Important Maximum Bending Stress in Spring Formulas PDF



Formula	Example with Units	
$t = \frac{f_{proof load} \cdot L^2}{4 \cdot E \cdot \delta}$	$460.2944\text{mm}\ = \frac{7.2\text{MPa}\cdot4170\text{mm}^2}{4\cdot20000\text{MPa}\cdot3.4\text{mm}}$	





2.1) Length given Maximum Bending Stress of Leaf Spring Formula 🕝





$2 \cdot f_{\text{leaf spring}} \cdot n \cdot b \cdot t^2$	2	$85.0054_{\text{N}} = \frac{2 \cdot 1047_{\text{Pa}} \cdot 8 \cdot 300_{\text{mm}} \cdot 460_{\text{mm}}}{2}$
$W_{load} = \frac{3 \cdot L}{3 \cdot L}$		





2.4) Number of Plates given Maximum Bending Stress of Leaf Spring Formula 🕝

FormulaExample with UnitsEvaluate Formula $n = \frac{3 \cdot W_{load} \cdot L}{2 \cdot f_{leaf spring} \cdot b \cdot t^2}$ $7.9995 = \frac{3 \cdot 85 \, \text{N} \cdot 4170 \, \text{mm}}{2 \cdot 1047 \, \text{Pa} \cdot 300 \, \text{mm} \cdot 460 \, \text{mm}^2}$

2.5) Thickness given Maximum Bending Stress of Leaf Spring Formula 🕝



2.6) Width given Maximum Bending Stress of Leaf Spring Formula



Evaluate Formula 🦳

3) Quarter Elliptical Springs Formulas 🕝

3.1) Length given Maximum Bending Stress in Quarter Elliptical Spring Formula 🕝

FormulaExample with UnitsEvaluate Formula
$$L = \frac{f_{elliptical spring} \cdot n \cdot b \cdot t^2}{6 \cdot W_{load}}$$
 $4169.9997 \, \text{mm} = \frac{4187.736 \, \text{Pa} \cdot 8 \cdot 300 \, \text{mm} \cdot 460 \, \text{mm}^2}{6 \cdot 85 \, \text{N}}$

3.2) Load given Maximum Bending Stress in Quarter Elliptical Spring Formula 🕝

FormulaExample with UnitsEvaluate Formula
$$W_{\text{load}} = \frac{f_{\text{elliptical spring}} \cdot n \cdot b \cdot t^2}{6 \cdot L}$$
 $85_{\text{N}} = \frac{4187.736 \, \text{Pa} \cdot 8 \cdot 300 \, \text{mm} \cdot 460 \, \text{mm}^2}{6 \cdot 4170 \, \text{mm}}$

3.3) Maximum Bending Stress in Quarter Elliptical Spring Formula 🕝



3.4) Number of Plates given Maximum Bending Stress in Quarter Elliptical Spring Formula 🕝



3.5) Thickness given Maximum Bending Stress in Quarter Elliptical Spring Formula 🕝 👘



3.6) Width given Maximum Bending Stress in Quarter Elliptical Spring Formula 🕝 👘





Evaluate Formula 🦳

Evaluate Formula

Variables used in list of Maximum Bending Stress in Spring Formulas above

- b Width of Cross Section (Millimeter)
- E Young's Modulus (Megapascal)
- **f**elliptical spring Maximum Bending Stress in Elliptical Spring (*Pascal*)
- fleaf spring Maximum Bending Stress in Leaf Spring (Pascal)
- fproof load Maximum Bending Stress at Proof Load (Megapascal)
- L Length in Spring (Millimeter)
- n Number of Plates
- t Thickness of Section (Millimeter)
- Wload Spring Load (Newton)
- δ Deflection of Spring (Millimeter)

Constants, Functions, Measurements used in list of Maximum Bending Stress in Spring Formulas above

- Functions: sqrt, sqrt(Number) A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.
- Measurement: Length in Millimeter (mm) Length Unit Conversion
- Measurement: Force in Newton (N) Force Unit Conversion
- Measurement: Stress in Megapascal (MPa), Pascal (Pa) Stress Unit Conversion



- Important Deflection in Spring
 Formulas
- Important Proof Load on Spring
 Formulas
- Important Maximum Bending Stress in Spring Formulas I I

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