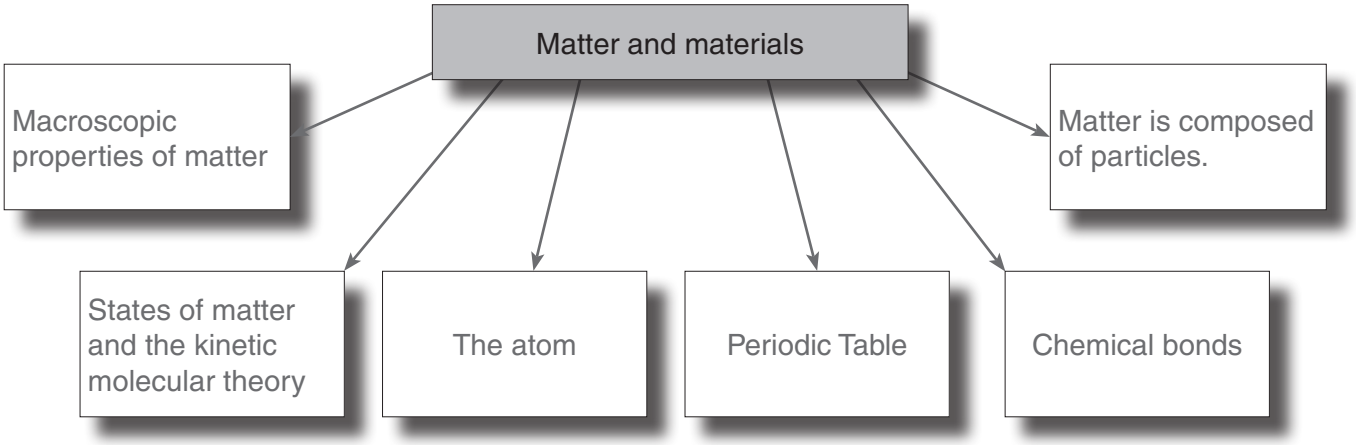
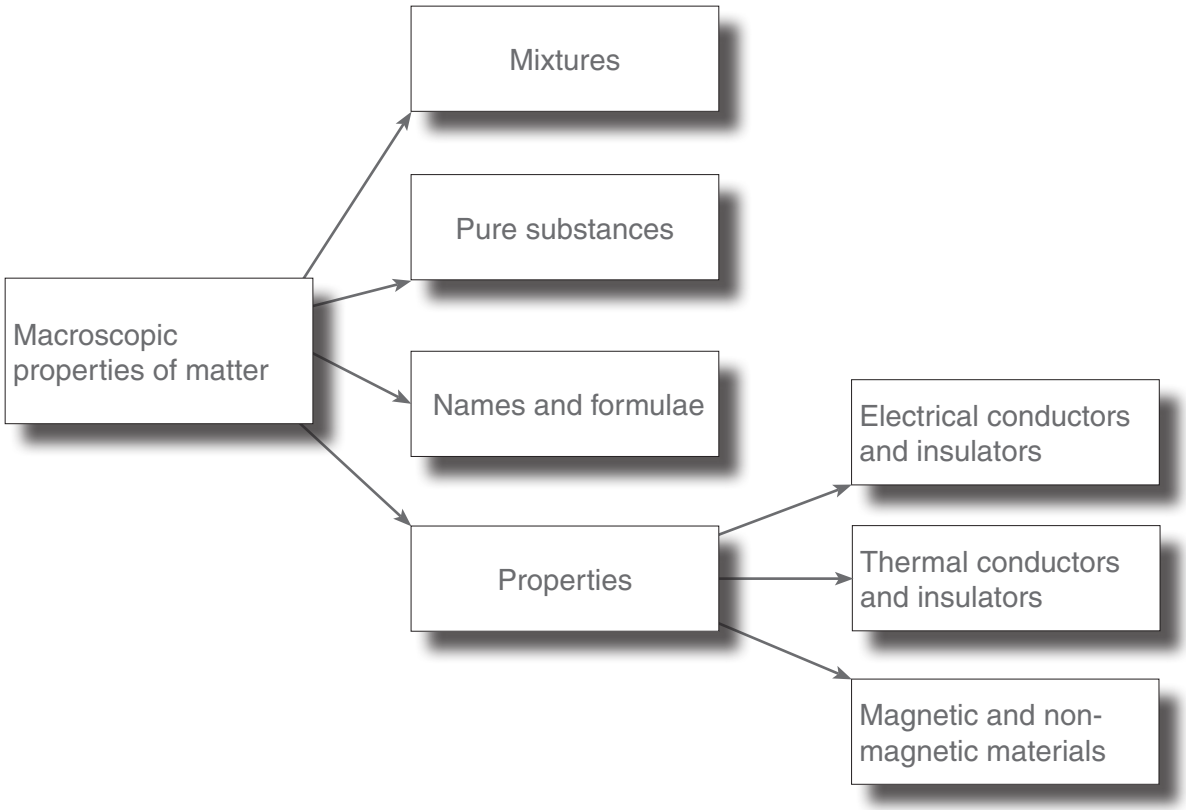
Masters for transparencies

