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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-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	

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 gasses ideally suited for replacing R-22 in scroll compressor packages. R-410A will not damage the ozone.