

Refrigerants and lubricants approved for use in Copeland compressors

	Refrigerants	Class*	GWP***	Similar to	Application		Lubricant choices			Comments			
					Retrofit	New	Preferred	Alternate #1	Alternate #2				
Ozone depleting	CFC R-12		10900		L,M		MIN	AB & MIN		Phased out in 1996			
	CFC R-502		4657		L,M		MIN	AB & MIN	POE-32	Phased out in 1996			
	HCFC R-22		1810		L,M,H		MIN	AB & MIN	POE-32	No new equipment 2010**			
	HCFC R-401A		1182	R-12	M,H		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Freon™ MP39			
	HCFC R-401B		1288	R-12	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Freon MP66			
	HCFC R-402A		2788	R-502	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Freon HP80			
	HCFC R-402B		2416	R-502	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: Freon HP81			
	HCFC R-408A		3152	R-502	L,M		AB & MIN	POE-32 & MIN	POE-32	For service applications only, trade name: FX10			
	HCFC R-409A		1909	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	1430	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			
				R-12	L,M	L,M	POE-22B				Compressors produced in Brazil		
				R12	L,M	L,M	POE-22D				POE-22D	Compressors produced in Slovakia	
	HFC R-404A		3922	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		3985	R-502	L,M	L,M	POE-32			Genetron™ AZ50			
	HFC R-407A		2107	R-22	L,M	L,M	POE-32						
	HFC R-407C		1774	R-22	L,M,H	L,M,H	POE-32						
	HFC R-407F		1825	R-22	L,M	L,M	POE-32			Freon 9000/KLEA 66			
	R-407H		1495	R-22/R-404A	L,M		POE-32						
	R-448A		1387	R-22/R-404A	L,M	L,M	POE-32				POE-22D	Solstice™ N40	
	R-449A		1396	R-22/R-404A	L,M	L,M	POE-32			Compressors produced in Slovakia			
	R-22/R-404A			L,M	L,M	POE-22A	POE-22D				Opteon™ XP40		
	R-450A		601	R-12/R-134a	M,H	M,H	POE-32			Compressors produced in Slovakia			
				R12	L,M	L,M	POE-22D				Compressors produced in Brazil		
				R-12/R-134a	M,H	M,H	POE-22A				POE-22D	Compressors produced in Slovakia	
	R-513A		630	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-452A		2140	R-22/R-404A	L,M	L,M	POE-32			Compressors produced in Slovakia			
	HFC R-410A		2688			Discus = L,M	POE-32						Copeland ZP & ZB KCP scroll models and certain Discus models only
						Scroll = M,H	PVE-68						
	HFC R-422A		3143	R-22	L,M		POE-32	MIN	AB	For use with specific highside variable speed compressors manufactured in Suzhou.			
	HFC R-422D		2729	R-22	L,M		POE-32	MIN	AB	Discus supermarket racks only			
HFC-R427A	2138	R-22	L,M	POE-32				Discus supermarket racks only					
HFC R-438A	2265	R-22	L,M	POE-32	MIN		AB	Discus supermarket racks only; Freon MO99					
R-704 helium	1			Cryogenic	PAG				Copeland ZC scroll models only				
R-744 CO ₂	1			Sub-critical	POE-68	PAG-68			4MSLS semi-hermetic and Copeland ZO scroll models for CO ₂ ,				
				Trans-critical	POE-68	PAG-68			RFL68EP for CO ₂ compressor manufactured in Europe				
					POE-68	PAG-68		4MTLS semi-hermetic compressors for medium temp trans-critical applications					

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	Refrigerants	Class*	GWP***	Similar to	Application		Lubricant choices			Comments	
					Retrofit	New	Preferred	Alternate # 1	Alternate # 2		
Non-ozone depleting	R-32	A2L	675	R410A	M,H	M,H	POE-46	SP32		SP32 covers VE/ZE compressors manufactured in Asia only	
				R410A	M,H	M,H	POE-32B	POE-46		For use with specific compressors designed for R-32 manufactured in Suzhou	
	R-454A		239	R22/R404A	-	L,M	POE-32			Not for retrofit into A1 systems	
	R-454B		466	R410A	-	M,H					
	R-454C		148	R22/R404A	-	L,M					
	R-455A	145	R410A	-	M,H						
	R-290 propane	A3	3			L,M	L,M,H				POE-68B
										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
										PAG-68	
							AB/POE-32				
							POE-10		CPI 4708-32, ALP 360A-22 used in compressors produced in Brazil Compressors produced in Mexico		

Legend:

MIN: Mineral Oil (Copeland 46BWMO, Calumet RO15, Chevron/Texaco Capella WF32, Powercool32, Sonneborn Suniso 3GS, 3GS-P, Savsol 3000, Sonneborn LP200 and Savsol LP200, Sonneborn LP201, Sontex 200LT, 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, Cryolant RL-32EA, Shrieve 3MAF (Everest 22 CC, Copeland Ultra 22 CC, Mobil Arctic 22 CC) Last three are approved for 'top off' only, 32-3MAF preferred

POE-32B: Everest SP 32 POE

POE-46: NXG5020 POE, Cryolant RZ-46E POE

POE-22A: Emkarate RL22H, RL22HB

POE-22B: Hatcol 4408, Savsyn 200KC, Savsyn 200KCD

POE-22C: HXL-8828, Hatcol 4440

POE-22D: CP2922E, CPI RL 22DQ, RL 22LSHF

POE-10: CP 2910E

PAG: Polyalkylene Glycol Oil (Lubrizol RPAG 62, UCON LB300X, UCON LB-170-X)

PAG-68: Zerol RFL 68-EP

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.

*** GWP# subject to change - Data from refrigerant manufacturer and EPA documents.

NOTE: A2L refrigerants are only for use in compressors they have been approved for and should not be retrofitted into non-A2L compressors or products.

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 Copeland sales literature. Refer to Application Engineering bulletins, change-over guidelines and MSDS sheets for additional information at copeland.com/OPI