



SILA POTISKA

ZADACI

PRVI DEO

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1. Težina tela u vazduhu je 30N, a u tečnosti 17N. Kolika sila potiska deluje na telo dok je u tečnosti?

$$Q_V = 30N$$

$$Q_T = 17N$$

$$F_p = ?$$

$$F_p = Q_V - Q_T$$

$$F_p = 30N - 17N$$

$$F_p = 13N$$

2. Kuglica zapremine 500 cm^3 potpuno je potopljena u vodu. Kolika sila potiska deluje na kuglicu?

$$V_p = V = 500 \text{ cm}^3 = 500 : 1\,000\,000 \text{ m}^3 = 0,0005 \text{ m}^3$$

$$\rho_0 = 1000 \frac{\text{kg}}{\text{m}^3}$$

$$F_p = ?$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$F_p = 1000 \frac{\cancel{\text{kg}}}{\text{m}^3} \cdot 10 \frac{\text{N}}{\cancel{\text{kg}}} \cdot 0,0005 \text{ m}^3$$

$$F_p = 5 \text{ N}$$

3. Kolika sila potiska deluje na telo zapremine 20 dm^3 potpuno potopljeno u ulju? Gustina ulja je $0,92 \frac{\text{g}}{\text{cm}^3}$.

$$V_p = V = 20 \text{ dm}^3 = 20 : 1\,000 \text{ m}^3 = 0,02 \text{ m}^3$$

$$\rho_0 = 0,92 \frac{\text{g}}{\text{cm}^3} = 920 \frac{\text{kg}}{\text{m}^3}$$

$$F_p = ?$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$F_p = 920 \frac{\cancel{\text{kg}}}{\text{m}^3} \cdot 10 \frac{\text{N}}{\cancel{\text{kg}}} \cdot 0,02 \cancel{\text{m}^3}$$

$$F_p = 184 \text{ N}$$

4. Boca zapremine 2 l potpuno je potopljena u vodu. Za koliko je boca lakša u vodi nego u vazduhu?

$$V_p = V = 2 \text{ l} = 2 \text{ dm}^3 = 2 : 1\,000 \text{ m}^3 = 0,002 \text{ m}^3$$

$$\rho_0 = 1000 \frac{\text{kg}}{\text{m}^3}$$

$$F_p = ?$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$F_p = 1000 \frac{\cancel{\text{kg}}}{\text{m}^3} \cdot 10 \frac{\text{N}}{\cancel{\text{kg}}} \cdot 0,002 \cancel{\text{m}^3}$$

$$F_p = 20 \text{ N}$$

5. Kolika sila potiska deluje na telo mase 99 g i gustine $1,1\frac{\text{g}}{\text{cm}^3}$ u vodi?

$$\left. \begin{aligned} m &= 99\text{g} = 99 : 1000\text{ kg} = 0,099\text{ kg} \\ \rho &= 1,1\frac{\text{g}}{\text{cm}^3} = 1100\frac{\text{kg}}{\text{m}^3} \end{aligned} \right\} V = \frac{m}{\rho} = \frac{0,099\text{ kg}}{1100\frac{\text{kg}}{\text{m}^3}} = 0,00009\text{m}^3$$

$$\rho_0 = 1000\frac{\text{kg}}{\text{m}^3}$$

$$F_p = ?$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$F_p = 1000\frac{\text{kg}}{\text{m}^3} \cdot 10\frac{\text{N}}{\text{kg}} \cdot 0,00009\text{m}^3$$

$$F_p = 0,9\text{ N}$$



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Sila potiska zadaci

6. Odredi gustinu tečnosti u koju je uronjeno telo zapremine 200 cm^3 ako na njega deluje sila potiska 1500 mN .

$$F_p = 1500 \text{ mN} = 1,5 \text{ N}$$

$$V = 200 \text{ cm}^3 = 200 : 1\,000\,000 \text{ m}^3 = 0,0002 \text{ m}^3$$

$$\rho_0 = ?$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$\rho_0 = \frac{F_p}{g \cdot V_p}$$

$$\rho_0 = \frac{1,5 \text{ N}}{10 \frac{\text{N}}{\text{kg}} \cdot 0,0002 \text{ m}^3}$$

$$\rho_0 = \frac{1,5 \text{ kg}}{0,002 \text{ m}^3}$$

$$\rho_0 = 750 \frac{\text{kg}}{\text{m}^3}$$

7. Na ronionca ispod površine morske vode deluje sila potiska 5150 N. Kolika je zapremina ronionca ako je gustina morske vodie $1030 \frac{kg}{m^3}$?

