

Se prepara 600 g solutie de HNO₃ de c=60% din 80 g solutie HNO₃ de c=50% si cantitatile corespunzatoare de solutii de c=30%, respectiv c=65%. Calculati:

a. Care este masa solutiei HNO₃ de c=30%;

b. Care este masa solutie HNO₃ de c=65%;

c. In ce raport se amestecă solutiile HNO₃ 30%:HNO₃ 50%:HNO₃65% = ?

Notam:

m_{s1} = masa sol de conc 50% (80 g),

m_{s2} = masa sol de conc 30%

m_{s3} = masa sol de conc 65%

Din formula concentratiei procentuale:

$$c = \frac{m_d}{m_s} \cdot 100 \text{ rezulta } m_{d1} = \frac{c_1 \cdot m_{s1}}{100} = \frac{50 \cdot 80}{100} = 40 \text{gHNO}_3 \text{ din prima solutie}$$

$$m_{d2} = \frac{30m_{s2}}{100} = 0,3m_{s2}$$

$$m_{d3} = 0,65m_{s3}$$

$$c_f = \frac{m_{d1} + m_{d2} + m_{d3}}{m_{s1} + m_{s2} + m_{s3}} \cdot 100 = \frac{40 + 0,3m_{s2} + 0,65m_{s3}}{80 + m_{s2} + m_{s3}} \cdot 100 = 60$$

$$100(40 + 0,3m_{s2} + 0,65m_{s3}) = 60(80 + m_{s2} + m_{s3})$$

$$4000 + 30m_{s2} + 65m_{s3} = 4800 + 60m_{s2} + 60m_{s3}$$

$$5 m_{s3} - 30 m_{s2} = 800 / :5$$

$$\mathbf{m_{s3} - 6 m_{s2} = 160} \text{ (ecuatia 1)}$$

$$\text{Din } m_{s1} + m_{s2} + m_{s3} = 600 \text{ rezulta } m_{s2} + m_{s3} = 600 - 80 = 520$$

$$\mathbf{m_{s2} + m_{s3} = 520} \text{ (ecuatia 2)}$$

Scadem ecuatia 1 din 2 si vom avea $7 m_{s2} = 360$, deci $\mathbf{m_{s2} = 51,42 \text{ g HNO}_3 \text{ de conc } 30\%}$.

Inlocuind in prima ecuatie $\mathbf{m_{s3} = 468,57}$

$$\mathbf{m_{s2} : m_{s1} : m_{s3} = 51,42 : 80 : 468,57 = 1 : 1,55 : 9,11}$$