

# **CAPACITY CALCULATION OF CONVEYORS:**

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Capacity of conveyance depends essentially on width and speed of belt.

Other major involved factors are:

1. Angle of trough
2. Angle of repose of material
3. Material density
4. Conveyance slope
5. Idler configuration

Besides these factors there are miscellaneous corrections involved due to possible irregularities in material loading.



Dependence of these factors on the capacity can be described in brief as:

**BELT WIDTH:**

Belt width is influenced by loading and transfer point requirements and material lump size.

**BELT SPEED:**

It is also affected by the loading ,transfer point requirements and material lump size.

## **MATERIAL BULK DENSITY AND SURCHARGE ANGLE:**

It is a very important criteria for the capacity of belt conveyors as it directly governs the cross sectional area of the material on the belt and hence the “volume” being conveyed.

For the materials which slump readily e.g dust or fine powder surcharge angle reduces so we may require to increase belt width or speed to require same capacity.

## **INCLINATION ANGLE:**

Angle of inclination changes the belt capacity. Load cross sectional area of an inclined load is reduced and surcharge angle of the material also reduced perpendicular to the belt. Effectively the reduced capacity is usually less than 3%.

## **TROUHING ANGLE:**

Standard trough angle is  $35^\circ$  and generally used between  $20^\circ$  and  $45^\circ$ . Steeper trough angles give increased capacity.

## **IDLER CONFIGURATION:**

Most common configuration for the idler rollers is 3 rolls of equal length. Sometimes 5 idler rollers are used and with unequal length roll are also used.

So roughly the **belt capacity** formula can be given as:

$$T = A \times B \times V$$

T = capacity in tonnes

A = avg. cross sectional area in  $M^2$

B = bulk density in  $T_e/M^3$

V = Speed of belt in  $m/s$



THANK  
YOU