5.1
Matter and materials

KNOWLEDGE AREA: MATTER AND MATERIALS

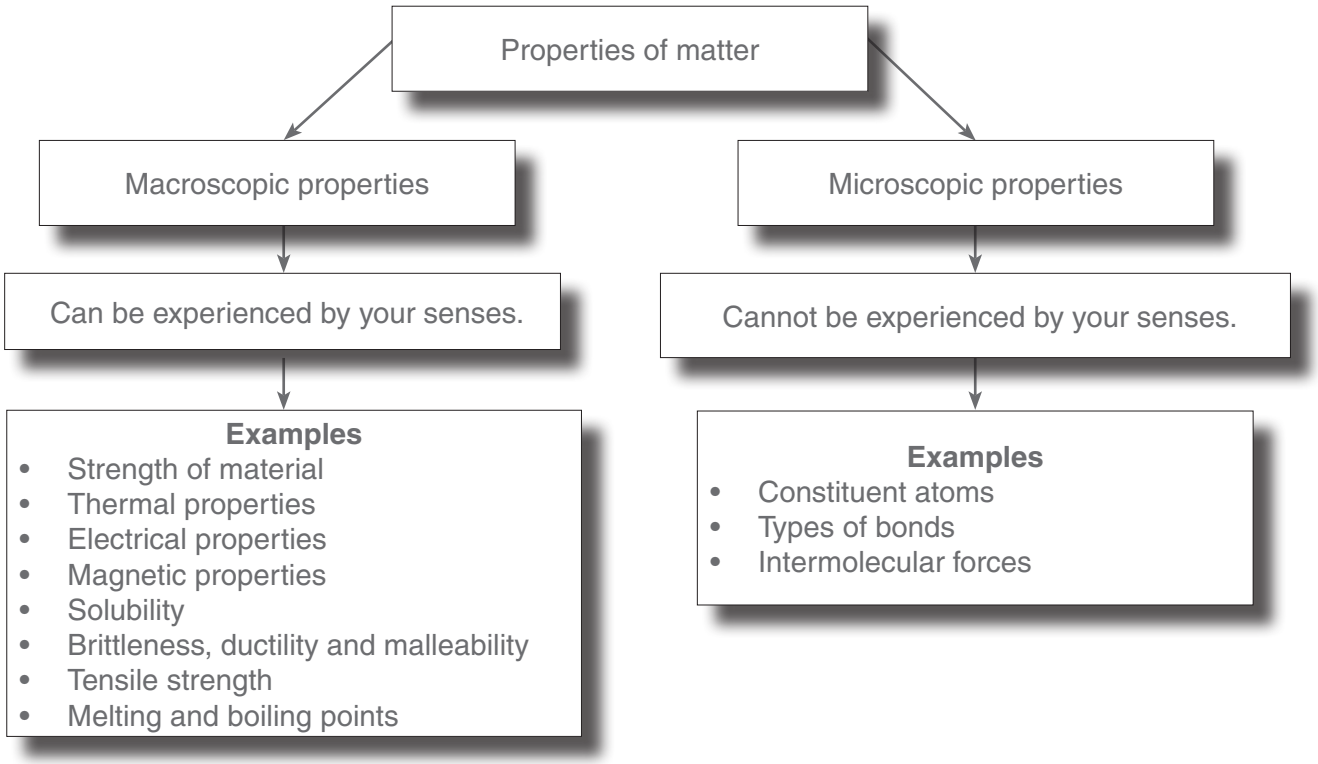


UNIT 1 MACROSCOPIC PROPERTIES OF MATTER



Matter is everything that: has mass;
occupies space.

