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Unit 4D: Solids and Liquids

Learnanywhere

Solids, liquids and how they can be separated








Group the materials according to your own criteria

Some useful words

Melt	when a solid changes to a liquid
Freeze	when a liquid changes to a solid
Solidify	a liquid changes to a solid
Dissolve	when a solid "disappears" in a liquid
Solution	a liquid with a solid dissolved in it
Undissolved	when a solid doesn't disappear
Filter	a way of getting undissolved solids out of a liquid

Solids and Liquids







Group the materials according to your own criteria

There are 2 main groups – liquids and solids

...cont

Are all the liquids colourless?
What will happen to a liquid if the container it is in is changed?
Can you spill the solids?
What happens if you tilt the bottle the liquids are in?

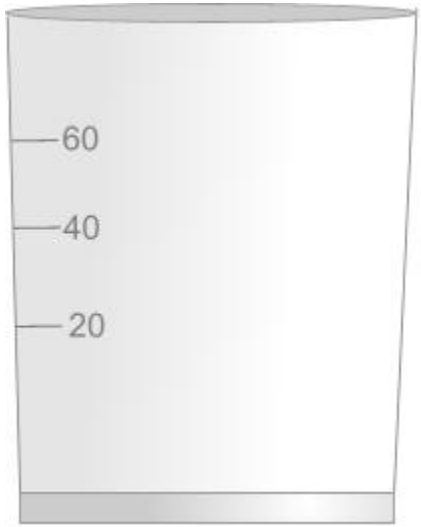
	Solids	Liquids
Retain shape		
Take shape of container		
Fixed volume (amount of space it takes up)		
Volume changes		
Flow		
Particles packed very close together		
Particles close together but can move a little		

...cont

Are the following Solids or Liquids. Try to give a reason for your answers:

- **Cotton wool**
- **Sand**
- **Shampoo**
- **Rice**
- **Jelly**
- **Soup**
- **Syrup**

The shape and volume of liquids



Powders

Some solids consist of very small pieces, such as sand, are sometimes called powders. They behave in a similar way to liquids

One material, two states

Many materials can exist as a solid or a liquid. When it changes from solid to liquid we say it melts. When it changes from a liquid to a solid we say it solidifies or freezes

Melting solids

...cont

Melting and solidifying or freezing are changes that can be reversed and are the reverse of each other

LIQUID

SOLID

Mixing Solids

How can the 2 solids be separated?

…cont

How do you think you can separate:

Dried peas and paper clips.

Stones and salt.

Why do you think each method will work?

Mixing Solids and Liquids

Investigate what happens when the each of the following is mixed with water:

Salt
Instant coffee
Sugar
Flour
Sand
Marbles
Plaster of Paris
Paint

Record your results

Substance	Dissolves	Does not dissolve
Salt		
Instant Coffee		
Sugar		
Flour		
Sand		
Marbles		
Plaster of Paris		
Paint		

Separating the undissolved solids

How can we separate the marbles from the water

Would this method work with the sand?

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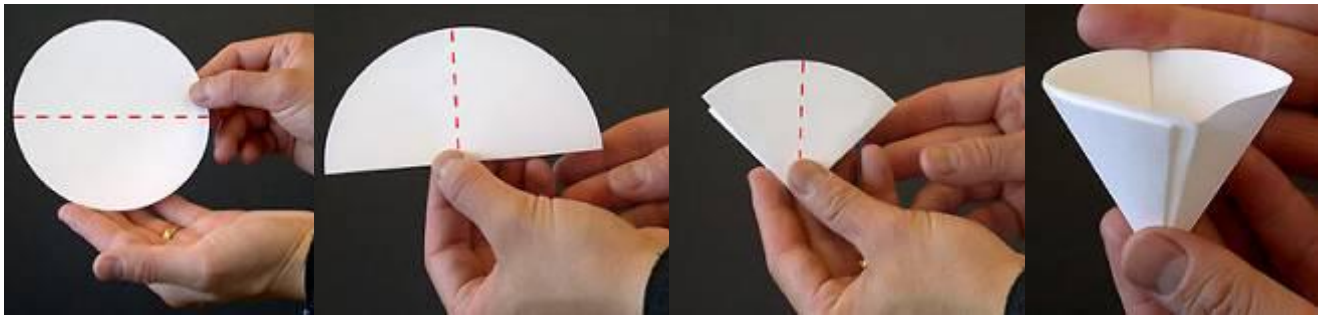

Filter paper is like a sieve but the holes are very, very small - only very small particles like water can pass through the holes.

Filtering dissolved solids

Using filter paper and a funnel, filter the salt water you made.

Do you think the salt will be filtered out like the sand was? Try to give a reason for your answer

If the solid has dissolved it means that the particles must be smaller than the water particles so they can 'hide' between them. This means they can get through the filter paper