Ref. : FF.92 /01.17/V3/EN

R-438A

(FREON® MO99)

GUARANTEED COMMERCIAL SPECIFICATIONS

STANDARD SPECIFICATIONS	LIMIT VALUE
Composition - R-601a - R-600 - R-32 - R-134a - R-125	 0.6 % (+ 0.1% - 0.2%) 1.7 % (+ 0.1% - 0.2%) 8.5 % (+ 0.5% - 1.5%) 44.2 % (+1.5% - 1.7%) 45.0 % (+1.5% - 1.5%)
Purity	≥ 99.5% weight
Water content	≤ 10 ppm weight
Chloride ion Test	Negative
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 zeotropic HFC blend, which can replace R-22 (HCFC) in residential and commercial air conditioning applications, chillers and low & medium temperature direct expansion refrigeration systems.
Do not use in centrifugal chillers and check with us if they have a flooded evaporator.

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***

R-438A

R-438A PHYSICAL PROPERTIES

Molar mass	g/mol	100.6
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 50°C	 bar bar	 11.24 20.94
Critical temperature	°C	83.74
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 Thermal conductivity of vapour at 1.013 bar	W/(m.K) W/(m.K)	0.074 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 Viscosity of vapour at 1.013 bar	10^{-3} Pa.s 10^{-3} Pa.s	0.162 0.012
Specific heat of liquid at 25°C Specific heat of vapour at 1.013 bar	kJ/(kg.K) kJ/(kg.K)	1.454 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 ASHRAE		 On way A1
Ozone Depletion Potential	(R-11=1)	0
GWP	(CO_2 =1)	2265

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.