physical and chemical hazards

- Fire or explosion

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

Classification/Specific hazards

: According to EC criteria, this product is not classified as a "hazardous substance".

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## 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.
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## 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.
- 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.
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## 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.

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".
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## 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: <ul style="list-style-type: none"><li>- the container tightly closed and dry.</li><li>- in a cool, well-ventilated area.</li><li>- at temperatures not exceeding 45°C.</li><li>- away from any source of heat.</li><li>- away from any source of ignition.</li></ul>
Incompatible products	:	Refer to the detailed list of incompatible materials (section 10 "Stability/Reactivity").
Packaging	:	Bulk product : consult the supplier. <ul style="list-style-type: none"><li>- Steel cylinders.</li></ul>
Packaging materials	:	
- Recommended	:	Steel.
- Not suitable	:	Magnesium and its alloys. Zinc and its alloys. Aluminium alloys containing more than 2% magnesium.

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## 8 Exposure controls / personal protection

Engineering measures	:	Ensure good ventilation of the work station.
Control parameters	:	
Occupational exposure limits	:	
- Limits (U.S.A./A.C.G.I.H.)	:	TLV ( TWA ) : 4250 mg/m3 (1000 ppm). (*)
- Limits (UK)	:	OES: 1000 ppm (4200 mg/m3). (Long term exposure limit - 8h TWA reference period).
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.

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## 9 Physical and chemical properties

### APPEARANCE

- Physical state	:	Compressed liquefied gas.
- Colour	:	colourless.
Odour	:	slightly ethereal.
pH	:	Not applicable
Specific temperatures		
- Freezing	:	-108°C.
- Boiling	:	-26.5°C.
Flammability characteristics		
- Flash point	:	Not applicable.
Oxidizing properties	:	Non oxidizing material according to EC criteria.
Vapour pressure	:	671 kPa, at 25°C.
Relative density (air = 1)	:	3.5.
Specific gravity	:	Liquid product: 1200 kg/m <sup>3</sup> at 25°C.
Solubility		
- in water	:	1 g/l at 25 °C. (*) Slightly soluble.
- in organic solvents	:	Soluble in: - common solvents.
Octanol/water partition coefficient	:	1.06 (log POW)

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## 10 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. (Hydrofluoric acid). (Fluorinated compounds).

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## 11 Toxicological information

Acute toxicity	:	LC 50 inhalation (Rat) / 4h : > 500000 ppm. (Unpublished reports)
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.
Specific effects	:	
- Carcinogenicity	:	Carcinogenicity study : on ingestion (Rat) (300 mg/kg/day) No carcinogenic effects have been observed (*) Carcinogenicity study : by inhalation (Rat) No carcinogenic effects have been observed (10000 ppm) (*) (Published data). NOT considered to be : Carcinogen (Human) (*)
- Reproductive toxicity	:	Fertility study (1 generation) by inhalation (Rat) NOEL, foetal toxicity : 50000 ppm (*) (Published data).
Further information	:	Not classified as hazardous according to EEC criteria.

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## 12 Ecological information

### MOBILITY

Volatility	:	Product is volatile when in aqueous solution.
Expected behaviour of the product	:	Ultimate destination of the product : AIR.

### BIODEGRADABILITY

- Ultimate aerobic biodegradability	:	Not readily biodegradable. (evaluation by structure-activity relationship) (*)
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### BIOACCUMULATION

Octanol/water partition coefficient	:	Not potentially bioaccumulable. Refer to § 9 for actual figures.
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### ECOTOXICITY

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Effects on the aquatic environment : EC 50 (Daphnia: Daphnia magna)/48 h: 980 mg/l. (\*)  
LC 50 (Fish: Onchorhyncus mykiss) / 96h: 450 mg/l. (\*)  
(Published data).  
NOT considered to be : Harmful to aquatic organisms.

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## 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.

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## 14 Transport information

### INTERNATIONAL REGULATIONS

#### Land

- Rail/road (RID/ADR) : UN number: 3159.  
Class:2.2.  
Hazard identification number: 20.  
Labelling: 2.2.  
Packing group: 2A. (\*)

#### Sea (IMO/IMDG)

: Class: 2.2.  
UN Number: 3159.  
Labelling: 2 NON-FLAMMABLE GAS.  
Marine pollutant: NO.  
Emergency schedule (EmS): F-C, S-V. (\*)

#### Air (ICAO-IATA)

: Class: 2.2.  
UN number: 3159.  
Labelling: 2 NON-FLAMMABLE GAS.  
Cargo aircraft : Packing instruction: 200 Quantity : 150 kg.  
Passenger aircraft: Packing instruction: 200 Quantity : 75 kg.

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## OTHER REGULATIONS

- United Kingdom: Rail/road : Substance identification number: 3159.  
Classification for conveyance: 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.

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## 15 Regulatory information

### LABELLING

EC regulations : Mandatory labelling (self-classification) of hazardous substances: not applicable.

- Identification of the hazardous product : Chemical name of the substance : 1,1,1,2-Tetrafluoroethane  
EC N°: Does not appear on the EC hazardous substances list (Annex 1 of the modified EC directive 67/548/EEC).  
EC No. : 212-377-0.

- 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:  
Control of Substances Hazardous to Health Regulations  
Environmental Hygiene Guidance: EH/40 Occupational Exposure Limits (revised annually).  
Environmental Protection Act  
Collection and Disposal of Waste Regulations  
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

Chemical formula	:	C <sub>2</sub> H <sub>2</sub> F <sub>4</sub> .
Molecular mass	:	102.04 g
Registration numbers	:	Registered in the TSCA inventory. Registered in the EINECS inventory.
* Update	:	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 (*).

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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.