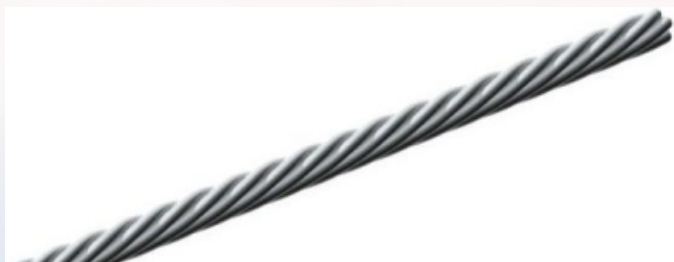


钢丝绳强度计算



锚链、钢丝绳和起重吊具的强度计算

D型钢丝绳 6x19-23.5-170受拉力50kN, 6x37-32.5-190 受拉力100kN,问哪根钢丝绳拉应力大, 如取安全系数 $n=6$, 试校核其强度。



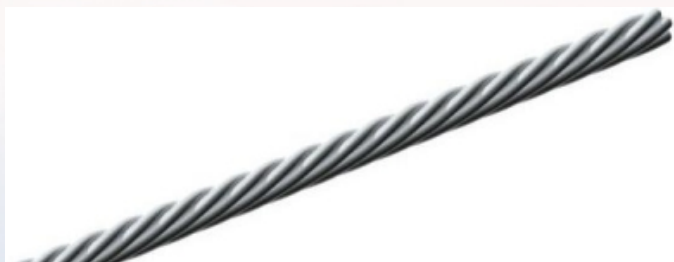
两根钢丝绳的面积分别为:

$$A_1 = 201.44\text{mm}^2, A_2 = 392.27\text{mm}^2$$



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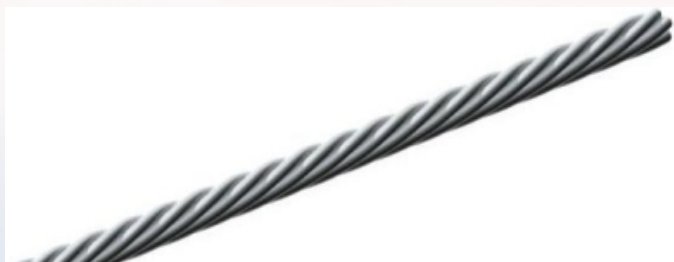
$$\sigma_1 = \frac{N_1}{A_1} = \frac{P_1}{A_1} = \frac{50 \times 10^3}{201.44 \times 10^{-6}} \text{ MPa} = 248.2 \text{ MPa}$$

$$\sigma_2 = \frac{N_2}{A_2} = \frac{P_2}{A_2} = \frac{100 \times 10^3}{392.27 \times 10^{-6}} \text{ MPa} = 255.0 \text{ MPa}$$



锚链、钢丝绳和起重吊具的强度计算

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$$[\sigma_1] = \frac{\sigma_b \varphi_1}{n} = \frac{170 \times 9.8 \times 0.86}{6} \text{MPa} = 238.8 \text{MPa}$$

$$[\sigma_2] = \frac{\sigma_b \varphi_{12}}{n} = \frac{190 \times 9.8 \times 0.82}{6} \text{MPa} = 255.0 \text{MPa}$$