$$F_p = 5150 N$$

$$\rho_0 = 1030 \frac{kg}{m^3}$$

$$V = ?$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$V_p = \frac{F_p}{g \cdot \rho_0}$$

$$V_p = \frac{5150 N}{10 \frac{N}{kg} \cdot 1030 \frac{kg}{m^3}}$$

$$V_p = \frac{5150}{10300} m^3$$

$$V_p = 0,5 m^3$$

8. Kockica ivice 10 cm nalazi se u sudu sa vodom tako da je potopljeno $\frac{2}{5}$ njene zapremine. Kolika sila potiska deluje na kockicu?

$$a = 10\text{cm} = 10 : 100\text{ m} = 0,1\text{ m}$$
$$V = a \cdot a \cdot a$$
$$V = 0,1\text{ m} \cdot 0,1\text{ m} \cdot 0,1\text{ m}$$

$$\rho_0 = 1000 \frac{\text{kg}}{\text{m}^3}$$
$$V = 0,001\text{m}^3$$

$$V_p = \frac{2}{5}V \longrightarrow V_p = \frac{2}{5}V$$

$$F_p = ?$$
$$V_p = \frac{2}{5}0,001\text{m}^3$$

$$V_p = 0,0004\text{m}^3$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$F_p = 1000 \frac{\cancel{\text{kg}}}{\text{m}^3} \cdot 10 \frac{\text{N}}{\cancel{\text{kg}}} \cdot 0,0004\cancel{\text{m}}^3$$

$$F_p = 4\text{ N}$$

Sila potiska zadaci

9. Na telo oblika kvadra potpuno potopljeno u tečnost deluje sila potiska 250N. Dimenzije tela su 2 dm, 0,5 dm i 4 dm. Kolika je gustina tečnosti?

$$a = 2 \text{ dm} = 2 : 10 \text{ m} = 0,2 \text{ m}$$

$$b = 0,5 \text{ dm} = 0,5 : 10 \text{ m} = 0,05 \text{ m}$$

$$c = 4 \text{ dm} = 4 : 10 \text{ m} = 0,4 \text{ m}$$

$$F_p = 250 \text{ N}$$

$$\rho_0 = ?$$

$$V = a \cdot b \cdot c$$

$$V = 0,2 \text{ m} \cdot 0,05 \text{ m} \cdot 0,4 \text{ m}$$

$$V = 0,004 \text{ m}^3$$

$$V_p = V = 0,004 \text{ m}^3$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$\rho_0 = \frac{F_p}{g \cdot V_p}$$

$$\rho_0 = \frac{250 \text{ N}}{10 \frac{\text{N}}{\text{kg}} \cdot 0,004 \text{ m}^3}$$

$$\rho_0 = \frac{250 \text{ kg}}{0,04 \text{ m}^3}$$

$$\rho_0 = 6250 \frac{\text{kg}}{\text{m}^3}$$



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TREĆI DEO

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10. Težina kuglice i vazduhu je 5N, a kada je potpuno potopljena u vodi 3N. Kolika je gustima kuglice?

