Compressibility Factor :-

The perfect gas equation is

$$PV = RT$$

But for real gas, a correction factor has to be introduced in the perfect gas equation to take into account the deviation of the real gas from the perfect gas equation. This factor is known as compressibility factor (z).

$$Z = \frac{PV}{RT}$$

The general compressibility chart is plotted with compressibility factor (z) versus reduced pressured (P_r) for various values of reduced temperature (T_r).

The equation of state for real gas at any state becomes.

$$PV = ZRT$$

Similarly, the equation of state for the same real gas at critical point becomes.

$$P_c V_c = Z_c R T_c .$$