Important Elastic Packing Formulas PDF

Formulas
Examples
with Units

List of 9
Important Elastic Packing Formulas

1) Diameter of Bolt given Frictional Force exerted by Soft packing on Reciprocating rod Formula

Evaluate Formula

Formula

$$d = \frac{F_{friction}}{.005 \cdot p}$$

Example with Units

$$13.8679\,\text{mm} = \frac{294\,\text{N}}{.005 \cdot 4.24\,\text{MPa}}$$

2) Fluid pressure by soft packing exerted by frictional force on reciprocating rod Formula

Evaluate Formula

Formula

$$p = \frac{F_{friction}}{.005 \cdot d}$$

Example with Units

$$4.2\,\text{MPa} = \frac{294\,\text{N}}{.005 \cdot 14\,\text{mm}}$$

3) Fluid Pressure given Friction Resistance Formula

Evaluate Formula

Formula

$$p = \frac{F_{friction} - F_0}{\mu \cdot A}$$

Example with Units

$$4.202\,\text{MPa} = \frac{294\,\text{N} - 190\,\text{N}}{0.3 \cdot 82.5\,\text{mm}^2}$$

4) Fluid Pressure given Torsional Resistance Formula

Evaluate Formula

Formula

$$p = \frac{M_t \cdot 2}{.005 \cdot (d)^2}$$

Example with Units

$$4.2041\,\text{MPa} = \frac{2.06\,\text{N} \cdot 2}{.005 \cdot (14\,\text{mm})^2}$$

5) Friction resistance Formula

Evaluate Formula

Formula

$$F_{friction} = F_0 + (\mu \cdot A \cdot p)$$

Example with Units

$$294.94\,\text{N} = 190\,\text{N} + (0.3 \cdot 82.5\,\text{mm}^2 \cdot 4.24\,\text{MPa})$$

6) Frictional force exerted by soft packing on reciprocating rod Formula

Evaluate Formula

Formula

$$F_{friction} = .005 \cdot p \cdot d$$

Example with Units

$$296.8\,\text{N} = .005 \cdot 4.24\,\text{MPa} \cdot 14\,\text{mm}$$

7) Seal resistance Formula

Evaluate Formula

Formula

$$F_0 = F_{friction} - (\mu \cdot A \cdot p)$$

Example with Units

$$189.06\,\text{N} = 294\,\text{N} - (0.3 \cdot 82.5\,\text{mm}^2 \cdot 4.24\,\text{MPa})$$

8) Torsional Resistance given Fluid Pressure Formula

Evaluate Formula

Formula

$$M_t = \frac{.005 \cdot (d)^2 \cdot p}{2}$$

Example with Units

$$2.0776\,\text{N} = \frac{.005 \cdot (14\,\text{mm})^2 \cdot 4.24\,\text{MPa}}{2}$$

9) Torsional resistance in rotary motion friction Formula

Evaluate Formula

Formula

$$M_t = \frac{F_{friction} \cdot d}{2}$$

Example with Units

$$2.058\,\text{N} = \frac{294\,\text{N} \cdot 14\,\text{mm}}{2}$$

Variables used in list of Elastic Packing Formulas above

- **A** Area of Seal Contacting Sliding Member *(Square Millimeter)*
- **d** Diameter of Elastic Packing Bolt *(Millimeter)*
- F_0 Seal Resistance *(Newton)*
- $F_{friction}$ Friction Force in Elastic Packing *(Newton)*
- M_t Torsional Resistance in Elastic Packing *(Newton)*
- **p** Fluid Pressure in Elastic Packing *(Megapascal)*
- **μ** Coefficient of Friction in Elastic Packing

Constants, Functions, Measurements used in list of Elastic Packing Formulas above

- Measurement: **Length** in Millimeter (mm)
  Length Unit Conversion
- Measurement: **Area** in Square Millimeter (mm²)
  Area Unit Conversion
- Measurement: **Pressure** in Megapascal (MPa)
  Pressure Unit Conversion
- Measurement: **Force** in Newton (N)
  Force Unit Conversion

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