



climalife®

VIN-FP-546/004

R-438A (FREON® MO99)

GUARANTEED COMMERCIAL SPECIFICATIONS

STANDARD SPECIFICATIONS	LIMIT VALUE
Composition	
- R-32	8.5 % (+ 0.5% - 1.5%)
- R-125	45.0 % (+1.5% - 1.5%)
- R-134a	44.2 % (+1.5% - 1.7%)
- R-600	1.7 % (+ 0.1% - 0.2%)
- R-601a	0.6 % (+ 0.1% - 0.2%)
Purity	≥ 99.5% weight
Water content	≤ 10 ppm weight
Acidity (HCl)	≤ 1 ppm weight
Non-condensable content (gas phase)	≤ 1.5 % volume
High boiling residues	≤ 0.01 % volume

MAIN APPLICATIONS

R-438A (FREON® MO99) is a non-azeotropic HFC blend, which can replace R-22 (HCFC) and R-422D in residential and commercial air conditioning applications, chillers and low & medium temperature refrigeration applications.

Do not use in flooded centrifugal units and check with us for recommendations for pump circulation and LPR systems.

OILS

Use a mineral oil (MO), alkylbenzene (AB) or polyol ester (POE). Climalife recommend using a POE oil for all HFCs. Check with **Climalife** regarding the viscosity of the oil selected for your application, and the miscibility with the fluid under consideration.

PRECAUTIONS OF USE

Refer to the Safety Data Sheet*.

REGULATION

The use and implementation of R-438A are governed by EU Regulation n° 517/2014.

The recovery of R-438A is mandatory under EU Regulation n° 517/2014.

(Refer to regulations enforced in each country)

* Find the Safety Data Sheet (SDS) directly on our website www.climalife.dehon.com



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R-438A PHYSICAL PROPERTIES

Molar mass	g/mol	100.56
Melting point	°C	N/A
Boiling point (at 1.013 bar)	°C	-42.31
Temperature glide at 1.013 bar	K	6.25
Saturated liquid density at 25°C	kg/m ³	1180
Saturated vapour density at boiling point	kg/m ³	5.390
Vapour pressure at: 25°C	bar	11.24
50°C	bar	20.94
Critical temperature	°C	83.7
Critical pressure	bar	42.16
Critical density	kg/m ³	522
Latent heat of vaporisation at boiling point	kJ/kg	213.63
Thermal conductivity of liquid at 25°C	W/(m.K)	0.074
Thermal conductivity of vapour at 1.013 bar	W/(m.K)	0.014
Surface tension 25°C	10 ⁻³ N/m	6.28
Solubility of water in the fluid at 25°C	% weight	0.1
Viscosity of liquid at 25°C	10 ⁻³ Pa.s	0.162
Viscosity of vapour at 1.013 bar	10 ⁻³ Pa.s	0.012
Specific heat of liquid at 25°C	kJ/(kg.K)	1.454
Specific heat of vapour at 1.013 bar	kJ/(kg.K)	0.826
Cp/Cv ratio at 25°C at 1.013 bar		1.123
Flammability in air		Non-flammable
Flash point		None
Classification NF-EN 378		A1
ASHRAE		A1
Ozone Depletion Potential	(R-11=1)	0
GWP According to IPCC-AR4/IPCC-AR5	(CO ₂ =1)	2265/2059

Please contact your distributor or our **Climalife** sales department for more information. In addition, if the refrigeration system you want to install, or are working on, does not appear to be a typical installation, please do not hesitate to contact us for advice and information.

The information contained in this product sheet is the result of our studies and experience. It is provided in good faith, but should not, under any circumstance, be taken to constitute a guarantee on our part or an assumption of our responsibility. This is particularly the case when third party rights are at stake or in situations where a user of one of our products fails to observe applicable regulations.

For more information, please visit our website:



http://www.climalife.dehon.com/contact_us