

Experimental 2: Physical and Chemical Changes

A. Understanding Concepts from Introduction

Matter	<i>Any substance that occupies space and has mass in the universe.</i>
Substance	<i>Matter which has a specific composition and specific properties. Every pure element and every pure compound are substances.</i>
Mixture	<i>Two or more compounds that are not joined by any chemical bonds.</i>
Element	<i>The simplest pure substances that cannot be broken down using chemical reactions.</i>
Compound	<i>A pure substance of two or more elements chemically combined in a fixed proportion by weight.</i>
Chemical change	<i>The forming of a new substance when one or more element is used up through the rearrangement of their atoms cause a change in their chemical properties.</i>
Physical change	<i>The change in physical properties of a substance. Phase changes (change of state)</i>
Sublimation	<i>The process in which a solid change into a gas phase without first melting to form the liquid phase.</i>
Extraction	<i>A technique uses to selective separate a desire substance by dissolving the soluble substance in a suitable solvent. The other substance in the mixture are insoluble.</i>
Filtration	<i>The separation of a solid from a liquid using a porous paper</i>
Evaporation	<i>the process of heating a mixture in order to separate a liquid from another liquid or a solid dissolved in a liquid.</i>

B. Chemical Changes

Test	Observation and Explanation
SiO₂	<i>No Change was observed</i>
NaCl+Na₂CO₃	<i>No change was observed</i>
BaCl₂+H₂SO₄	<i>A white precipitate was formed</i>
CuSO₄+NH₄OH	<i>A pale blue solution of CuSO₄ changed to a blue precipitate when NH₄OH was added</i>

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HCl+Na₂CO₃	<i>Bubbles of a colorless gas evolved. No color change occurred</i>
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C. Separation of a Three-Component Mixture

Mass of mixture A = 1g

Heat sublimation

Mass of Naphthalene = 0.185g

Mass of mixture B (Sand + Salt) = 0.80g

Filtration + Evaporation of water

Mass of NaCl (salt) = MassBK2+Salt- Mass BK2 dry
= 0.407g

Mass of sand = Mass FP + Sand – Mass FP
= 0.335g

Calculate

Mass percent of Sand =
 $0.335/1 \times 100 = 33.5\%$

$0.407/1 \times 100 = 40.7\%$

Mass percent of NaCl (Salt) =

Mass percent of Naphthalene =
 $0.185/1 \times 100 = 18.5\%$

Yield%=
 $0.335+0.407+0.185 = 0.927$

$0.927/1 \times 100 = 92.7\%$

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Lab 2