calculatoratoz.com

unitsconverters.com

Stiffness Formulas

Calculators!   **Examples!**   **Conversions!**

Bookmark **calculatoratoz.com**, **unitsconverters.com**

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

Please leave your feedback here...

List of 10 Stiffness Formulas

Stiffness 📤

1) Diameter of Spring Wire or Coil given Stiffness of Spring 📤

Open Calculator 📤

fx $$d = \left(\frac{64 \cdot K \cdot R^3 \cdot N}{G_{Torsion}} \right)^{\frac{1}{4}}$$

ex $$45mm = \left(\frac{64 \cdot 25N/mm \cdot (225mm)^3 \cdot 9}{40GPa} \right)^{\frac{1}{4}}$$

2) Mean Radius of Spring given Stiffness of Spring 📤

Open Calculator 📤

fx $$R = \left(\frac{G_{Torsion} \cdot d^4}{64 \cdot K \cdot N} \right)^{\frac{1}{3}}$$

ex $$225mm = \left(\frac{40GPa \cdot (45mm)^4}{64 \cdot 25N/mm \cdot 9} \right)^{\frac{1}{3}}$$

3) Modulus of Rigidity given Stiffness of Spring ⎘

Open Calculator ⎘

fx $\boxed{G_{\text{Torsion}} = \dfrac{64 \cdot K \cdot R^3 \cdot N}{d^4}}$

ex $\boxed{40\text{GPa} = \dfrac{64 \cdot 25\text{N/mm} \cdot (225\text{mm})^3 \cdot 9}{(45\text{mm})^4}}$

4) Number of Spring Coils given Stiffness of Spring ⎘

Open Calculator ⎘

fx $\boxed{N = \dfrac{G_{\text{Torsion}} \cdot d^4}{64 \cdot R^3 \cdot K}}$

ex $\boxed{9 = \dfrac{40\text{GPa} \cdot (45\text{mm})^4}{64 \cdot (225\text{mm})^3 \cdot 25\text{N/mm}}}$

5) Stiffness of Spring ⎘

Open Calculator ⎘

fx $\boxed{K = \dfrac{G_{\text{Torsion}} \cdot d^4}{64 \cdot R^3 \cdot N}}$

ex $\boxed{25\text{N/mm} = \dfrac{40\text{GPa} \cdot (45\text{mm})^4}{64 \cdot (225\text{mm})^3 \cdot 9}}$

Square Section Wire 🖝

6) Mean Radius given Stiffness of Square Section Wire Spring 🖝

Open Calculator 🖝

$$fx \quad R_{sq} = \left(\frac{G_{Torsion} \cdot d^4}{44.7 \cdot N \cdot K} \right)^{\frac{1}{3}}$$

$$ex \quad 253.5946mm = \left(\frac{40GPa \cdot (45mm)^4}{44.7 \cdot 9 \cdot 25N/mm} \right)^{\frac{1}{3}}$$

7) Modulus of Rigidity given Stiffness of Square Section Wire Spring 🖝

Open Calculator 🖝

$$fx \quad G_{sq} = \frac{K \cdot 44.7 \cdot R^3 \cdot N}{d^4}$$

$$ex \quad 27.9375GPa = \frac{25N/mm \cdot 44.7 \cdot (225mm)^3 \cdot 9}{(45mm)^4}$$

8) Number of Spring Coils given Stiffness of Square Section Wire Spring 🖝

Open Calculator 🖝

$$fx \quad N_{sq} = \frac{G_{Torsion} \cdot d^4}{44.7 \cdot R^3 \cdot K}$$

$$ex \quad 12.88591 = \frac{40GPa \cdot (45mm)^4}{44.7 \cdot (225mm)^3 \cdot 25N/mm}$$

9) Stiffness of Square Section Wire Spring ⌕

Open Calculator ⌕

$$fx \quad K_{sq} = \frac{G_{Torsion} \cdot d^4}{44.7 \cdot R^3 \cdot N}$$

$$ex \quad 35.79418 \text{N/mm} = \frac{40 \text{GPa} \cdot (45 \text{mm})^4}{44.7 \cdot (225 \text{mm})^3 \cdot 9}$$

10) Width given Stiffness of Square Section Wire Spring ⌕

Open Calculator ⌕

$$fx \quad w_{sq} = \left(\frac{K \cdot 44.7 \cdot R^3 \cdot N}{G_{Torsion}} \right)^{\frac{1}{4}}$$

$$ex \quad 41.13812 \text{mm} = \left(\frac{25 \text{N/mm} \cdot 44.7 \cdot (225 \text{mm})^3 \cdot 9}{40 \text{GPa}} \right)^{\frac{1}{4}}$$

Variables Used

- **d** Diameter of Spring *(Millimeter)*
- **G_{sq}** Modulus of Rigidity of Square Section Wire Spring *(Gigapascal)*
- **$G_{Torsion}$** Modulus of Rigidity *(Gigapascal)*
- **K** Stiffness of Spring *(Newton per Millimeter)*
- **K_{sq}** Stiffness of Square Section Wire Spring *(Newton per Millimeter)*
- **N** Number of Coils
- **N_{sq}** Number of Spring Coils of Sq. Sec. Wire Spring
- **R** Mean Radius *(Millimeter)*
- **R_{sq}** Mean Radius of Square Section Wire Spring *(Millimeter)*
- **w_{sq}** Width of Square Section Wire Spring *(Millimeter)*

Constants, Functions, Measurements used

- Measurement: **Length** in Millimeter (mm)
  Length Unit Conversion 🔗
- Measurement: **Pressure** in Gigapascal (GPa)
  Pressure Unit Conversion 🔗
- Measurement: **Stiffness Constant** in Newton per Millimeter (N/mm)
  Stiffness Constant Unit Conversion 🔗

Check other formula lists

- **Deflection in Spring Formulas** ↗
- **Maximum Bending Stress in Spring Formulas** ↗
- **Proof Load on Spring Formulas** ↗
- **Stiffness Formulas** ↗

Feel free to SHARE this document with your friends!

PDF Available in

English Spanish French German Russian Italian Portuguese Polish Dutch

7/18/2024 | 5:06:36 AM UTC   *Please leave your feedback here...*