

ISCEON® MO99 (R438A)

Revision: 1
Revision date: June 2020

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name	R438A
REACH registration number	See section 3: Composition/information on ingredients
CAS No.	See section 3: Composition/information on ingredients
EC No.	See section 3: Composition/information on ingredients

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product use	Refrigerant Industrial uses: Uses of substances as such or in preparations at industrial sites Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Restricted use	Consumer uses: Private households (= general public = consumers)
Description	Gas

1.3 Details of the supplier of the safety data sheet

Company	Harp International Limited
Address	Gellihirion Industrial Estate Pontypridd Rhondda Cynon Taff CF37 5SX UK
Web	www.harpintl.com
Telephone	+44 (0) 1443 842 255
Fax	+44 (0) 1443 841 805
Email	harp@harpintl.com
Email of competent person	safety@harpintl.com

1.4 Emergency telephone number


Emergency telephone number	+44 (0) 1270 502 891 24 hours
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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification – EC 1272/2008	Compressed gas: H280
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2.2 Label elements

Hazard pictograms	
Signal word	Warning
Hazard statement	H280 – Contains gas under pressure; may explode if heated
Precautionary statement	P410+P403 – Protect from sunlight. Store in a well-ventilated place.

2.3 Other hazards

Other hazards	Asphyxiant in high concentrations. May cause cold burns/frostbite.
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SECTION 3: Composition/information on ingredients

3.1 Substances

EC 1272/2008

Chemical name	CAS No.	EC No.	REACH registration number	Concentration (%w/w)	Classification
Difluoromethane (R32)	75-10-5	200-839-4	01-2119471312-47	ca. 8	Flam. Gas 1: H220 Compressed gas: H280
Pentafluoroethane (R125)	354-33-6	206-557-8	01-2119485636-25	ca. 45	Compressed gas: H280
1,1,1,2-Tetrafluoroethane (R134a)	811-97-2	212-377-0	01-2119459374-33	ca. 44	Compressed gas: H280
n-Butane (R600)	106-97-8	203-448-7	01-2119474691-32	ca. 2	Flam. Gas 1: H220 Compressed gas: H280
n-Pentane (R601)	109-66-0	203-692-4	01-2119459286-30	ca. 1	Flam. Gas 2: H225 STOT SE 3: H336 Asp. Tox. 1: H304 Aquatic chronic 2: H411

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation	Move the exposed person to fresh air
Eye contact	Rinse immediately with plenty of water
Skin contact	Frostbite: treat as thermal burns
Ingestion	Ingestion is not considered a potential route of exposure

4.2 Most important symptoms and effects, both acute and delayed

Inhalation	Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Respiratory arrest.
Eye contact	Contact with liquefied gas can cause damage due to evaporative cooling
Skin contact	Contact with liquefied gas can cause damage due to evaporative cooling
Ingestion	Ingestion is not considered a potential route of exposure

4.3 Indication of any immediate medical attention and special treatment needed

Inhalation	If you feel unwell, seek medical advice
Eye contact	Seek medical attention if irritation or symptoms persist
Skin contact	Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.
Ingestion	Ingestion is not considered a potential route of exposure

SECTION 5: Firefighting measures

5.1 Extinguishing media

	This product is not flammable in air under ambient conditions of temperature and pressure. Use extinguishing media appropriate to the surrounding fire conditions.
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5.2 Special hazards arising from the substance or mixture

	At high temperature, toxic and/or corrosive fumes may be produced by thermal decomposition (gaseous hydrogen fluoride (HF), carbon oxides).
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5.3 Advice for firefighters

	Wear self-contained breathing apparatus and protective clothing. Heat may cause the containers to explode. Keep fire exposed containers cool by spraying with water. Fire exposed containers may vent contents through pressure relief devices. In case of fire nearby, remove exposed containers.
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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

	Ensure adequate ventilation of the working area. Avoid contact with skin and eyes. Evacuate personnel to a safe area. Wear self-contained breathing apparatus and protective clothing. Vapours are heavier than air. Prevent from entering sewers, basements or workpits. Do not enter confined spaces where gas may have accumulated.
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6.2 Environmental precautions

	Prevent further leakage or spillage if safe to do so.
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6.3 Methods and material for containment and clean up

	Allow to evaporate. Provide adequate ventilation.
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6.4 Reference to other sections

	See section 8 Exposure controls / personal protection See section 13 Disposal considerations
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SECTION 7: Handling and storage

7.1 Precautions for safe handling

	Only experienced and properly instructed persons should handle gases under pressure. Protect containers from physical damage. Do not drag, roll, slide or drop. Do not remove or deface labels. Adopt best manual handling considerations when handling, carrying and dispensing. Secure cylinders in an upright position at all times. Close valves when not in use and when empty. Ensure adequate ventilation of the working area. Do not allow backfeed into the container. Avoid contact with skin and eyes. When using, do not eat, drink or smoke. Never use direct flame or electrical heating device to raise the pressure of the container.
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7.2 Conditions for safe storage, including any incompatibilities

	Keep containers tightly closed. Keep in a cool, dry, well-ventilated area. Store in correctly labelled containers. Keep away from sources of ignition – no smoking. Store out of direct sunlight.
Suitable packaging	Stainless steel, steel.

