

# ALTERNATIVE REFRIGERANTS

## LOW AND MEDIUM-TEMPERATURE COMMERCIAL REFRIGERATION LONG-TERM REPLACEMENTS

ASHRAE #	Trade Name	Manufacturer	Replaces	Type	Lubricant (a)	Applications	Comments
R-404A (125/143a/134a)	404A	Allied Signal Elf Atochem	R-502 & HCFC 22	Blend (Small Glide)	Polyol Ester	New Equipment & Retrofits	Close Match to R-502; higher efficiency than R-22 at low temperature
	HP62	Dupont					
R-407D (32/125/134a)	407D	ICI	R-500	Blend (Moderate Glide)	Polyol Ester	New Equipment & Retrofits	Slightly Higher Capacity
			R-12 Low Temp.				
R-507 (125/143a)	AZ-50	Allied Signal	R-502 & HCFC 22	Azeotrope	Polyol Ester	New Equipment & Retrofits	Close Match to R-502; higher efficiency than R-22 at low temperature
	507	Dupont					

## LOW AND MEDIUM-TEMPERATURE COMMERCIAL REFRIGERATION INTERIM REPLACEMENTS (b)

ASHRAE #	Trade Name	Manufacturer	Replaces	Type	Lubricant (a)	Applications	Comments
R-402A (22/125/134a)	HP80	Allied Signal Dupont	R-502	Blend (Small Glide)	Alkylbenzene or Polyol Ester	Retrofits	Higher Discharge Pressure than R-502
R-402B (22/125/290)	HP81	Allied Signal Dupont	R-502	Blend (Small Glide)	Alkylbenzene or Polyol Ester	Ice Machines	Higher Discharge Temperature than R-502
R-408A (125/143a/22)	408A	Allied Signal Dupont Elf Atochem	R-502	Blend (Small Glide)	Alkylbenzene or Polyol Ester	Retrofits	Higher Discharge Temperature than R-502

## LONG TERM REPLACEMENTS

ASHRAE #	Trade Name	Manufacturer	Replaces	Type	Lubricant (a)	Applications	Comments
R-23	HFC-23	Allied Signal Dupont ICI	R-13	Pure Liquid	Polyol Ester	New Equipment & Retrofits	Higher Discharge Temperature than R-13

R-508B (23/116)	508B	Allied Signal	R-13 & R-503	Azeotrope	Polyol Ester	New Equipment & Retrofits	————
	95	Dupont					
R-508A (23/116)	508A	ICI	R-13 & R-503	Azeotrope	Polyol Ester	New Equipment & Retrofits	————

**AUTOMOTIVE A/C AND MEDIUM TEMPERATURE COMMERCIAL REFRIGERATION  
LONG TERM REPLACEMENTS**

ASHRAE #	Trade Name	Manufacturer	Replaces	Type	Lubricant (a)	Applications	Comments
R-134a	HFC-134a	Allied Signal Dupont Elf Atochem ICI	CFC-12	Pure Liquid	Polyol Ester	New Equipment & Retrofits	Close Match to CFC-12

**MEDIUM TEMPERATURE COMMERCIAL REFRIGERATION  
INTERIM REPLACEMENTS (b)**

ASHRAE #	Trade Name	Manufacturer	Replaces	Type	Lubricant (a)	Applications	Comments
R-401A (22/152a/124)	MP39	Allied Signal Dupont	CFC-12	Blend (Moderate Glide)	Alkylbenzene, Polyol Ester or in some cases, Mineral Oil	Retrofits (c)	Close to CFC-12 Use where evap temperature is -10°F or Higher
R-401B (22/152a/124)	MP66	Allied Signal Dupont	CFC-12	Blend (Moderate Glide)	Alkylbenzene or Polyol Ester	Transport (c) Refrigeration Retrofits	Close to CFC-12 Use where evap temperature is below -10°F
			R-500		Alkylbenzene, Polyol Ester or in some cases, Mineral Oil	Retrofits including Air Conditioners & Dehumidifiers	————
B-406A (22/142b/600a)	GHG	Peoples Welding Supply	CFC-12	Blend (high glide)	Mineral Oil or Alkylbenzene	Retrofits	Can Segregate to Flammable Composition
R-409A (22/124/142b)	R-409A	Allied Signal Dupont Elf Atochem	CFC-12	Blend (high glide)	Alkylbenzene, Polyol Ester or in some cases, Mineral Oil	Retrofits (c)	Higher Capacity than CFC-12 Similar to MP66
R-414A (pending) (22/124/142b/600a)	Autofrost	Peoples Welding Supply	CFC-12	Blend (high glide)	Alkylbenzene, Polyol Ester or in some cases, Mineral Oil	Retrofits	Similar to 409A

R-414B (pending) (22/124/142b/600a)	Hot Shot	ICOR International	CFC-12	Blend (high glide)	Alkylbenzene, Polyol Ester or in some cases, Mineral Oil	Retrofits	Similar to 409A
R-416A (pending) (124/134a/600)	FRIGC FR-12	Intercool Energy	CFC-12	Blend (small glide)	Polyol Ester	Retrofits	Lower Pressure than 134a at High Ambient Conditions

**COMMERCIAL AND RESIDENTIAL AIR CONDITIONING  
LONG TERM REPLACEMENTS**

ASHRAE #	Trade Name	Manufacturer	Replaces	Type	Lubricant (a)	Applications	Comments
R-123	HCFC-123	Allied Signal Dupont Elf Atochem	CFC-11	Pure Fluid	Alkylbenzene, or Mineral Oil	Centrifugal Chillers	Lower Capacity than R-11. With Modifications, Equivalent Performance to CFC-11
R-134a	HCFC-134a	Allied Signal Dupont Elf Atochem ICI	CFC-12	Pure Fluid	Polyol Ester	New Equipment & Retrofits	Close Match to CFC-12
			HCFC-22	Pure Fluid	Polyol Ester	New Equipment	Lower Capacity than HCFC-22 Larger Equipment Needed
R-401A (33/125)	AZ-20	Allied Signal	HCFC-22	Azeotropic Mixture	Polyol Ester	New Equipment	Higher Efficiency than HCFC-22 Requires Equipment Redesign
	9100	Dupont					
	410A	Elf Atochem					
R-407C (32/125/134a)	407C	Allied Signal Elf Atochem ICI	HCFC-22	Blend (high glide)	Polyol Ester	New Equipment	Lower Efficiency than HCFC-22 Close Capacity to HCFC-22
	9000	Dupont					

- (a) Check with the compressor manufacturer for their recommended lubricant.
- (b) Interim replacements contain HCFCs which are scheduled for phaseout under the Montreal Protocol.
- (c) Not recommended for automotive air conditioning.