

## Air Conditioning

### Commercial and Residential

ASHRAE#	Trade or Brand Name	Manufacturer	Type <sup>(e)</sup>	Replaces	Lubricant <sup>(a)</sup>	Applications	Comments
R-123	Genetron 123 Suva 123 Forane 123	Honeywell DuPont Atofina	Pure Fluid HCFC	R-11	Alkylbenzene or Mineral Oil	Centrifugal Chillers	
R-134a	Genetron 134a Suva 134a Florane 134a Klea 134a	Honeywell DuPont Atofina ICI	Pure Fluid HFC	R-12	Polyol Ester	New Equipment and Retrofits	Close match to R-12.
				R-22	Polyol Ester	New Equipment	Lower capacity than R-22 so larger equipment needed.
R-410A (125/32)	Genetron AZ-20 <sup>®</sup> Forane 410A Suva 410A Puron	Honeywell Atofina DuPont	Azeotropic Mixture HFC	R-22	Polyol Ester	New Equipment. Widely Accepted by OEMs.	High efficiency. Equipment redesign required.
R-407C (125/32/134a)	Genetron 407C Forane 407C Suva 407C Klea 407C	Honeywell Atofina DuPont ICI	Blend (High glide) HFC	R-22	Polyol Ester	New Equipment and Retrofits	Expedient alternative to R-22. Close capacity, but lower efficiency.

## Commercial Refrigeration

### Very Low Temperature Long Term Replacements

ASHRAE#	Trade or Brand Name	Manufacturer	Type <sup>(e)</sup>	Replaces	Lubricant <sup>(a)</sup>	Applications	Comments
R-23	Genetron 23 Suva 23 Klea 23	Honeywell DuPont ICI	Pure fluid HFC	R-13	Polyol Ester	New Equipment and Retrofits	Capacity between R-13 and R-503. Higher discharge temperature than R-13.
R-508A (23/116)	Klea 508A	ICI	Azeotrope HFC/FC	R-13 R-503	Polyol Ester	New Equipment and Retrofits	
R-508B (23/116)	Genetron 508B Suva 95	Honeywell DuPont	Azeotrope HFC/FC	R-13 R-503	Polyol Ester	New Equipment and Retrofits	Capacity similar to R-503. Lower discharge temperature.

### Low and Medium Temperature Interim HCFC-Based Replacements<sup>(b)</sup>

ASHRAE#	Trade or Brand Name	Manufacturer	Type <sup>(e)</sup>	Replaces	Lubricant <sup>(a)</sup>	Applications	Comments
R-402A (22/125/290)	Genetron HP80 Suva HP80	Honeywell DuPont	Blend (Small glide) HCFC/HFC/ HC	R-502	Alkylbenzene or Polyol Ester	Retrofits	Retrofit R-502 systems with simple change to alkylbenzene oil. Higher discharge pressure than R-502.
R-402B (22/125/290)	Genetron HP81 Suva HP81	Honeywell DuPont	Blend (Small glide) HCFC/HFC/ HC	R-502	Alkylbenzene or Polyol Ester	Ice Machines	Rapid harvest cycle in ice machines due to higher discharge temperature than R-502.
R-408A (22/125/143a)	Genetron 408A Suva 408A Forane FX-10	Honeywell DuPont Atofina	Blend (Small glide) HCFC/HFC	R-502	Alkylbenzene or Polyol Ester	Retrofits	Retrofit R-502 systems with simple change to alkylbenzene oil. Higher discharge temperature than R-502.

# Commercial Refrigeration (continued)

## Low and Medium Temperature Long Term HFC-Based Replacements

ASHRAE#	Trade or Brand Name	Manufacturer	Type <sup>(e)</sup>	Replaces	Lubricant <sup>(a)</sup>	Applications	Comments
R-507A (125/143a)	Genetron AZ-50 <sup>®</sup> Suva 507	Honeywell DuPont	Azeotrope HFC	R-502 R-22	Polyol Ester	New Equipment and Retrofits	Close match to R-502. Best long-term option. Higher efficiency than 404A and low temperature R-22.
R-404A (125/143a/134a)	Genetron 404A Forane FX-70 Suva HP62	Honeywell Atofina DuPont	Blend (Small glide) HFC	R-502 R-22	Polyol Ester	New Equipment and Retrofits	Close match to R-502. Higher efficiency than R-22 at low temperature.
R-407D (125/134a/32)	Klea 407D	ICI	Blend (Small glide) HFC	R-500 R-12 (Low Temp)	Polyol Ester	New Equipment and Retrofits	Slightly higher capacity than R-500. Higher capacity than R-12.

