

$$N_{\text{tour}} := 9000 \cdot \frac{1}{\text{min}}$$

$$\text{Fonteblanche} := 7500 \cdot \frac{\text{kg}}{\text{m}^3}$$

$$\text{Fonteblanche} = 7.5 \times 10^3 \frac{\text{kg}}{\text{m}^3}$$

$$\omega := \frac{\pi \cdot N_{\text{tour}}}{30}$$

$$\text{Dext} := .220 \cdot \text{m}$$

$$\text{Rayon} := \frac{\text{Dext}}{2}$$

$$\omega = 15.708 \frac{\text{rad}}{\text{sec}}$$

$$\text{Dint} := .200 \cdot \text{m}$$

$$\text{Rayon} = 0.11 \text{ m}$$

$$\text{Long} := .050 \cdot \text{m}$$

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$$V_{\text{tangentielle}} := \text{Rayon} \cdot \omega$$

$$V_{\text{tangentielle}} = 1.728 \frac{\text{m}}{\text{s}}$$

$$\text{Volume} := \frac{\pi (\text{Dext} - \text{Dint})^2}{4} \cdot \text{Long}$$

$$\text{Masse} := \text{Fonteblanche} \cdot \text{Volume}$$

$$\text{Volume} = 1.571 \times 10^{-5} \text{ m}^3$$

$$\text{Masse} = 0.118 \text{ kg}$$

$$\text{Force} := \text{Masse} \cdot \omega^2 \cdot \text{Rayon}$$

$$\text{Force} = 3.198 \text{ N}$$

$$\text{Efonte} := 10 \text{ GPa} \quad \text{Efonte} = 1 \times 10^{10} \text{ Pa}$$

$$g = 9.807 \frac{\text{m}}{\text{s}^2}$$

$$\text{Tension} := \text{Fonteblanche} \cdot V_{\text{tangentielle}}^2$$

$$\text{Tension} = 0.022 \frac{\text{N}}{\text{mm}^2}$$

$$\text{Elongation} := \frac{\text{Fonteblanche} \cdot V_{\text{tangentielle}}^2 \cdot \text{Rayon}}{\text{Efonte}}$$

$$\text{Elongation} = 2.463 \times 10^{-7} \text{ m}$$