

# **Lesson Plan**

**Topic:- Is matter Around Us  
Pure**

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# Mixtures & Compounds



# CONTENTS

- Introduction
- Pure Substance
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- Types of Mixtures
- Homogeneous and Heterogeneous Mixtures
- Properties of Solution
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# • Previous Knowledge Testing

What is a pure substance?

## Pure or Mixture?

Are these pure or a mixture?

Gold bar

Air

Sea water

Milk

Distilled water

Salt

Iron nail

Chocolate

A person

Tap water

Oxygen gas

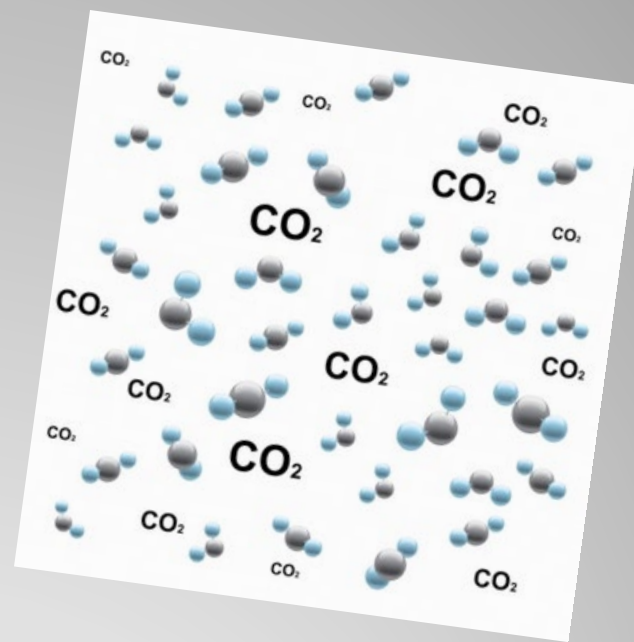
Ink



**Commonly 'Pure' means= Free from impurities**

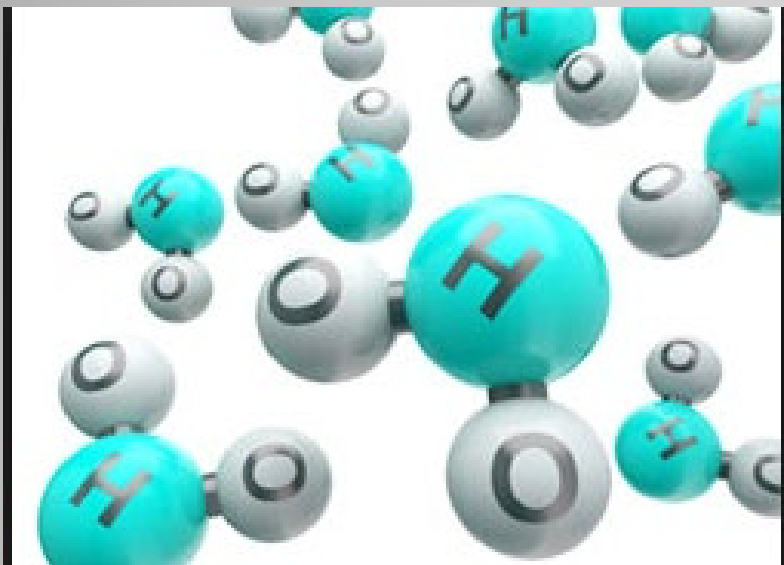


**According to Scientists**  
**PURE= ????????????????**

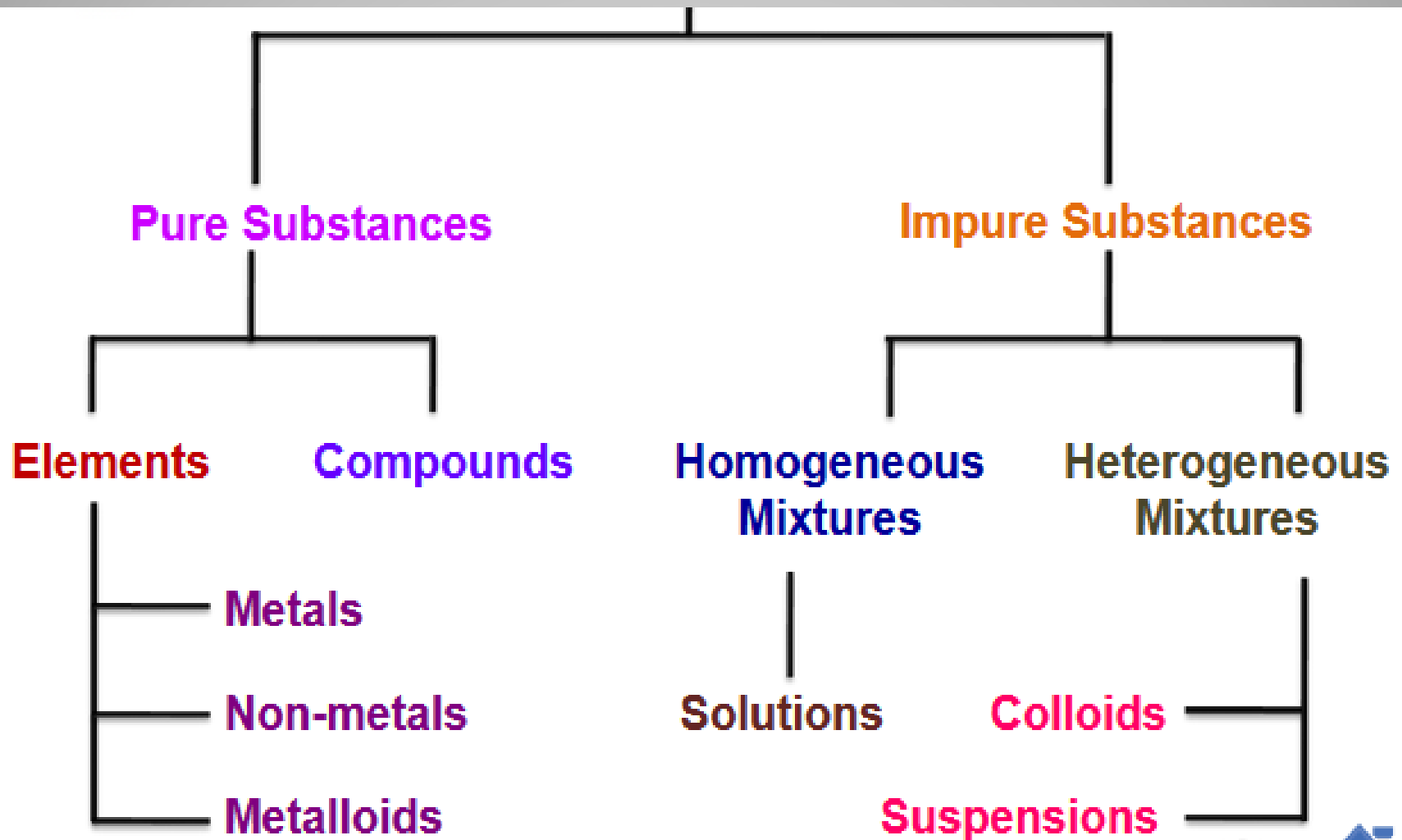


**A Pure Substance consists of a single type of particles.**

- **Pure means** all the constituent particles of that substance are the same in their chemical nature.

