

Answer on Question #71290, Chemistry / General Chemistry

If 150ml of 0.35M barium chloride is reacted with 150ml of 0.4M sodium sulphate.

- Write the balanced chemical equation.
- Determine the limiting reagent.
- What mass of precipitate could form?

Solution



1 mole of barium chloride requires 1 mole of sodium sulphate for the reaction

Determine what amounts of compounds react with each other.

$$v(\text{BaCl}_2) = 0.15 \times 0.35 = 0,0525 \text{ (mole)}$$

$$v(\text{Na}_2\text{SO}_4) = 0.15 \times 0.4 = 0.06 \text{ (mole)}$$

The amount of sodium sulphate is more than the one of barium chloride. That's why **barium chloride is the limiting reagent.**

BaSO₄ is precipitate. 1 mole of BaSO₄ is formed from 1 mole of BaCl₂. Thus 0.0525 mole of BaSO₄ is formed from the amount of BaCl₂ given. Molar mass of BaSO₄ is 233 g/mole.

$$m(\text{BaSO}_4) = 233 \times 0.0525 = \mathbf{12.23 \text{ (g)}}.$$

Answer

Barium chloride is the limiting reagent. **12.23 g** of precipitate could form.

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