

Refrigerants and lubricants approved for use in Copeland™ compressors

	Refrigerants	Class *	Similar to	Application		Lubricant choices			Comments		
				Retrofit	New	Preferred	Alternate #1	Alternate #2			
Ozone depleting	CFC R-12			L,M		MIN	AB & MIN		Phased out in 1996		
	CFC R-502			L,M		MIN	AB & MIN	POE-32	Phased out in 1996		
	HCFC R-22			L,M,H		MIN	AB & MIN	POE-32	No new equipment 2010 **		
	HCFC R-401A		R-12	M,H		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Freon™ MP39		
	HCFC R-401B		R-12	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Freon MP66		
	HCFC R-402A		R-502	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Freon HP80		
	HCFC R-402B		R-502	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Freon HP81		
	HCFC R-408A		R-502	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: FX10		
	HCFC R-409A		R-12	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: FX56		
Non-ozone depleting	HFC R-134a	A1	R-12	M,H	M,H	POE-32					
			R-12	L,M	L,M	POE-22B			Hatcol 4408/Savsyn 200KC for use with specific Copeland compressors designed for R-134a manufactured in India		
			R12	L,M	L,M	POE-22D			Compressors produced in Brazil		
	R12		L,M		POE-22A	POE-22D			Compressors produced in Slovakia		
	HFC R-404A		R-502	L,M	L,M	POE-32				Freon HP62, Forane™ FX70	
			R-502	L,M	L,M	POE-22C				For use with compressors manufactured in India	
			R-502	L,M	L,M	POE-22A				POE-22D	Compressors produced in Slovakia
	HFC R-507		R-502	L,M	L,M	POE-32				Genetron™ AZ50	
	HFC R-407A		R-22	L,M	L,M	POE-32					
	HFC R-407C		R-22	L,M,H	L,M,H	POE-32				Freon 9000/KLEA 66	
	HFC R-407F		R-22	L,M	L,M	POE-32				Discus™ and select refrigeration scroll models (ZF/ZB)	
	R-448A		R-22/R-404A	L,M	L,M	POE-32				Solstice™ N40	
			R-22/R-404A	L,M	L,M	POE-22A				POE-22D	Compressors produced in Slovakia
			R-22/R-404A	L,M	L,M	POE-32				Opteon™ XP40	
	R-449A		R-22/R-404A	L,M	L,M	POE-22A			POE-22D	Compressors produced in Slovakia	
			R-12/R-134a	M,H	M,H	POE-32				Solstice N13 for refrigeration applications only	
			R12	L,M	L,M	POE-22D				Compressors produced in Brazil	
	R-450A		R-12/R-134a	M,H	M,H	POE-22A				POE-22D	Compressors produced in Slovakia
			R-12/R-134a	M,H	M,H	POE-32				Opteon XP10 for refrigeration applications only	
			R12	L,M	L,M	POE-22D				Compressors produced in Brazil	
	R-513A		R-12/R-134a	M,H	M,H	POE-22A				POE-22D	Compressors produced in Slovakia
			R-22/R-404A	L,M	L,M	POE-32				OPTEON™ XP44 for U.S. and European pre-approved applications only	
										ZP & ZB KCP Copeland Scroll™ models and certain Discus models only	
	HFC R-410A				Discus = L,M Scroll = M,H	POE-32					For use with specific highside variable speed compressors manufactured in Suzhou.
					M,H	PVE-68			Discus supermarket racks only		
	HFC R-422A/D		R-22	L,M		POE-32			MIN		AB
	HFC R-427A		R-22	L,M		POE-32					Discus supermarket racks only
	HFC R-438A		R-22	L,M		POE-32			MIN	AB	Discus supermarket racks only; Freon MO99
	R-704 helium					Cryogenic			PAG		
R-744 CO ₂				Sub-critical	POE-68	PAG-68		4MSLS Semi-Hermetic and ZO Copeland Scroll models for CO ₂			
					PAG-68	POE-68		RFL68EP for CO ₂ compressor manufactured in Europe			
				Trans-critical	POE-68	PAG-68		4MTLS semi-hermetic compressors for medium temp trans-critical applications			

