

# 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	
Non-ozone depleting	HCFC R-409A	A1		R-12	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: FX56	
	HFC R-134a			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
	HFC R-404A			R12	L,M	L,M		POE-22D			Compressors produced in Brazil
				R12	L,M			POE-22A	POE-22D		Compressors produced in Slovakia
				R-502	L,M	L,M		POE-32			Freon HP62, Forane™ FX70
	HFC R-407A			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-407C			R-22	L,M	L,M		POE-32			
	HFC R-407F			R-22	L,M,H	L,M,H		POE-32			Freon 9000/KLEA 66
	R-448A			R-22	L,M	L,M		POE-32			Discus™ and select refrigeration scroll models (ZF/ZB)
				R-22/R-404A	L,M	L,M		POE-32			Solstice™ N40
	R-449A			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-450A			R-12/R-134a	M,H	M,H		POE-22A	POE-22D		Compressors produced in Slovakia
				R12	L,M	L,M		POE-32			Solstice N13 for refrigeration applications only
	R-513A			R-12/R-134a	M,H	M,H		POE-22D			Compressors produced in Brazil
				R-12/R-134a	M,H	M,H		POE-22A	POE-22D		Compressors produced in Slovakia
	R-452A			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
	HFC R-410A			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
	HFC R-422A/D						Discuss = L,M	POE-32			ZP & ZB KCP Copeland Scroll™ models and certain Discus models only
							Scroll = M,H				
	HFC R-427A						M,H	PVE-68			For use with specific highside variable speed compressors manufactured in Suzhou.
	HFC R-438A			R-22	L,M			POE-32	MIN	AB	Discus supermarket racks only
	R-704 helium			R-22	L,M			POE-32			Discus supermarket racks only
				R-22	L,M			POE-32	MIN	AB	Discus supermarket racks only; Freon MO99
	R-744 CO <sub>2</sub>						Cryogenic	PAG			ZC Copeland Scroll models only
				Sub-critical	POE-68	PAG-68		4MSLS Semi-Hermetic and ZO Copeland Scroll models for CO <sub>2</sub>			
				Trans-critical	PAG-68	POE-68		RFL68EP for CO <sub>2</sub> compressor manufactured in Europe			
					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
					L,M	POE-22A			For use with specific Copeland compressors designed for R-290, excluding models manufactured in India
						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

<b>Legend:</b>		PAG:	Polyalkylene Glycol Oil (Lubrizol RPAG 62, UCON LB300X)
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	PAG-68:	RFL 68EP for use in R-744 CO <sub>2</sub>
AB:	Alkyl Benzene Oil (AB46 Copeland Ultra 200, National NL AKB200R, Shrieve Zerol 200 TD, Sonneborn Suniso AKB200A, Shell 2212, CPI-4708-32)	PVE-68:	FVC 68D for high-side variable speed
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-32 & MIN:	Minimum 50% POE
POE-32B:	SP32 for use with R-32 applications	AB & MIN:	Minimum 50% Alkyl Benzene
POE-46:	NXG5020 POE for use with R32 applications	POE-68:	Emkarate RL68HB oil for use with R-744 CO <sub>2</sub> applications
POE-22A:	Emkarate RL22H, RL22HB	POE-68B:	Hatcol 4467 POE 68 (ISO 68 viscosity grade), Chemtura
POE-22B:	Hatcol 4408, Savsyn 200KC	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
POE-22C:	HXL-8828, Hatcol 4440	M:	Medium Temperature Application (Refrigeration)
POE-22D:	CP2922E	H:	High Temperature Application (Air-Conditioning, Heat Pump, Refrigeration)
POE-10:	CP 2910E		* 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](http://Emerson.com/OPI)**

93-11 R37 (9/18)  
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