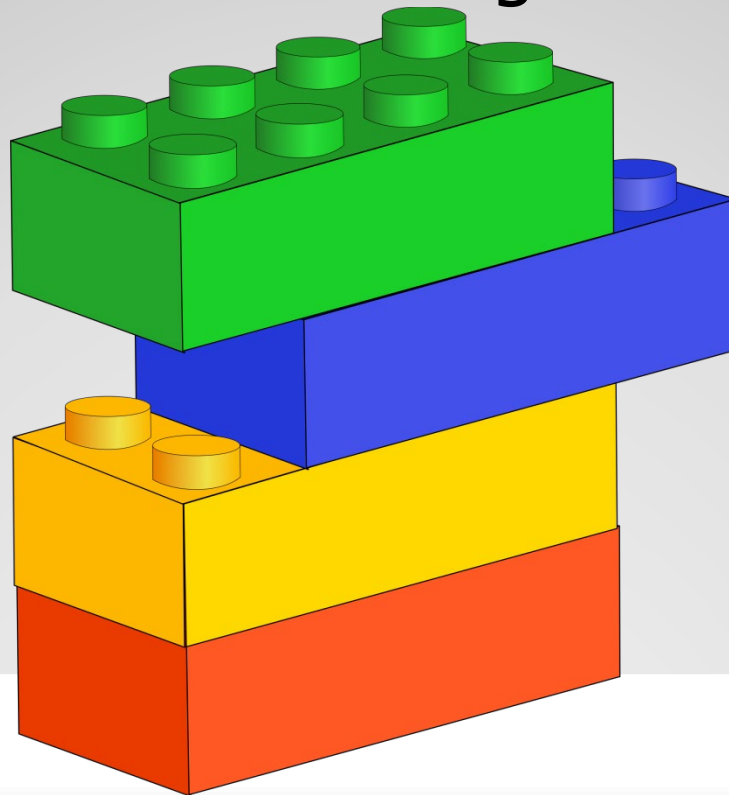


# Matter



# Activity : LEGO DEMONSTARTION

- The concept of Pure and Impure Substance can be presented with the help of Different Coloured Lego Blocks



- *Step 1:* We will take a single colored Lego.
- Explain to the students that this single colored Lego represents an element.
- This is an example of an element (pure substance).



- *Step 2:* Take four more same colored Legos.

- Explain to the students that as the Legos are uniform and cannot be physically separated thus this is an example of a pure substance.



- Take three Legos of different colors and mix them together.
- We will explain to the students that this has become a mixture because it is no longer uniform (two different colored Legos are now present) and it can be physically separated (into the two different color groups).
- This is an example of a mixture of elements.



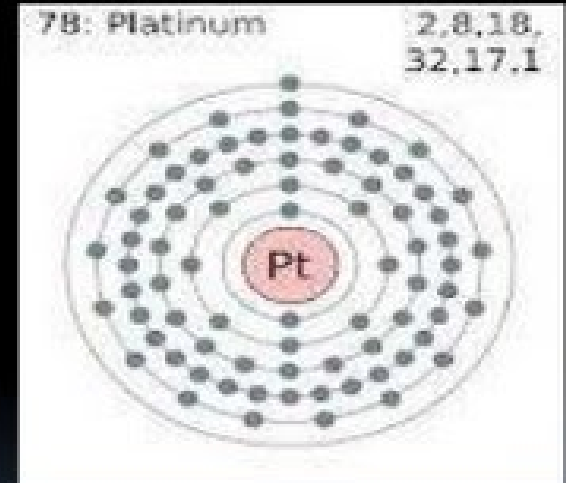
- **Create one compound by connecting two blue Legos and one white Lego.**
- Explain to the students that this is an example of a compound and that compounds are also examples of pure substances.
- This is an example of a compound (pure substance).



# PURE SUBSTANCE

A pure substance is one which is made up of only one kind of particle.

- EX- PLATINUM



Pure substance are of two types-

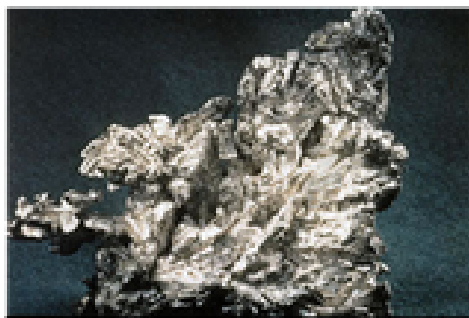
- 1-Element
- 2-Compound

- ❖ It is a pure substance, which is made up of *only one kind of atom*.
- ❖ Elements *cannot be further reduced to simpler substances*.

