

DESIGNATION OF REFRIGERANTS

Designation of Refrigerant are followed by certain numerals
e.g., R-11, R-12, R-22

Saturated hydrocarbon Refrigerant :

The chemical formula $C_m H_n F_p Cl_q$

The designation of the refrigerant is : **R- (m-1) (n+1) p**

Where $n+p+q = 2m+2$

m = Number of carbon atoms,.

n = Number of hydrogen atoms,

P = Number of fluorine atoms,

q = Number of chlorine atoms.

Unsaturated hydrocarbon Refrigerant :

The chemical formula $C_m H_n F_p Cl_q$

The designation of the refrigerant is : **R- 1 (m-1) (n+ 1) p**

Where $n+p+q = 2m$

Inorganic Refrigerant :

R 700+ molecular Wt.

PROPERTIES OF AN IDEAL REFRIGERANT

refrigerant should possess the following properties:

A. Thermodynamic Properties :

- (i) Low boiling point
- (ii) Low freezing point
- (iii) Positive pressure in evaporator and condenser (close to atm. pressure)
- (iv) High saturation temperature .
- (v) High latent heat of vaporization
- (vi) Enthalpy of vaporization must be large
- (vii) Pressure ratio must be small
- (viii) Low specific volume of vapour
- (ix) Low specific heat

B. Chemical Properties:

- (i) Non-toxicity
- (ii) Non-flammable and non-explosive
- (iii) Non-corrosiveness
- (iv) Chemical stability in reacting

C. Physical Properties

- (i) High thermal conductivity
- (ii) Low viscosity
- (iii) High electrical insulation.
- (iv) Ease of leakage location
- (v) Availability and low cost
- (vi) High C.O.P.
- (vii) Low -power consumption
- (viii) Low pressure ratio and pressure difference

References

Refrigeration and Air conditioning – CP Arora (TMH)

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