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	Refrigerants	Class *	Similar to	Application		Lubricant choices			Comments
				Retrofit	New	Preferred	Alternate #1	Alternate #2	
Non-ozone depleting	R-32	A2L	R410A	M,H	M,H	POE-46			New NXG5020 oil for new R32 scrolls launched starting 2018 & replacing SP32 (Asia products)
			R410A	M,H	M,H	POE-32B			For use with specific compressors designed for R-32 manufactured in Suzhou
	R-290 propane	A3			L,M,H	POE-68B			For use with specific Scroll Copeland compressors manufactured in North Ireland for R-290
						POE-22A			For use with specific Copeland compressors designed for R-290, excluding models manufactured in India
					L,M	POE-32			For use with specific Copeland compressors manufactured in India for R-290
						AB/POE-32			CPI 4708-32, ALP 360A-22 used in compressors produced in Brazil
						POE-10			Compressors produced in Mexico

Legend:

MIN: Mineral Oil (Copeland 46BWMO, Calumet RO15, Chevron/Texaco Capella WF32, Sonneborn Suniso 3GS, 3GS-P, Savsol 3000, Sonneborn LP200 and Savsol LP200, KRP-32, KRW-35) Mineral oils are interchangeable for 'top off' purposes

AB: Alkyl Benzene Oil (AB46 Copeland Ultra 200, National NL AKB200R, Shrieve Zerol 200 TD, Sonneborn Suniso AKB200A, Shell 2212, CPI-4708-32)

POE-32: Polyolester Oil (Copeland Ultra 32-3MAF, Lubrizol Emkarate RL32-3MAF, Everest 32-3MAF, National NL PE32-3MAF, Parker EMKARATE RL32-3MAF/ (Virginia) LE323MAF, Nu Calgon 4314-66/EMKARATE RL32-3MAF, ALP 360A-22, Everest 22 CC, Copeland Ultra 22 CC, Mobil Arctic 22 CC) Last three are approved for 'top off' only, 32-3MAF preferred

POE-32B: SP32 for use with R-32 applications

POE-46: NXG5020 POE for use with R32 applications

POE-22A: Emkarate RL22H, RL22HB

POE-22B: Hatcol 4408, Savsyn 200KC

POE-22C: HXL-8828, Hatcol 4440

POE-22D: CP2922E

POE-10: CP 2910E

PAG: Polyalkylene Glycol Oil (Lubrizol RPAG 62, UCON LB300X)

PAG-68: RFL 68EP for use in R-744 CO₂

PVE-68: FVC 68D for high-side variable speed

POE-32 & MIN: Minimum 50% POE

AB & MIN: Minimum 50% Alkyl Benzene

POE-68: Emkarate RL68HB oil for use with R-744 CO₂ applications

POE-68B: Hatcol 4467 POE 68 (ISO 68 viscosity grade), Chemtura

L: Low Temperature Application (Refrigeration) for R-407A, R-407C, R-407F, R-422A/D, R-427A, R-438A, R-448A, R-449A Demand Cooling™ or auxiliary cooling may be required for low temperature application - See AE guidelines for details

M: Medium Temperature Application (Refrigeration)

H: High Temperature Application (Air-Conditioning, Heat Pump, Refrigeration)

* ASHRAE Std. 34 Refrigerant Classification: A1=Non-Flammable/Non-Toxic; A2, A2L=Mildly Flammable/Non-Toxic; A3 = Flammable/Non-Toxic; B2, B2L = Mildly Flammable/Toxic. A2L and B2L are lower flammability refrigerants with a maximum burning velocity of ≤ 3.9 in/sec (10cm/s)

** A & R product lines with R-22 are only approved for use with AB oil.

Spectronics AR-GLO 4/E Fluorescent Leak Detection Dye is approved for HFC/POE and HCFC/ Mineral Oil usage at the manufacturer's recommended concentrations.

CAUTION: POE must be handled carefully and the proper protective equipment (gloves, eye protection, etc.) must be used when handling POE lubricant. POE must not come into contact with any surface or material that might be harmed by POE, including without limitation, certain polymers (e.g. PVC/CPVC and polycarbonate). Do not take internally. Avoid eye contact and prolonged or repeated skin contact. Safety Data Sheets are available at your supplier.

For specific product availability and performance data refer to Emerson sales literature.

Refer to Application Engineering bulletins, change-over guidelines and MSDS sheets for additional information at [Emerson.com/OPI](https://www.emerson.com/OPI)

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