

IMPORTANT FORMULAES

1 To find the Inlet wire

$$D = d \times \sqrt{\frac{E\%}{100}} + 1$$

2 To find the Outlet Wire

$$d = \frac{D}{\sqrt{\frac{E\%}{100}}} + 1$$

3 To find the % Elongation

$$E\% = \left\{ \left(\frac{D}{d} \right)^2 - 1 \right\} \times 100\%$$

4 To find the Area Reduction

$$A\% = \left\{ 1 - \left(\frac{D}{d} \right)^2 \right\} \times 100\%$$

5 Relation between Elongation percentage & Area percentage is

$$E\% = \left(\frac{100 \times E\%}{E + 100\%} \right) \quad \& \quad A\% = \left(\frac{100 \times A\%}{100 - A\%} \right)$$

Where,

D = Inlet Wire.

d = Outlet wire.

E% = Wire Elongation percentage.

A% = Area reduction percentage.

6 To find the profile height parameters:

A Entry = [Blank thickness - (RA + BL + BR)] X 50%

B Approach = [Blank thickness - (RA + BL + BR)] x 10%

C RA = 3 x BL

D Bearing = Size x (25 - 40%)

E Back relief = Bearing x (10 – 15%)

F Exit =[Blank thickness - (RA + BL + BR)] X 40%

Where,

RA – Reduction Angle

BL – Bearing length

BR – Back relief.

7 How to calculate the weight of any casing.

$$W = \left(\frac{\pi d^2 \times L \times \rho}{4000000} \right)$$

Where,

π Mathematical Constant.

d Diameter of the casing.

L Height of the casing

ρ Density of the material used.