Opteon™ XL41

Refrigerant (R-454B)

Product Information

Opteon™ XL41 (R-454B) is a mildly flammable low global warming potential (GWP) hydrofluoro-olefin (HFO) based refrigerant to replace R-410A in new equipment designs. Opteon™ XL41 offers the optimal balance of properties to replace R-410A in positive displacement, direct expansion air conditioning, heat pump and chiller applications.

Opteon™ XL41 is the lowest GWP Opteon™ replacement for R-410A (78% reduction) and provides improved performance. Opteon™ XL41 offers similar properties to R-410A which makes it easy and cost-effective to apply in new equipment without major modifications.

Opteon™ XL41 is classified as a mildly flammable (ISO/ASHRAE class 2L) refrigerant. Please check your local regulations and Standards such as PED, EN 378 or ISO 5149 to verify the allowable filling charge, new equipment design and safe handling requirements for the intended application.

Applications

- Positive displacement, DX air conditioning, heat pumps and chillers
  - Residential, light commercial, commercial
- Direct replacement for all equipment types designed for R-410A
  - Window units, portables, mini-splits, ducted splits, PTACs, multi-splits, DX chillers, and other

Benefits

- Lowest GWP replacement for R-410A (reduction of 78 %) [1]; best where lowest GWP is required
- Improved capacity and efficiency compared to R-410A [2]
- Excellent performance in normal and high ambient conditions
- Very close match to R-410A – easily convertible from R-410A design with minimal changes
- Very low temperature glide – can be topped off after leaks
- Non-toxic and mildly flammable (ISO/ASHRAE [3] A2L)
- Allows >1.7 kg minimum filling charge under new Codes & Standards (e.g. ISO 5149 or EN 378)
- Miscible with POE lubricants

Opteon™ XL41 properties

ASHRAE Number	R-454B
Composition Wt %	R-32/R-1234yf 68.9/31.1
Molecular Weight	62.6 g/mol
Boiling Point @ 1 atm (101.3 kPa)	-50.9 °C (-50.6 °F)
Critical Temperature	77 °C (170.6 °F)
Liquid Density @ 21.1 °C	996.5 Kg/m³ (62.2 lb/ft³)
Ozone Depletion Potential (CFC-11 = 1.0)	0
AR5 (AR4) GWP (CO_2 = 1.0)	467 (466)
ASHRAE Safety Classification	A2L
Temperature Glide	-1.5 K
LFL [4]	0.303 kg/m³ (18.9 10^{-3} lb/ft³)
Burning Velocity @ 23 °C	5.2 cm/s (2.0 in/s)

[1] According to Assessment Report 4 (AR4) which is the basis for the F-Gas regulation (EU) No. 517/2014.

[2] INPAC, Remplacement du R-410A dans une pompe à chaleur réversible, 5ième Congrès Français des Pompes à Chaleur.

[3] American Society of Heating, Refrigerating and Air-Conditioning Engineers

[4] Based on Worst-case formulation (WCF) flammability.

Chemours™

Low GWP

What to expect at similar operating conditions

The data below was obtained from theoretical cycle calculations for lower- (-15 °C mean evaporating temperature) and higher temperature (8 °C mean evaporating temperature) applications. For both the heat-pump and the cooling scenarios the following parameters were used: evaporator superheat = 5 K, suction line superheat 3 K, Liquid subcooling 2 K and compressor efficiency = 70 %. [5)]

	Lower Temperature		Higher Temperature	
Mean Condensing Temperature	40 °C	60 °C	40 °C	60 °C
Cooling Capacity	-3 %	+3 %	-3 %	+2 %
C.O.P.	+2 %	+7 %	+2 %	+6 %
Relative Mass Flow	-20 %	-20 %	-20 %	-20 %
Suction Pressure	-30 kPa	-30 kPa	-65 kPa	-65 kPa
Discharge Pressure	-140 kPa	-229 kPa	-140 kPa	-229 kPa
Discharge Temperature	+9.9 K	+12.6 K	+5.4 K	+7.9 K

+ is an increase, - is a decrease relative to R-410A

[5)] 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 refrigerants from Chemours, visit **opteon.com**

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