



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/m ³ (64.7 lb/ft ³)
Ozone Depletion Potential (CFC-11 = 1.0)	0
AR4 (AR5) GWP (CO ₂ = 1.0)	239 (238)
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

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](https://www.opteon.com)

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

For more information on the Opteon™ family of refrigerants or other refrigerants from Chemours, visit [opteon.com](https://www.opteon.com)

The information set forth herein is furnished free of charge and based on technical data that Chemours believes to be reliable. It is intended for use by persons having technical skill, at their own risk. Since conditions of use are outside our control, we make no warranties, expressed or implied and assume no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under, or a recommendation to infringe any patents or patent applications.

© 2024 The Chemours Company FC, LLC. Opteon™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC. Chemours™ and the Chemours Logo are trademarks of The Chemours Company.

C-11000 (11/2024)