

The density of a 19.75% ammonium sulfate solution is 1.13g/ml. What volume of the solution contains 204.6g of ammonium sulfate?

Solution:

According to mass fraction formula:

$$\omega(\text{ammonium sulfate}) = \frac{m(\text{ammonium sulfate})}{m(\text{solution})} = \frac{m(\text{ammonium sulfate})}{\rho(\text{solution}) * V(\text{solution})}$$

We can express volume variable from an equation, mentioned above:

$$V(\text{solution}) = \frac{m(\text{ammonium sulfate})}{\rho(\text{solution}) * \omega} = \frac{204.6 \text{ g}}{1.13 \frac{\text{g}}{\text{ml}} * 0.1975} = 916.77 \text{ ml}$$

Answer:

Volume of ammonium sulfate solution, equal to 916.77 ml, contains 204.6 g of ammonium sulfate.

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