**For example:** Gold, silver, sulphur, carbon, oxygen, etc.



Gold



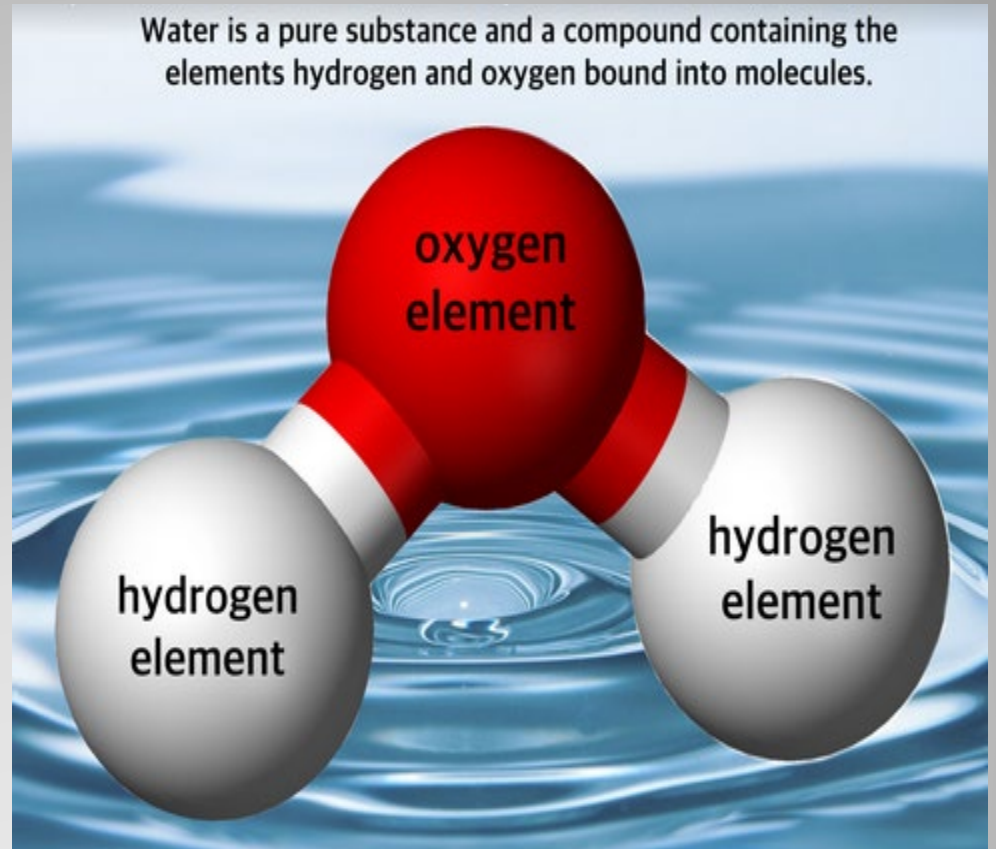
Silver



Sulphur

# ELEMENTS

- A compound is a substance which is made up of two or more element chemically combined in a fixed ratio by mass. Ex. Water



# Mixtures

Homogeneous Vs Heterogeneous

Salt water



Oil + Water



## Spot the Difference..!!



I

**Vegetables are  
visible.**



II

**Vegetables are  
not visible.**

## Homogeneous mixtures



In a homogeneous mixture, it isn't possible to see the different substances. Mayonnaise is a homogeneous mixture. It contains oil, eggs and vinegar, but we cannot see these individual ingredients. Although we cannot see them, it is sometimes possible to separate the individual substances.

## Heterogeneous mixtures



We can see the individual substances that make up a heterogeneous mixture. This means that it is possible to separate the substances easily. A fruit salad is a heterogeneous mixture.

# Types Of Mixtures

There are 2 major types of mixtures:

**Heterogeneous**

**Means "*different*"**

**You can see the  
different parts  
(phases) of the  
mixture easily**

**Homogeneous**

**Means "*the same*"**

**You cannot see  
the different parts  
(phases) of the  
mixture**

- **Activity**

- Set up three glasses of water.
- Add pebbles of sand to the first glass.
- Stir the water.
- Ask students whether this is a mixture or compound



- Add a teaspoon of salt to the second glass.
- Stir the water until the salt disappears.
- Ask students if this is a mixture or a compound.



- Ask students if two liquids will form a mixture or a solution.
- Then add some vegetable oil to the third glass and stir.
- Ask students if the glass contains a mixture or a compound.