## Medium Temperature Interim HCFC-Based Replacements<sup>(b)</sup>

ASHRAE#	Trade or Brand Name	Manufacturer	Type <sup>(e)</sup>	Replaces	Lubricant <sup>(a)</sup>	Applications	Comments
R-401A (22/152a/124)	Genetron MP39 Suva MP39	Honeywell DuPont	Blend (Moderate glide) HCFC/HFC	R-12	Alkylbenzene, Polyol Ester, or Mineral oil in many cases.	Retrofits <sup>(c)</sup>	No oil change needed above 20°F (-7°C) evaporator unless extremely long piping.
R-401B (22/152a/124)	Genetron MP66 Suva MP66	Honeywell DuPont	Blend (Moderate glide) HCFC/HFC	R-12	Alkylbenzene Polyol Ester, or Mineral oil in many cases.	Transport Refrigeration Retrofits <sup>(c)</sup>	Close to R-12. Use where evaporator temperature is below -10°F.
				R-500		Retrofits including air conditioners and dehumidifiers	
R-409A (22/124/142b)	Genetron 409A Forane FX-56 Suva 409A	Honeywell Atofina DuPont	Blend (High glide) HCFC	R-12	Alkylbenzene, Polyol Ester, or Mineral oil in most cases.	Retrofits <sup>(c)</sup>	No oil change above -20°F (-29°C) evaporator unless extremely long piping.
R-414A (22/124/142b/ 600a) <sup>(d)</sup>	GHG-X4	Autofrost/ Peoples Welding Supply	Blend (High glide) HCFC/HC	R-12	Alkylbenzene, Polyol Ester, or Mineral oil in most cases.	Retrofits	Similar to 409A.
R-414B (22/124/142b/ 600a) <sup>(d)</sup>	Hot Shot	ICOR International	Blend (High glide) HCFC/HC	R-12	Alkylbenzene, Polyol Ester, or Mineral oil in most cases.	Retrofits	Similar to 409A.
R-416A (124/134a/600) <sup>(d)</sup>	FRIGC R-416A FRIGC FR-12	Intercool	Blend (Small glide) HCFC/HFC/HC	R-12	Polyol Ester	Retrofits	Lower capacity and pressure than R-134a.

## Medium Temperature Long Term HFC-Based Replacements

ASHRAE#	Trade or Brand Name	Manufacturer	Type <sup>(e)</sup>	Replaces	Lubricant <sup>(a)</sup>	Applications	Comments
R-134a	Genetron 134a Suva 134a Forane 134a Klea 134a	Honeywell DuPont Atofina ICI	Pure Fluid HFC	R-12	Polyol Ester	Favored in New Equipment and Retrofits	Performs well 20°F (-7°C) evaporator or higher.

### R22 Phase Out Schedule for Air Conditioning and Refrigeration

January 1, 2010: No new R22 can be manufactured for new equipment manufactured or imported into the US or Canada.

January 1, 2020: No new R22 refrigerant can be manufactured or imported into the US or Canada. Any servicing must be done using stockpiled or reclaimed material.

### Notes

- (a) Check with the compressor manufacturer for their recommended lubricant.
- (b) Interim replacements contain HCFCs that may be scheduled for phase out.
- (c) Not recommended for automotive air conditioning.
- (d) The refrigerant R-600 is butane. The refrigerant R-600a is isobutane.
- (e) CFC = Chlorofluorocarbon ; HCFC = Hydrochlorofluorocarbon ; HFC = Hydrofluorocarbon ; HC = Hydrocarbon ; FC = Fluorocarbon

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