

SENIOR SECTION
DEPARTMENT OF CHEMISTRY
CLASS IX
LAB SHEET - VI

LAW OF CONSERVATION OF MASS

Experiment No: ...6.....

Date:

Objective: To prove the law of conservation of mass in a chemical reaction.

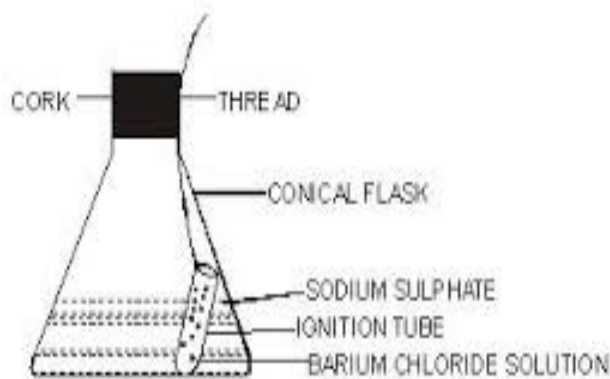
Requirements: Conical flask, test tubes, barium chloride, sodium sulphate, cork, spring balance

Theory :

- According to law of conservation of mass, mass can neither be created nor destroyed in a chemical reaction.
- Total mass of reactants = Total mass of the products

Procedure:

- Prepare 5% solutions of barium chloride and sodium sulphate.
- Take 2ml of barium chloride solution in the conical flask and 2ml of sodium sulphate solution in the test tube.
- Suspend the test tube with sodium sulphate in the flask with the thread and cork as shown in the figure



- Weigh the complete system.
- Now loosen the cork so that the solution in the test tube mixes with the solution in the conical flask.
- Again weigh the complete system.
- Find the difference between the initial and final masses of the system.

Observation:

- A white precipitate of barium sulphate is formed on mixing barium chloride and sodium sulphate which shows the formation of the product.
- The mass of the reaction flask is found to remain unchanged, i.e., mass remains same before and after the reaction.

Conclusions:

The above activity shows that in any chemical reaction, the total mass of the reactants is equal to the total mass of the products i.e; mass can neither be created nor be destroyed in a chemical reaction which proves the law of conservation of mass.

Precautions

1. The spring balance should be held vertical while in use.
2. Before making use of the spring balance it must be ensured that its pointer is at zero mark
3. The reading of the balance should be noted only when its pointer comes to rest.
4. Solutions should not get mixed before initial weighing

MULTIPLE CHOICE TYPE QUESTIONS

1.	To identify the law of conservation of mass, a student added 10 mL of 5% barium chloride solution into 10 mL of 5% sodium sulphate solution. Which one of the following is the correct observation? a) A clear solution is obtained b) The solution turns to red colour c) A yellow precipitate is formed d) A white precipitate is formed
2.	While verifying the law of conservation of mass Smith added 3.5 g of magnesium metal into 13.7 g of hydrochloric acid. If the mass of magnesium chloride formed is 13.8 g, what is the mass of eliminated hydrogen gas if the law of conservation of mass is correct. a) 3.2 g b) 3.4 g c) 4.3 g d) 5 g
3.	In a chemical reaction one molecule of nitrogen reacts with three molecules of hydrogen to form ammonia. If the law of conservation of mass is correct what will be the number of atoms of nitrogen and hydrogen at the end of the reaction? a) N = 2, H = 6 b) N = 1, H = 3 c) N = 6, H = 2 d) N = 3, H = 3
4.	While verifying the law of conservation of mass, a student added 5 g of sodium bicarbonate to a test tube containing 14.5 g of acetic acid. The total mass of the reactant is 19.5 g but the mass of the product after the reaction is only 16.2 g. The reduction in the mass of the product is due to a) Elimination of CO ₂ gas b) Elimination of O ₂ gas c) Liberation of heat d) Elimination of CO gas
5.	Which one of the following reactions is not suitable in the laboratory to verify the law of conservation of mass? a) Mixing HCl and NaOH solution b) Thermal decomposition of ferrous sulphate c) Mixing copper sulphate and barium chloride solutions d) Mixing lead nitrate and potassium iodide solutions
6.	Lime stone(CaCO ₃) upon strong heating undergoes thermal decomposition to form lime(CaO) and CO ₂ gas. The mass of CaO and mass of CO ₂ formed by the decomposition of 25 g of CaCO ₃ are (RAM of Ca = 40, C = 12, O = 16) a) CaO= 28, CO ₂ = 22 b) CaO= 14, CO ₂ = 11 c) CaO= 22, CO ₂ = 28 d) CaO= 11, CO ₂ = 14
7.	To verify the law of conservation of mass, which one of the following combinations can a student select to prove the law. a) Copper sulphate and sodium sulphate b) Sodium sulphate and sodium chloride c) Copper sulphate and sodium carbonate d) Sodium sulphate and sodium carbonate
8.	For the verification of law of conservation of mass in a chemical reaction four students, A, B, C and D performed the following reactions: A - Added calcium oxide to water B - Heated ferrous sulphate crystals in a test tube. C - Dipped iron nails in copper sulphate solution. D - Added silver nitrate to calcium chloride. The student who is likely to get the best result is, a) A b) B c) C d) D