Opteon™ XP10

Refrigerant (R-513A)

Product Information

Opteon™ XP10 (R-513A) is a non-ozone depleting, low Global Warming Potential (GWP) hydrofluoro-olefin based refrigerant developed to replace R-134a in positive displacement, direct expansion medium temperature commercial and industrial applications. It is also suitable for use in centrifugal chillers. Opteon™ XP10 is suitable in new systems as well as for retrofit of existing systems, offering an optimal balance of properties including high energy efficiency, environmental sustainability and safety. It is also well-suited to replace R-134a in the medium temperature circuit of hybrid cascade systems in conjunction with CO_2.

Applications

- Medium temperature circuit of hybrid cascade systems
- Medium temperature commercial and industrial DX refrigeration
- Water chillers, air conditioning and heat pumps
- New equipment/retrofit of existing systems

Benefits

- Non-ozone depleting and low GWP (>55 % reduction vs. R-134a) [1)]
- Energy efficiency comparable to R-134a
- Close performance match to R-134a for retrofit and new systems
- Azeotrope with zero glide
- Provides quick, easy and low cost retrofit from R-134a
- Safe and non-flammable (ASHRAE [2)] A1)
- Supported and approved by major equipment manufacturers
- Extensively field tested with no equipment/ lubricant/seal changes (superheat adjustment may be required)
- Miscible with POE lubricants
- Can be topped off after leaks

Opteon™ XP10 properties

ASHRAE Number	R-513A
Composition Wt %	R-1234yf/R-134a 56.0/44.0
Molecular Weight	108.4 g/mol
Boiling Point @ 1 atm (101.3 kPa)	-29.2 °C
Critical Pressure	3766 kPa
Critical Temperature	96.5 °C
Liquid Density @ 21.1 °C	1185.7 kg/m^3
Ozone Depletion Potential (CFC-11 = 1.0)	0
AR4 Global Warming Potential (CO_2 = 1.0)	631
ASHRAE Safety Classification	A1
Temperature Glide	0 K

1) According to Assessment Report 4 (AR4) which is the basis for the F-Gas regulation (EU) No. 517/2014.
2) American Society of Heating, Refrigerating and Air-Conditioning Engineers

Chemours™

LOW GWP

What to expect after retrofitting

The data below was obtained from theoretical cycle calculations for high temperature (0 °C mean evaporating temperature) and medium temperature (-10 °C mean evaporating temperature) refrigeration scenarios. For both the high and medium temperature scenarios the following parameters were used; evaporator superheat = 8 K, Suction line Superheat = 4 K, Liquid subcooling = 2 K and compressor isentropic efficiency = 70%. [3)]

	High Temperature		Medium Temperature	
Mean Condensing Temperature	30 °C	45 °C	30 °C	45 °C
Cooling Capacity	+4%	+2%	+4%	+3%
C.O.P.	-1%	-2%	-1%	-3%
Relative Mass Flow	+15%	+15%	+16%	+16%
Suction Pressure	+26 kPa	+26 kPa	+20 kPa	+20 kPa
Discharge Pressure	+45 kPa	+55 kPa	+45 kPa	+55 kPa
Discharge Temperature	-3.7 K	-5.2 K	-5.2 K	-6.6 K

+ is an increase, - is a decrease relative to R-134a

3) Actual performance for a specific system depends on a number of factors, including equipment conditions and operating environment.

For more information on the Opteon™ family of refrigerants or other Chemours Refrigerants products vist **opteon.com**

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