- **Q:** What are some other examples of mixtures?
- **A:** Other examples of liquid mixtures include salt water and salad dressing. Air is a mixture of gases, mainly nitrogen and oxygen. The rock pictured in the figure below is a solid mixture.



# SOLUTION

- ❖ A solution is defined as a *homogenous mixture of two or more chemically non-reacting species.*
- ❖ Its composition can be varied.

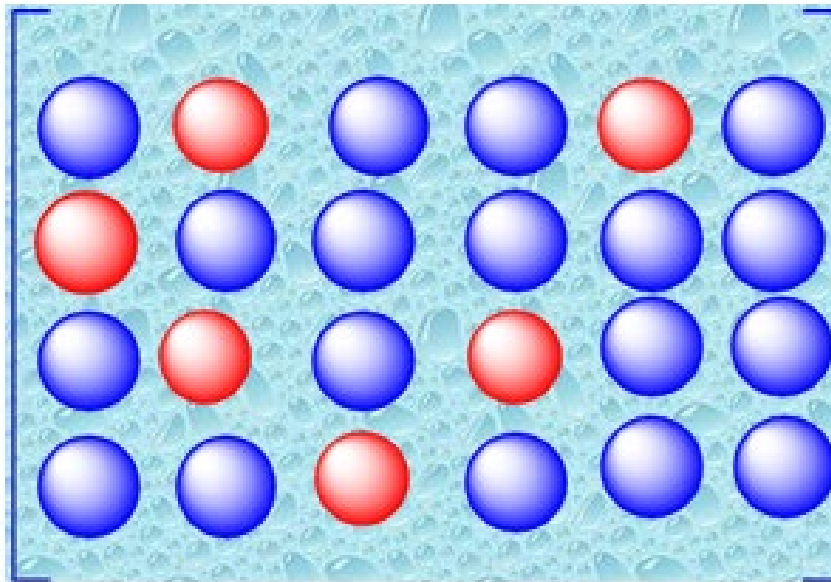


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graph TD; Solution[Solution] --- Branch(( )); Branch --- Solvent[Solvent]; Branch --- Solute[Solute];
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**Solution**

**Solvent**

**Solute**



**Solute**



**Solvent**

**A system containing solution**

# Matter – Homogeneous Mixtures - Solutions

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One type of homogeneous mixture is a solution:

- a mixture made of two or more pure substances
- the particles that make up a solution are too small to be seen
- examples: salt water, tea, mouthwash, air, alloys (mixture of different metals)

# Heterogeneous Mixtures

- A **heterogeneous mixture** is a mixture in which the composition is not uniform throughout the mixture.
- Vegetable soup is a heterogeneous mixture.
- Any given spoonful of soup will contain varying amounts of the different vegetables and other components of the soup.



# Matter – Heterogeneous Mixtures:

## Suspensions

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One type of heterogeneous mixture is a suspension:

- made of larger, visible particles that do not dissolve
- solid particles will settle and separate over time if left alone
- examples: pulpy orange juice, tomato juice, sand in water, Chex Mix

# Close All the Windows and the Doors





**Open the  
Window Or  
the Door  
Facing the  
Sunlight**



**DO you observe  
dust particles  
floating in the  
beam of  
Sunlight??????**

**These are called  
Suspended  
Particles..**

What is common between them?



**Milk**



**Jelly**



**Fog**

All these are **colloids**.

- ❖ A colloid is a *heterogeneous mixture*.

## Colloids

- ❖ It has two components, the *dissolved phase* is called **dispersed phase** and the *continuous phase* is called **dispersion medium**.

**For example:** Soap solution, ink, blood

## RECAPITULATION

1. Pick out then odd one from the following:  
Milk, Gold, Salt solution, brass
2. Why is a bucket of sand and water heterogeneous?
3. Why is pizza heterogeneous?
4. What is the Difference Between Heterogeneous and Homogeneous Mixtures?



Thank You!

A graphic featuring the words "Thank You!" in a black, cursive script font. The text is centered on a white background. Above the text, there are several yellow stars of varying sizes. Below the text, there is a thick, horizontal yellow brushstroke. The entire graphic is set against a light gray background with a subtle gradient.