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Chapter:- 3. ATOMS AND MOLECULES.

CLASS:- IXth

SUBTEACHER:-VIKASH KR. RAJAK

SUBJECT:-CHEMISTRY

DATE :-26/05/2020

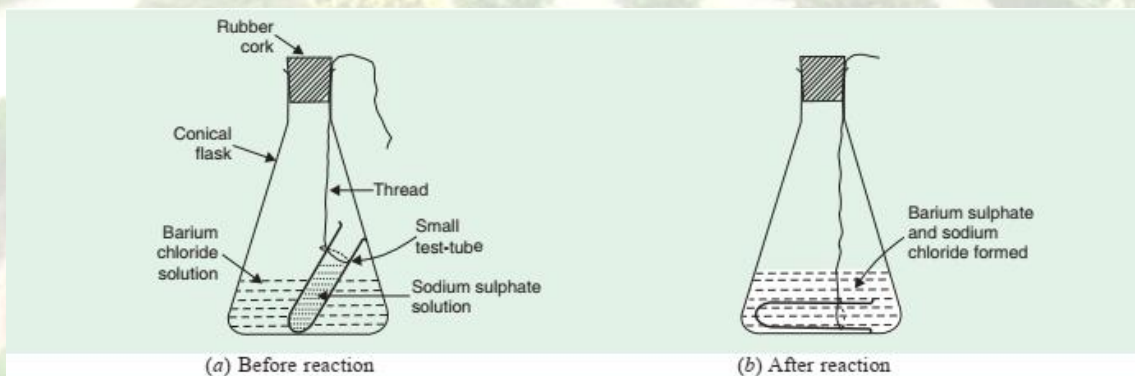


Topic:- Laws of Conservation of Mass.

➤ Experiment to Verify Law of Conservation of Mass:-

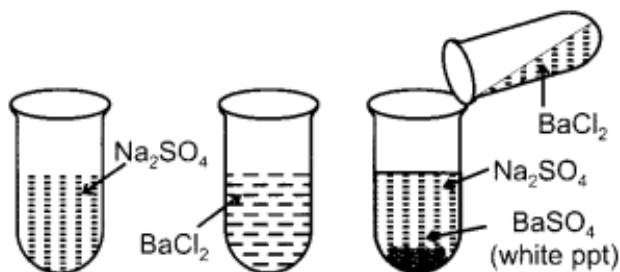
Take a clean conical flask fitted with a rubber cork, and a small test-tube having a long thread tied to its neck. All these things are weighed together on a sensitive balance to find the initial mass of this apparatus.

- i. Take some barium chloride solution in the conical flask. Put some sodium sulphate solution in the small test-tube and lower it carefully in the conical flask by holding from the free end of thread tied to its neck. Fix a rubber cork in the mouth of the flask so that it holds the thread firmly. The mouth of the small test-tube should remain above the liquid level in the flask so that the reactants do not get mixed at this stage. Find the mass of the apparatus along with reactants by weighing on the balance. If we subtract the initial mass of apparatus from this mass, we will get the mass of reactants. Let the mass of reactants be x .

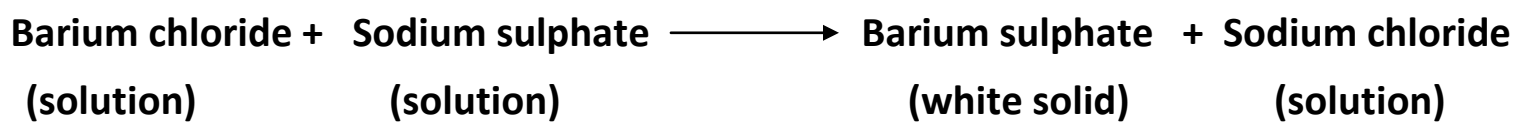


- ii. Remove the rubber cork from the mouth of conical flask for a moment so that the thread becomes loose. The small test-tube containing sodium sulphate solution now drops in the flask due to which sodium sulphate solution mixes with barium chloride solution. Now, barium chloride solution reacts with sodium sulphate solution to form a white precipitate of barium sulphate, and sodium chloride solution. We again find the mass of the apparatus alongwith products by weighing on a balance. If we subtract the initial mass of the apparatus from this mass, we will get the mass of

products. Suppose the mass of products is y , now, if the mass of products (y) is equal to the mass of reactants (x), then this experiment verifies the law of conservation of mass.



☞ **Experiment:-** The chemical reaction taking place in the above experiment can be written as:



In an experiment to verify the law of conservation of mass, the following data was obtained :

- (i) Mass of barium chloride taken = 20.8 g
- (ii) Mass of sodium sulphate taken = 14.2 g
- (iii) Mass of barium sulphate formed = 23.3 g
- (iv) Mass of sodium chloride formed = 11.7 g

In this case, barium chloride and sodium sulphate are reactants.

$$\text{So, Mass of reactants} = 20.8 \text{ g} + 14.2 \text{ g} = 35.0 \text{ g} \dots\dots\dots (1)$$

Here, barium sulphate and sodium chloride are products.

$$\text{So, Mass of products} = 23.3 \text{ g} + 11.7 \text{ g} = 35.0 \text{ g} \dots\dots\dots (2)$$

Since the total mass of products (35 g) in this chemical reaction is equal to the total mass of reactants.

☞ **Home Work**

Answer the following questions:-

1. Give the differences between true solution, colloidal solution and suspension?
2. Give two applications of centrifugation
3. What is Tyndall effect?
4. What is meant by chromatography?
5. Why a mixture is an impure substance