SELECTION GUIDE FOR RETROFITTING R-22 EQUIPMENT

Suva® HP62 (R-404A) Suva® 407C Suva® 507

There is no one best alternative refrigerant for all R-22 equipment. The following information is provided to you for the alternative refrigerants DuPont recommends for retrofitting your present system. Consult appropriate retrofit guidelines. DuPont recommends that all leaks be identified and repaired prior to or during the retrofit.

BENEFITS

R-404A and R-507

- Higher cooling capacity at evaporator temperatures below 30°F
- Higher energy efficiency at evaporator temperatures below 10°F
- Requires POE lubricant
- Lower compressor discharge temperature than R-22
- Good for systems with direct-expansion or flooded evaporators
- Extensive global use in commercial refrigeration since 1993

BENEFITS

R-407C

- Suitable for common direct-expansion system
- Tends to separate in flooded heat exchangers impacting performance
- Closest match to R-22 cooling capacity and energy efficiency above 20°F

1 Performance Options – All temperatures reflect evaporator temperatures.

20°F OR BELOW

R-404A

R-507

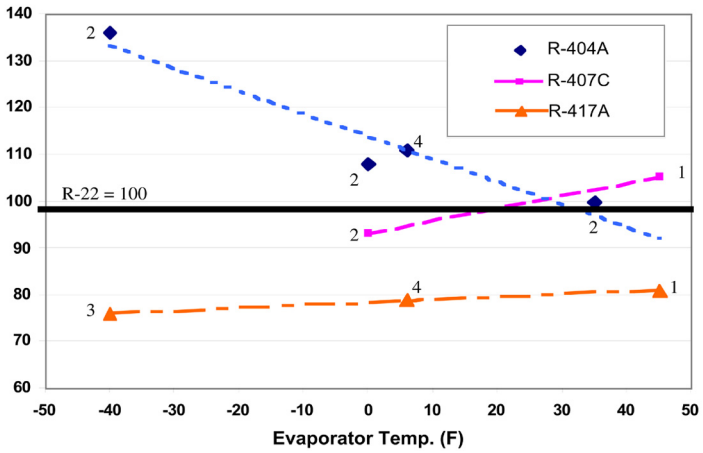
ABOVE 20°F

R-407C

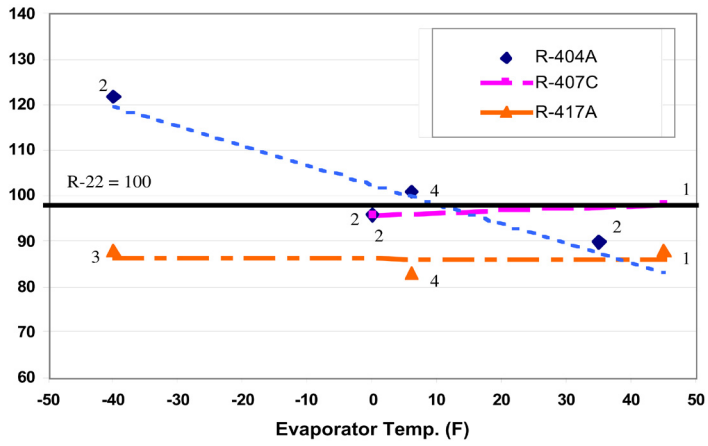
R-404A

R-507

Cooling Capacity Relative to R-22



Energy Efficiency Relative to R-22



COOLING CAPACITY COMPARED TO R-22

Evaporator Temp	R-404A	R-407C	R-417A
–40°F	+36%	—	–24%
0°F	+8%	–7%	—
5°F	+11%	+5%	–21%
45°F	—	+5%	–19%

ENERGY EFFICIENCY COMPARED TO R-22

Evaporator Temp	R-404A	R-407C	R-417A
–40°F	+22%	—	–12%
0°F	–4%	–4%	—
5°F	+1%	—	–17%
45°F	—	–2%	–12%

Testing Details

1 Tests performed at Larson Laboratory of the Joint Center for Energy Management at University of Colorado at Boulder, 1999

2 Tests performed at DuPont Fluorochemicals Laboratories in Wilmington, DE, 1994

3 Test performed at Keio University in Yokohama, Japan, 2000

4 Test performed at U.S. commercial bakery operation, Summer 2002

General Notes

Data on R-417A included for comparative purposes.

Selection Guide for Retrofitting R-22 Equipment

2 Oil Return Considerations

General Information:

- In all air-conditioning and refrigeration equipment, a small amount of lubricant leaves the compressor with the refrigerant.
- The lubricant must be capable of flowing through the rest of the loop and returning to the compressor. If not, there is an opportunity for the lubricant to accumulate in the evaporator and/or condenser, interfering with heat transfer. **Lack of oil return may also deplete oil in the compressor sump far enough to reduce lubrication and damage the compressor.**

3 Lubricant Guide

R-404A/R-507/R-407C

- POE lubricant required
- MO should be less than 5%
- Usually requires 3 or 4 quick oil changes

Note: Some refrigerant manufacturers offer products which claim no oil change required.

- Monitor compressor oil sump level
- Refrigerant system configurations can impact oil return– especially liquid receivers or high oil circulation rate.

4 Refrigerant Blend Separation

R-404A/R-507

- Minimal tendency to separate.
  – System can be topped off without recovering the charge
- Suitable for use in all refrigeration systems including those with a flooded evaporator and/or flooded condenser.

R-407C

- Suitable for common direct-expansion system.
  – System can be topped off without recovering the charge
- Tends to separate in flooded heat exchangers impacting performance.

5 Materials Compatibility

- HFC refrigerants are usually compatible with the same metals and elastomer O-ring materials as used in R-22 systems.
- Most elastomers swell when exposed to any refrigerant. It is possible that the O-ring will swell a different amount when exposed to an HFC refrigerant that has been put into a system that previously contained R-22.
- Monitor elastomer joints in the system after retrofit for possible leaks.

6 Operating Conditions

Compressor discharge pressure will vary (relative to R-22)

Refrigerant	Compressor discharge pressure vs R-22
R-407C	+30 psi
R-404A	+50 psi
R-507	+50 psi

Check with OEM to assure the system is designed for these pressures.

www.suva.dupont.com • 800-235-SUVA

H-96125 10/02