The properties of matter can be divided as follows:



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Complete the following table.

Product	Ingredients
Instant coffee	**Dextine, dextrose, maltose, sigory and soluble solids of roasted coffee beans**
Potato crisps	**Potatoes, vegetable oil with antioxidant (TBHQ), Sugar, salt, soya, dextrose, vegetable powder (onion and garlic), maltodextrin, flavouring, herbs and spices, flavour enhancers, sweeteners and phenylalanine**
Tinned vegetables	**Water, carrots, peas, potatoes, beans, salt and cane sugar**
Apricot jam	**Glucose, apricots, cane sugar, pectin and citric acid**
Packet of pasta and sauce	**Pasta, gluten, egg, cheese, milk, whey products, cornflour, flour, salt, flavouring, stabiliser (E452), sugar, onion, chives, nutmeg.**

1. What do the different ingredients tell you about the product?

Information about the contents of the product

2. Why are the ingredients mentioned on the label?

Some people are allergic to certain ingredients. By reading the label, they can tell if they can use it or not.

Case study: Mopani worms: Page 16

Questions:

1. Name and discuss three types of preservation that are mentioned in the case study.

Sun drying: dry food in the sun.
Smoke: dry food in an oven/over a fire while it is smoked.
Pickle: place the food in salt/salt water, which dries out food.

2. Name and discuss two other types of preservation used in industry.

Canning: cook food and put it in a syrup.
Pasteurise: heat, without cooking.

3. What is a preservative?

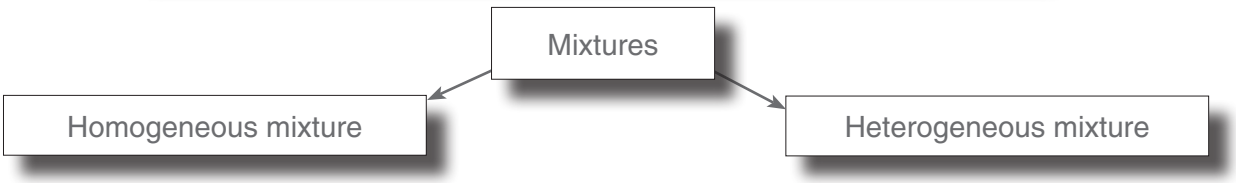
A substance that stops/counteracts the working of microorganisms.

4. Name one preservative mentioned in the case study.

Salt

1.1 Mixtures

What are the properties of a mixture?
- The components are not in a fixed ratio.
- The components keep their own properties.
- The components can be separated easily by physical means.



A homogeneous mixture is a mixture with a uniform composition (that will remain constant for a period of time).

This means that the components of a homogeneous mixture:
- cannot be distinguished from each other.
- are in the same state

Examples

- Air is a mixture of different gases – all in the same state.
- Alloys are mixtures of metals.
- Cool drink concentrate in water consists of two liquids that are mixed.

A heterogeneous mixture is a mixture with a non-uniform composition (that will remain constant for a period of time).

This means that the components of a heterogeneous mixture:
- are not in the same state
- are easily distinguishable.

Examples

Examples of mixtures:

Example	Components	Type of mixture
Air	Nitrogen, oxygen, carbon dioxide	Homogeneous mixture: Uniform composition (will remain constant for a period of time).
An alcoholic drink	Alcohol in water	
Brine	Salt in water	
Steel	Carbon in iron	
Smoke from a fire	Soot and ash in air	Heterogeneous mixtures: - Particles are not uniform. - Can be distinguished.
Salad dressing	Oil, vinegar, water and herbs	
Mud	Sand in water	
Orange juice	Fruit pulp in fruit juice	
Dough	Flour, eggs and milk	
Carbonated (fizzy) cool drink	Carbon dioxide in cool drink	

Practical activity 1: Page 19

Complete the following table.

Mixture	Heterogeneous or homogeneous?	Are distinct particles visible?
Sand and water	**Heterogeneous**	**Yes**
Potassium dichromate crystals ($K_2Cr_2O_7$) and water	**Homogeneous**	**No**
Iodine and ethanol	**Homogeneous**	**No**
Iodine and water	**Heterogeneous**	**Yes**

1. What is a homogeneous mixture?

A homogeneous mixture is a mixture with uniform composition (and that will remain constant for a period of time).

2. What is a heterogeneous mixture?

A heterogeneous mixture is a mixture with a non-uniform composition. Particles can be distinguished.