Opteon™ XL40

Refrigerant (R-454A)

Product Information

Opteon™ XL40 (R-454A) is a mildly flammable refrigerant with low global warming potential (GWP) for replacement of R-404A in new equipment designs. Opteon™ XL40 is a low GWP hydrofluoro-olefin (HFO) based refrigerant with the optimal balance of properties to replace R-404A in positive displacement, direct expansion low- and medium temperature commercial and industrial applications.

Opteon™ XL40 offers improved energy performance and higher cooling capacities which makes it easy and cost-effective to apply in new equipment without major modifications. Classified as mildly flammable (ISO/ASHRAE Class 2L), Opteon™ XL40 allows much higher charge sizes than other more highly flammable refrigerants and can be safely used by following the applicable codes and standards.

Since Opteon™ XL40 is a mildly flammable class 2L refrigerant, please check your local regulations and Standards such as EN378, UL 60335-2-89 and ISO5149 to verify the allowable filling charge and new equipment design and safe handling requirements for the intended application.

Applications

Low- and Medium temperature commercial and industrial refrigeration designed for R-404A

- Supermarkets
  - Distributed systems
  - Walk-in coolers/freezers, prep rooms, etc.
- Condensing units (e.g. in food service)
- Cold stores

Benefits

- Low GWP (94 % reduction versus R-404A) [1)]; zero ozone depletion
- Improved capacity and efficiency compared to R-404A
- Very close match to R-404A – easily convertible from current design with minimal equipment sizing differences relative to legacy HFC/HCFC designs
- Can be topped off after leaks
- ASHRAE A2L safety classification
- Compatible with POE lubricants

Opteon™ XL40 properties

ASHRAE Number	R-454A
Composition Weight %	R-32/R-1234yf 35.0/65.0
Molecular Weight	80.5 g/mol
Normal Boiling Point[1]	-47.8 °C (-54.1 °F)
Critical Pressure	4627.3 kPa (671.1 psia)
Critical Temperature	81.7 °C (179.1 °F)
Liquid Density at 21.1 °C (70 °F)	1037.2 kg/m³ (64.7 lb/ft³)
Ozone Depletion Potential (CFC-11 = 1.0)	0
AR4 (AR5) GWP (CO_2 = 1.0)	238 (239)
ASHRAE Safety Classification	A2L
Temperature Glide	-5 K (-9 R)
Lower Flammability Limit[2]	8.4 vol%

[1] Normal bubble point

[2] ASHRAE Standard 34 - 2022 Addendum A

Chemours™

LOW GWP ©

Thermodynamic Performance

The tables below summarize the thermodynamic cycle performance of R-454A relative to R-404A at standard low and medium temperature refrigeration conditions.

***Low Temperature Model Conditions:**
40.5 °C (105 °F) Cond, -28.8 °C (-20 °F) Evap, 16.6 K (30 R) Superheat, 5.5 K (10 R) Subcool, 75% efficiency

Refrigerant	Relative Capacity	Relative COP	Relative Mass Flow Rate	Suction Pressure kPa (psia)	Discharge Pressure kPa (psia)	Discharge Temperature °C (°F)
R-404A	1.00	1.00	1.00	213.1 (30.9)	1846.4 (267.8)	78.4 (173.1)
R-454A	1.07	1.05	0.72	202.0 (29.3)	1865.7 (270.6)	99.4 (211.0)

*Evap and Cond temp are in mid-point

Medium temperature Model Conditions:
40.5 °C (105 °F) Cond, -6.7 °C (20 °F) Evap, 16.6 K (30 R) Superheat, 5.5 K (10 R) Subcool, 75% efficiency

Refrigerant	Relative Capacity	Relative COP	Relative Mass Flow Rate	Suction Pressure kPa (psia)	Discharge Pressure kPa (psia)	Discharge Temperature °C (°F)
R-404A	1.00	1.00	1.00	486.1 (70.5)	1846.4 (267.8)	69.3 (156.8)
R-454A	1.06	1.03	0.74	471.6 (68.4)	1865.7 (270.6)	83.0 (181.4)

*Evap and Cond temp are in mid-point

For more information on the Opteon™ family of refrigerants or other refrigerants from Chemours, visit **opteon.com**

For refrigerant related support, contact our Tech2Tech Support Team
866-433-TECH (8324), or email **tech2tech@chemours.com**

C-11000 (1/2024)