

**Question:**

Calculate the molarity of a 30% by mass NH<sub>3</sub> solution. The density of the solution is 0.982 g/mL.

**Solution:**

$$C_M(\text{NH}_3) = n(\text{NH}_3)/V(\text{solution})$$

In 1 L of 30% by mass NH<sub>3</sub> solution, are  $0,3 * (0.982 \text{ g/mL} * 1000 \text{ ml}) = 294.6 \text{ g}$  of NH<sub>3</sub>. In moles it will be  $294.6 \text{ g} / 17 \text{ g/mol} = 17.33 \text{ mol}$ .

$$C_M(\text{NH}_3) = 17.33 \text{ mol} / 1 \text{ L} = 17.33 \text{ mol/L}$$

**Answer:**

Molarity of a 30% by mass NH<sub>3</sub> solution is 17.33 mol/L.

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