

General Replacement Guide

R-22 Replacements*						
Product Name	ASHRAE #	Applications ¹	Refrigerant Type ²	Equipment Type	Compatible Oil ³	GWP ⁴
Opteon™ XP40	R-449A	LT, MT	HFO Blend	New, Retrofit	POE	1282
Freon™ 407A	R-407A	LT, MT	HFC Blend	New, Retrofit	POE	1923
Freon™ MO29	R-422D	LT, MT	HFC Blend	Service Only ⁵	MO, AB, POE	2473
Freon™ MO99	R-438A	AC	HFC Blend	Retrofit	MO, AB, POE	2059
Freon™ 407C	R-407C	AC	HFC Blend	New, Retrofit	POE	1624
Freon™ 410A	R-410A	AC	HFC Blend	New	POE	1924

R-22 Retrofit Recommendation:

LT/MT: Opteon™ XP40: Excellent performance match and lower discharge temperature vs. R-22 with 27% lower GWP

AC: Freon™ MO99: Field proven R-22 replacement. Closest mineral oil compatible performance match to R-22 in air conditioning

R-12, MP39, MP66, R-409A Replacements*						
Product Name	ASHRAE #	Applications ¹	Refrigerant Type ²	Equipment Type	Compatible Oil ³	GWP ⁴
Opteon™ XP10	R-513A	MT, AC	HFO Azeotrope	New, Retrofit	POE	573
Freon™ 134a	R-134a	MT, AC, Auto	HFC	New, Retrofit	POE, PAG	1300
Opteon™ YF	R-1234yf	MT, AC, Auto	HFO (A2L)	New	POE, PAG	<1
Freon™ MO49Plus	R-437A	LT, MT	HFC Blend	Retrofit	MO, AB, POE	1638

R-134a Retrofit Recommendation:

Opteon™ XP10: Azeotropic, near drop-in replacement for R-134a in stationary equipment with 56% lower GWP and comparable performance. Specified by major chiller OEMs

R-404A, 507, HP80, HP81, R-408A, 502 Replacements*						
Product Name	ASHRAE #	Applications ¹	Refrigerant Type ²	Equipment Type	Compatible Oil ³	GWP ⁴
Opteon™ XP40	R-449A	LT, MT	HFO Blend	New, Retrofit	POE	1282
Opteon™ XP44	R-452A	LT, Transport	HFO Blend	New, Retrofit	POE	1945
Freon™ MO79	R-422A	LT, MT	HFC Blend	Service Only ⁵	MO, AB, POE	2846

R-404A/507 Retrofit Recommendation:

Opteon™ XP40: Up to 12% energy savings vs. R-404A with 67% lower GWP. TXV adjustment required similar to 407 series

Opteon™ XP44: Ideal for R-404A systems that require a low discharge temperature (e.g., transport refrigeration and low temp hermetics)

R-503, R-13 Replacements*						
Product Name	ASHRAE #	Applications ¹	Refrigerant Type ²	Equipment Type	Compatible Oil ³	GWP ⁴
Freon™ 95	R-508B	VLT	PFC/HFC Blend	New, Retrofit	POE	11,700
Freon™ 23	R-23	VLT	HFC	New, Retrofit	POE	12,400

R-123 Replacements*						
Product Name	ASHRAE #	Applications ¹	Refrigerant Type ²	Equipment Type	Compatible Oil ³	GWP ⁴
Opteon™ XP30	R-514A	AC, MT	HFO Blend (B1)	New, Retrofit**	POE	2

R-123 Retrofit Recommendation:

Opteon™ XP30: Azeotropic, with zero glide. Ideal for low pressure centrifugal chillers in commercial and industrial applications

*For more detailed information on Refrigerants from Chemours and their applications, visit www.freon.com and www.opteon.com, as well as consult local country-specific regulations.

**Retrofit options for Opteon™ XP30 are under development. Please consult your equipment manufacturer for more details.

¹VLT=Very Low Temperature, LT=Low Temperature, MT=Medium Temperature, AC=Air Conditioning, Transport=Transport Refrigeration, Auto=Automotive Air Conditioning

²All Refrigerants listed have ASHRAE A1 Safety Classification, unless otherwise noted.

³MO=Mineral Oil, AB=Alkylbenzene, POE=Polyol Ester, PAG=Polyalkylene Glycol for Mobile AC

⁴GWP=Global Warming Potential, IPCC Fifth Assessment Report, AR5

⁵In Canada, Freon™ MO29 is not available. Freon™ MO79 is available in limited package size.

Performance Comparison of Retrofit Refrigerants from Chemours

The following data is meant to provide general guidance for retrofit consideration. For data on actual field conversions, please consult a Chemours representative.

Product	Compared To	Application Conditions*	Relative Capacity (%)	Relative EER (%)	Relative Mass Flow (%)	Suction Pressure (psi)	Discharge Pressure (psi)	Discharge Temperature (°F)
Opteon™ XP40 (R-449A)	R-22**	LT	+5	-1	+18	+2	+33	-32
	R-22	MT	+4	-5	+14	+6	+33	-29
	R-404A	LT	-1	+4	-23	-4	-9	+32
	R-404A	MT	0	+2	-20	-7	-9	+18
	R-408A	LT	-4	-2	-5	-2	+9	-3
	HP80	LT	-11	+3	-30	-6	-25	+17
Opteon™ XP10 (R-513A)	R-134a	MT	+3	-2	+19	+8	-13	-13
	MP39	MT	-6	-1	+14	-3	-39	-34
	MP66	MT	-12	-1	+8	-13	-42	-37
	R-409A	MT	+6	-1	+10	-2	-42	-3
Opteon™ XP44 (R-452A)	R-404A	LT	-1	0	+2	-1	+2	+1
	R-404A	MT	0	-1	+3	-2	+2	+1
Freon™ MO99 (R-438A)	R-22**	LT	-12	-1	+11	-2	+4	-49
	R-22	MT	-10	-5	+10	-3	+4	-40
	R-22	HT	-7	-4	+12	-3	+5	-30
Freon™ 407A	R-22**	LT	+2	-1	+15	+1	+30	-31
	R-22	MT	+2	-5	+14	+4	+31	-28
Freon™ 407C	R-22	HT	0	-4	+3	+1	+20	-17
Freon™ MO49 <i>Plus</i> (R-437A)	MP39	MT	0	-2	+14	+1	+11	-25
	MP66	MT	-6	-2	+8	-2	+1	-28

Performance data is based on theoretical calculations at typical application conditions (outlined below). Actual performance will vary depending on system design and conditions.

*Application Conditions:

LT=Low Temperature; -22°F avg evaporator, 104°F avg condenser, 14°F return gas T, 97°F subcool T

MT=Medium Temperature; 20°F avg evaporator, 105°F avg condenser, 40°F return gas T, 95°F subcool T

HT=High Temperature (A/C); 45°F avg evaporator, 115°F avg condenser, 65°F return gas T, 100°F subcool T

**Corrected for liquid injection to maintain compressor discharge temperature at or below 250°F