

# Contractor Service Tips



## Alternative Refrigerants and Oils

**Q: What is the right oil to use with the new refrigerants?**

With the introduction of HFC refrigerants as alternatives to CFC and HCFC refrigerants, the question of the proper oil to use still comes up.

The generally preferred oil for use with HFCs is a polyolester (POE) which has an additive package for refrigeration applications. Mineral oil (MO) is not recommended because oil return is considered to be compromised.

**Q: Do I have to remove all the MO from the system when retrofitting?**

If retrofitting a system to an HFC refrigerant, current recommendations are to remove the mineral oil so that 5% or less is all that remains in the system before changing to POE oil. The percentage can be measured by using a refractometer.

**Q: What about alkyl benzene oils?**

Most interim HCFC refrigerants can also use alkyl benzene (AB) oil if approved by the compressor manufacturer. If in doubt about which oil to use with the refrigerant you are using, always consult the compressor manufacturer. (See chart for an example of one manufacturer's recommendation)



## Copeland Accepted Refrigerants/Lubricants

	Refrigerants	Source	Application			Lubricant Choices			Comments
			Similar To	Retrofit	New	Preferred	Alternate #1	Alternate #2	
Ozone Depleting	CFC R-12	Many		LM	LM	MO	AB & MO		Phaseout by 1996
	CFC R-502	Many		LM	LM	MO	AB & MO	POE	Phaseout by 1996
	HCFC R-22	Many		LMH	LMH	MO	AB & MO	POE	Phaseout by 2020
Interims	HCFC R-401A	Dupont/Allied	R-12	MH	N/A	AB & MO	POE & MO	POE	Service on Suva® MP39
	HCFC R-401B	Dupont/Allied	R-12	LM	N/A	AB & MO	POE & MO	POE	Service on Suva® MP66
	HCFC R-402A	Dupont	R-502	LM	N/A	AB & MO	POE & MO	POE	Service on Suva® HP80
	HCFC R-408A	Atochem	R-502	LM	N/A	AB & MO	POE & MO	POE	Service only FX10
	HCFC R-409A	Atochem	R-12	LM	N/A	AB & MO	POE & MO	POE	Service only FX56
Non-Ozone Depleting	HFC R-134a	Many	R-12	MH	MH	POE			Suva® HP62 Forane® FX70 Genetron® AZ50 Suva® 9000/KLEA 66 Genetron® AZ20/Suva® 9001**
	HFC R-404A	Many	R-502	LM	LM	POE			
	HFC R-507	Allied	R-502	LM	LM	POE			
	HFC R-407C	Dupont/Allied ICI	R-22	MH	MH	POE			
	HFC R-410A	Allied/Dupont			MH	POE			

**Legend:**

MO = Mineral Oil (3GS or Equivalent)

AB = Alkyl Benzene (Copeland Ultra 200 or Shreve Zerol 200 TD or Soltex AB 200A or Thermal Zone 200)

POE = Copeland Ultra 22CC or Mobil EAL™ Arctic 22 or ICI Emkarate™ RL32CF or Thermal Zone 22CC

POE & MO = Minimum 50% alkyl Benzene

AB & MO = Minimum 50% Alkyl Benzene (Shell 22-12)

Note: Shell 22-12 is a 70/30 mixture of AB & MO

Copeland Ultra 200, Zerol 200 TD, and Soltex AB 200A are 100% AB

**Refer to the following Application Bulletins for additional information:**

4-1295 HFC-134a Refrigerant Guidelines

17-1248 Refrigeration Oils

25-1177 Safe Handling of Compressed Gasses

93-02 CFC-12 to R-401A\*

93-03 CFC-12 to R410B\*

93-04 CFC-12 to HFC-124a

93-05 R-502 to R-402A\*

94-15 R-502 to R-404A/R-507\*

95-14 R-22 to R-407C\*

\*Refrigerant Changeover Guidelines

\*\*New equipment only

**For specific product availability and performance data refer to Copeland Sales Literature**