

Refrigerant Numbering System

- 000 series: methane-based compounds.
- 100 series: ethane-based compounds.
- 200 series: propane-based compounds.
- 300 series: cyclic organic compounds.
- 400 series: zeotropes.
- 500 series: azeotropes.
- 600 series: organic compounds.
- 700 series: inorganic compounds.
- 1000 series: unsaturated organic compounds.

Example: HCFC-22 is in the “000 series” of refrigerants, meaning it is a methane-based compound. R-134a is in the “100 series” of refrigerants, meaning it is an ethane-based compound.

Azeotrope Refrigerant - A mixture made up of two or more refrigerants with similar boiling points that act as a single fluid. The components of azeotropic mixtures will not separate under normal operating conditions and can be charged as a vapor or liquid.

Zeotrope - A mixture made up of two or more refrigerants with different boiling points. Zeotropic mixtures are similar to near-azeotropic mixtures with the exception of having a temperature glide greater than 10° F. Zeotropic mixtures should be charged in the liquid state.

Near Azeotrope - A mixture made up of two or more refrigerants with different boiling points that, when in a totally liquid or vapor state, act as one component. However, when changing from vapor to liquid or liquid to vapor, the individual refrigerants -evaporate or condense at different temperatures. Near-azeotropic mixtures have a temperature glide (see below) of less than 10°F and should be charged in the liquid state to assure proper mixture (non-azeotropic) composition.

Types of Refrigerants	
CFC	Chlorofluorocarbon
CFO	Chlorofluoroolefin
HCFC	Hydrochlorofluorocarbon
HCFO	Hydrochlorofluoroolefin
HFC	Hydrofluorocarbon
HFO	Hydrofluoroolefin
HCC	Hydrochlorocarbon
HCO	Hydrochloroolefin
HC	Hydrocarbon
HO	Hydroolefin (Alkene)
PFC	Perfluorocarbon
PFO	Perfluoroolefin
PCC	Perchlorocarbon
PCO	Perchloroolefin
H	Halon/Haloalkane

Safety Classification of Refrigerants		
Flammability in Air @ 60°C & 101.3 kPa	ASHRAE 34 Safety Group	
Higher Flammability LFL or ETFL ≤ 100 g/m ³ or HOC ≥ 19 MJ/kg	A3	B3
Lower Flammability LFL or ETFL > 100 g/m ³ or HOC < 19 MJ/kg	A2	B2
Lower Flammability LFL or ETFL > 100 g/m ³ or HOC < 19 MJ/kg with a maximum burning velocity of ≤ 10 cm/s	A2L	B2L
No Flame Propagation	A1	B1
Flammability in Air @ 60°C & 101.3 kPa	Lower Toxicity OEL ≥ 400 ppm	Higher Toxicity OEL < 400 ppm
LFL = Lower Flammability Limit ETFL = Elevated Temperature Flame Limit @ 60°C HOC = Heat of Combustion OEL = Occupational exposure limit		

Information from various sources including ASHRAE & Wikipedia