



Flow of Liquids inside Packed Beds Formulas

Calculators!

Examples!

Conversions!

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List of 12 Flow of Liquids inside Packed Beds Formulas

Flow of Liquids inside Packed Beds 🕑



fx
$$\mu = rac{\mathrm{D_o} \cdot \mathrm{U_b} \cdot
ho}{\mathrm{Re_{pb}} \cdot (1 - \in)}$$

ex
$$24.925 ext{Pa*s} = rac{25 ext{m} \cdot 0.05 ext{m/s} \cdot 997 ext{kg/m}^3}{200 \cdot (1 - 0.75)}$$

2) Density of Fluid by Ergun

fx
$$ho = rac{ ext{Re}_{ ext{pb}} \cdot \mu \cdot (1 - \in)}{ ext{D}_{ ext{eff}} \cdot ext{U}_{ ext{b}}}$$

ex
$$997.399 \text{kg/m}^{3} = rac{200 \cdot 24.925 \text{Pa}^{*} \text{s} \cdot (1 - 0.75)}{24.99 \text{m} \cdot 0.05 \text{m/s}}$$

3) Effective Particle Diameter by Ergun given Frication Factor

fx
$$D_{
m eff} = rac{{
m f}_{
m f}\cdot {
m L}_{
m b}\cdot {
m U}_{
m b}^2\cdot (1-\in)}{{
m g}\cdot {
m H}_{
m f}\cdot \in^3}$$
 ,

ex
$$24.79214 \mathrm{m} = rac{1.148 \cdot 1100 \mathrm{m} \cdot \left(0.05 \mathrm{m/s}
ight)^2 \cdot \left(1 - 0.75
ight)}{9.8 \mathrm{m/s^2} \cdot 0.0077 \mathrm{m} \cdot \left(0.75
ight)^3}$$

Open Calculator 🕑

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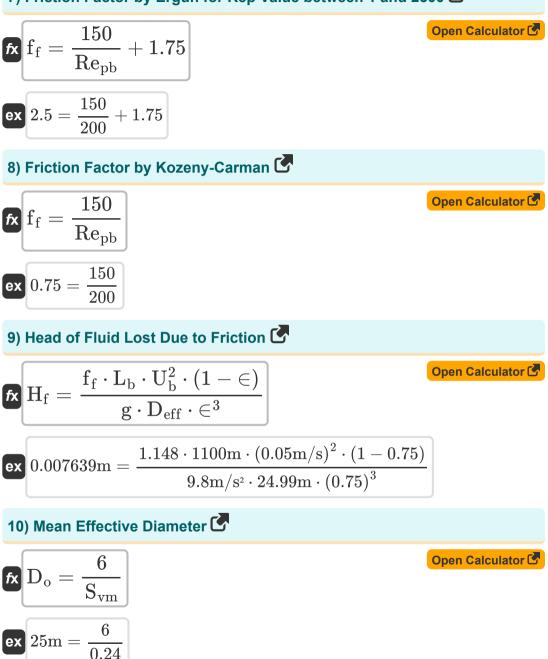
4) Effective Particle Diameter by Ergun given Reynolds Number

$$\begin{split} & \text{Open Calculator } \raspace{1.157162} \\ & \text{Open Calculator } \rasp$$





7) Friction Factor by Ergun for Rep Value between 1 and 2500 🕑







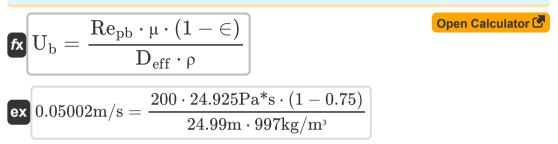
11) Reynolds Number of Packed Beds by Ergun 🕑

fx
$$\operatorname{Re}_{\mathrm{pb}} = \frac{\mathrm{D}_{\mathrm{eff}} \cdot \mathrm{U}_{\mathrm{b}} \cdot \rho}{\mathrm{u} \cdot (1 - \epsilon)}$$

$$e_{\rm pb} = \frac{\mu \cdot (1 - \epsilon)}{\mu \cdot (1 - \epsilon)}$$

ex
$$199.92 = rac{24.99 \mathrm{m} \cdot 0.05 \mathrm{m/s} \cdot 997 \mathrm{kg/m^3}}{24.925 \mathrm{Pa^*s} \cdot (1 - 0.75)}$$

12) Superficial Velocity by Ergun given Reynolds Number 💪



Open Calculator

Variables Used

- ∈ Void Fraction
- Deff Diameter(eff) (Meter)
- **D**o Diameter of Object (Meter)
- **f**_f Factor of Friction
- g Acceleration due to Gravity (Meter per Square Second)
- H_f Head of Fluid (Meter)
- L_b Length of Packaged Bed (Meter)
- Repb Reynolds Number(pb)
- Svm Mean Specific Surface
- U_b Superficial Velocity (Meter per Second)
- µ Absolute Viscosity (Pascal Second)
- **p** Density (Kilogram per Cubic Meter)



Constants, Functions, Measurements used

- Measurement: Length in Meter (m) Length Unit Conversion
- Measurement: Speed in Meter per Second (m/s)
 Speed Unit Conversion
- Measurement: Acceleration in Meter per Square Second (m/s²) Acceleration Unit Conversion
- Measurement: Dynamic Viscosity in Pascal Second (Pa*s)
 Dynamic Viscosity Unit Conversion
- Measurement: Density in Kilogram per Cubic Meter (kg/m³) Density Unit Conversion

Check other formula lists

 Flow of Liquids inside Packed Beds Formulas

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