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Lineset Informational Sheet - Refrigerants

The three most widely used refrigerants in the market are used in HVAC applications for residential and commercial uses are shown below. The major gas, R-22 refrigerant, is used widely in the residential and commercial markets followed by R-134A, which is used in commercial applications for chillers and in wide use in car air conditioning systems. The R-134A replaced R-12 for automobile air conditioning systems. R-410A is currently being phased in for residential use for R-22. Based on its vapor pressure characteristic of refrigerant, the 410A high pressures refrigerant gas systems should be designed in accordance with the safe internal working pressure of lineset tubing. The **Refrigerant Gas Data** table and **Allowable Internal Pressure** table are listed below.

Table 1. Refrigerant Gas Data

Refrigerant No.	Name	Molecular Mass	Boiling point at atmospheric pressure 14.7 psia,1 bar abs (oF)	Freezing Point at atmospheric pressure 14.7 psia, 1 bar abs (oF)	Critical Point		
					Temperature (oF)	Pressure (psia)	Specific Volume (Cu.Ft./lb.)
R-12	Dichlorodifluoromethane[1]	120.91	-21.8	-252	234	597	0.0287
R-22	Chlorodifluoromethane[2]	86.468	-41.3	-256	205	722	0.0305
R-32	Difluoromethane	52.02	-61.4				
R-134a	Tetrafluoroethane[3]	102.03	-15	-142	214	590	0.0290
R-410A	R-32 Difluoromethane (50% weight), R-125 Pentafluoroethane (50% weight)	72.6	-55.4		162	690	
R-454B	R-32 Difluoromethane (68.9% weight), R-1234yf 2,3,3,3-tetrafluoropropene (31.1% weight)	62.6	-58.9		173	764	0.037

[1] Production of R12 or CFC-12 (Freon) was halted by the clean air act on January 1, 1996.

[2] R22 or HCFC-22 is a single component HCFC refrigerant with low ozone depletion potential. It has long been used in a variety of air-conditioning and refrigeration applications in a variety of markets, including appliance, construction, food processing, and supermarkets.

[3] Refrigerant R134a or HFC-134a is a commercially available hydro fluorocarbon (HFC) refrigerant for use as a long-term replacement for R-12 in new equipment and for retrofitting medium temperature CFC-12 systems.

[4] R-410A is a highly efficient nearly azeotropic mixture (gases evaporate at nearly the same temperatures) of two gases ideally suited for replacing R-22 in scroll compressor packages. R-410A will not damage the ozone.