$$Q_V = 5N \quad \rightarrow \quad m = \frac{Q_V}{g} = \frac{5N}{10 \frac{N}{kg}} = 0,5kg$$

$$Q_T = 3N$$

$$\rho_0 = 1000 \frac{kg}{m^3}$$

$$\rho = ?$$

$$F_p = Q_V - Q_T$$

$$F_p = 5N - 3N$$

$$F_p = 2N$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$V_p = \frac{F_p}{g \cdot \rho_0}$$

$$V_p = \frac{2N}{10 \frac{N}{kg} \cdot 1000 \frac{kg}{m^3}}$$

$$V_p = \frac{2}{10\,000} m^3$$

$$V_p = 0,0002m^3$$

$$V = V_p = 0,0002m^3$$

$$\rho = \frac{m}{V}$$

$$\rho = \frac{0,5kg}{0,0002m^3}$$

$$\rho = 2500 \frac{kg}{m^3}$$

11. Masa kockice je 250 kg. Kolika je težina kockice u vazduhu, a kolika težina u vodi? Gustina materijala od koga je napravljena kockica je $2500 \frac{kg}{m^3}$.

$$m = 250kg \quad \rightarrow \quad Q_V = m \cdot g = 250kg \cdot 10 \frac{N}{kg} = 2500N$$

$$\rho_0 = 1000 \frac{kg}{m^3}$$

$$\rho = 2500 \frac{kg}{m^3}$$

$$V = V_p = \frac{m}{\rho} = \frac{250kg}{2500 \frac{kg}{m^3}} = 0,1m^3$$

$$Q_V = ?$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$Q_T = ?$$

$$F_p = 1000 \frac{kg}{m^3} \cdot 10 \frac{N}{kg} \cdot 0,1m^3$$

$$F_p = 1000 N$$

$$F_p = Q_V - Q_T$$

$$Q_T = Q_V - F_p$$

$$Q_T = 2500N - 1000N$$

$$Q_T = 1500N$$

12. Telo mase 500 kg lebdi u vodi. Izračunaj zapreminu tela. Kolika je gustina tela? Kolika je težina tela u vodi?

$$m = 500kg \quad \longrightarrow \quad Q_V = m \cdot g = 500kg \cdot 10 \frac{N}{kg} = 5000N$$

$$\rho_0 = 1000 \frac{kg}{m^3} \quad F_p = Q_V = 5000N$$

$$F_p = \rho_0 \cdot g \cdot V_p$$

$$F_p = Q_V - Q_T$$

$$F_p = Q_V$$

$$V_p = \frac{F_p}{g \cdot \rho_0}$$

$$Q_T = Q_V - F_p$$

$$V = ?$$

$$V_p = \frac{5000N}{10 \frac{N}{kg} \cdot 1000 \frac{kg}{m^3}}$$

$$Q_T = 5000N - 5000N$$

$$\rho = ?$$

$$Q_T = 0N$$

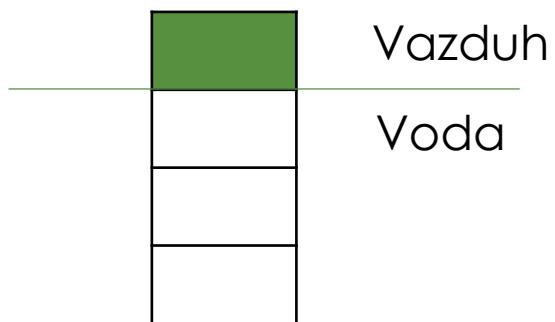
$$Q_T = ?$$

$$V_p = \frac{5000}{10\,000} m^3$$

$$V_p = 0,5m^3$$

$$\rho = \rho_0 = 1000 \frac{kg}{m^3}$$

13. Telo pliva u vodi tako da se $\frac{1}{4}$ njegove zapremine nalazi van vode. Izračunaj gustinu tela.



$$V_p = \frac{3}{4}V$$

$$\rho_0 = 1000 \frac{kg}{m^3}$$

$$\rho = ?$$

$$Q_V = F_p$$

$$Q_V = F_p$$

$$m \cdot g = \rho_0 \cdot g \cdot V_p$$

$$m = \rho_0 \cdot V_p$$

$$\rho \cdot V = \rho_0 \cdot \frac{3}{4}V$$

$$\rho = \rho_0 \cdot \frac{3}{4}$$

$$\rho = 1000 \frac{kg}{m^3} \cdot \frac{3}{4}$$

$$\rho = 750 \frac{kg}{m^3}$$