7.3 Specific end use(s)

	See section 1.2 Relevant identified uses of the substance or mixture and uses advised against for further information.
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SECTION 8: Exposure controls/personal protection

8.1 Control parameters – exposure limit values

Component	CAS No.	Value type (form of exposure)	Exposure limit values	Source
Difluoromethane	75-10-5		Not listed in EH40	
1,1,1,2-Tetrafluoroethane	811-97-2	TWA	1000ppm / 4240mg/m ³	EH40
Pentafluoroethane	354-33-6		Not listed in EH40	
n-Butane (<0.1% butadiene)	106-97-8	TWA	600ppm / 1450mg/m ³	EH40
n-Pentane	109-66-0	TWA	600ppm / 1800mg/m ³	EH40

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8.2 Exposure controls

Appropriate engineering controls	Ensure adequate ventilation of the working area. Oxygen detectors should be used when asphyxiating gases may be released. Systems under pressure should be regularly checked for leaks.
Individual protection measures	Wear protective clothing
Eye/face protection	Approved safety goggles
Skin & body protection	Wear suitable gloves. Wear safety shoes when handling containers.
Respiratory protection	Wear suitable respiratory protection equipment when necessary
Occupational exposure controls	Keep away from food, drink and animal feedstuffs.
Hygiene protection	Good industrial hygiene and safety procedures. Do not eat, drink or smoke when using the product.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance - Physical state	Gas
Appearance - Form	Liquefied gas
Colour	Colourless
Odour	Slight ethereal
Odour threshold	No data available
pH	Not applicable
Melting point	No data available
Boiling point / range	-42.3°C
Flash point	Not applicable
Evaporation rate	Not applicable
Flammability (solid, gas)	This product is not flammable
Upper explosion limit / Lower flammability limit	Not applicable
Vapour pressure	11,171 hPa (25°C)
Vapour density	3.5 (air = 1)
Relative density	1.15 (25°C)
Solubility(ies)	
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	Not applicable
Decomposition temperature	No data available
Viscosity	
Viscosity, kinematic	No data available
Explosive properties	Not applicable
Oxidising properties	Not applicable

SECTION 10: Stability and reactivity

10.1 Reactivity

	Stable under normal conditions
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10.2 Chemical stability

	Stable under normal conditions. The gaseous product in the presence of air can form, under certain conditions of temperature and pressure, a flammable mixture.
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10.3 Possibility of hazardous reactions

	No data is available on this product
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10.4 Conditions to avoid

	Keep away from heat and sources of ignition. Avoid contact with flames and red hot metallic surfaces.
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10.5 Incompatible materials

	Alkaline hydroxides, alkaline earth metals, strong oxidizing agents, finely divided metals.
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10.6 Hazardous decomposition products

	Under normal conditions of storage and use, hazardous decomposition products should not be produced. At high temperature, thermal decomposition can give rise to toxic and corrosive products.
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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity	As with other volatile aliphatic halogenated compounds, through vapour accumulation and/or inhalation of large quantities, the product can cause loss of consciousness and cardiac disorders aggravated by stress and lack of oxygen. Risk of mortality.
Skin corrosion/irritation	Ejection of liquefied gas: frostbite possible
Serious eye damage/irritation	Ejection of liquefied gas: frostbite possible
Respiratory or skin sensitisation	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
STOT single exposure	No data available
STOT repeated exposure	No data available
Aspiration hazard	No data available
Repeated or prolonged exposure	No data available

SECTION 12: Ecological information

12.1 Toxicity

	No data available
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12.2 Persistence and degradability

	Not applicable to gases and gas mixtures
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12.3 Bioaccumulative potential

	Expected to biodegrade and not expected to persist for long periods in an aquatic environment
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12.4 Mobility in soil

	Unlikely to cause ground or water pollution due to its high volatility
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12.5 Results of PBT and vPvB assessment

	Not classified as PBT or vPvB
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12.6 Other adverse effects

	Contains fluorinated greenhouse gases. When discharged in large quantities may contribute to the greenhouse effect. Global warming potential: 2264
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SECTION 13: Disposal considerations

13.1 Waste treatment methods

	Dispose of in accordance with all local and national regulations. Avoid discharges to atmosphere. Refer to manufacturer/supplier for information on recovery/recycling. Dispose of container via supplier only. EWC code: 14 06 01* Chlorofluorocarbons, HCFC, HFC
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SECTION 14: Transport information

Hazard pictograms

	
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14.1 UN number

	UN 1078
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14.2 UN proper shipping name

	REFRIGERANT GAS, N.O.S.
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14.3 Transport hazard class(es)

ADR/RID	
Class	2
Labels	2.2
Hazard No. (ADR)	20
Tunnel category	(C/E)
Emergency action code	2TE
IMDG	
Class	2.2
EmS No.	F-C, S-V
IATA	
Class	2.2
Packing instruction	200

14.4 Packing group

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14.5 Environmental hazards

Environmental hazards	Not applicable
Marine pollutant	Not classified as a marine pollutant

14.6 Special precautions for user

	Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure container valves are closed, not leaking and caps in place. Ensure containers are firmly secured. Ensure adequate air ventilation.
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14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

	Not applicable
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SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulations	REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.
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15.2 Chemical safety assessment

	No CSA has been carried out
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SECTION 16: Other information

Other information

Text of Hazard Statements in Section 3	H280: Contains gas under pressure; may explode if heated. H220: Extremely flammable gas H225: Highly flammable liquid and vapour H336: May cause drowsiness or dizziness H304: May be fatal if swallowed and enters airways H411: Toxic to aquatic life with long lasting effects
Reference materials	HSE publication EH40/2005 Workplace exposure limits (latest edition)
Changes from previous versions	-

Further information

	The information supplied in this safety data sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made of its accuracy. This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the material in the user's end product, if applicable.
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