

# 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: Suva™ MP39	
	HCFC R-401B			R-12		L,M	AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Suva MP66	
	HCFC R-402A			R-502		L,M	AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Suva HP80	
	HCFC R-402B			R-502		L,M	AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Suva 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			Hatcol 4408/Savsyn 200KC for use with specific Copeland compressors designed for R-134a manufactured in India	
	HFC R-404A			R-12	L,M	L,M	POE-22B			Suva HP62, Forane™ FX70	
				R-502	L,M	L,M	POE-32			For use with compressors manufactured in India	
	HFC R-507			R-502	L,M	L,M	POE-22C			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			Suva 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-449A			R-22/R-404A	L,M	L,M	POE-32			Opteon™ XP40	
	R-450A			R-12/R-134a	M,H	M,H	POE-32			Solstice N13 for refrigeration applications only	
	R-513A			R-12/R-134A	M,H	M,H	POE-32			Opteon XP10 for refrigeration applications only	
	R-452A			R-22/R-404A	L,M	L,M	POE-32			OPTEON™ XP44 for U.S. and European pre-approved applications only	
	HFC R-410A					Discus = L,M Scroll = M,H	POE-32			ZP & ZB KCP Copeland Scroll™ models and certain Discus models only	
						M,H	PVE-68			For use with specific highside variable speed compressors manufactured in Suzhou.	
	HFC R-422A/D			R-22	L,M		POE-32	MIN	AB	Discus supermarket racks only	
	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; ISCEON™ MO99	
	R-704 helium						Cryogenic	PAG			ZC Copeland Scroll models only
	R-744 CO <sub>2</sub>			A1			Sub-critical	POE-68			4MTLS Discus and ZO Copeland Scroll models for CO <sub>2</sub>
		PAG-68						RFL 38 EP, PAG-B for CO <sub>2</sub> compressor manufactured in Welkenraedt			
Trans-critical		POE-68						4MTLS semi-hermetic compressors for medium temp trans-critical applications			
R-32	A2L			M,H	POE-32B			For use with specific compressors designed for R-32 manufactured in Suzhou			
Non-ozone depleting	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		

Continued on reverse ➡

## 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 (Copeland Ultra 200, National NL AKB200R, Shrieve Zerol 200 TD, Sonneborn Suniso AKB200A, Shell 2212)
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, Everest 22 CC, Copeland Ultra 22 CC, Mobil Arctic 22 CC) Last three are approved for 'top off' only, 32-3MAF preferred
POE-B:	SP32 for use with R-32 applications
POE-32B:	Hatcol 4408, Savsyn 200KC
POE-22A:	RL22H, RL22HB
POE-22C:	HXL-8828, Hatcol 4440
PAG:	Polyalkylene Glycol Oil (Lubrizol RPAG 62, UCON LB300X)
PAG-68:	RFL 68EP for use in R-744 CO <sub>2</sub>

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 CO <sub>2</sub> 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).

**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)**