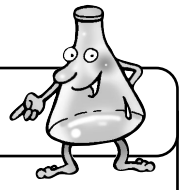
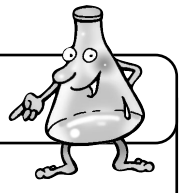


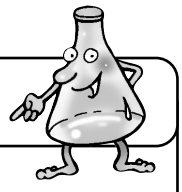
Starter A Particles loop

1 Glass is useful for windows because it is. . .	. . . dissolved, it can get through the filter paper
2 Cloth is useful for clothes because it is	. . . transparent
3 Tissue is useful for blowing your nose because it is . . .	. . . flexible
4 Stone is a useful building material because it is . . .	. . . absorbent



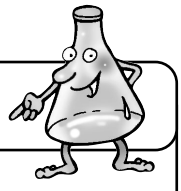
Starter A Particles loop (continued)

5 Sandpaper is scratchy because sand is . . .	. . . strong
6 Rubber is useful for tyres because it is . . .	. . . hard
7 Most 'tights' are made from . . .	. . . elastic
8 Most cars are made from . . .	. . . nylon
9 Most combs are made from . . .	. . . steel



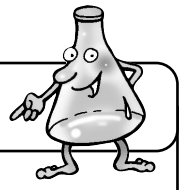
Starter A Particles loop (continued)

10 Most jewellery is made from . . .	. . . plastic
11 A liquid we drink is . . .	. . . gold
12 Lemonade is not a pure liquid because . . .	. . . lemonade
13 Dissolved means . . .	. . . it has solids dissolved in it
14 Lemonade has sugar in it but . . .	. . . a solid disappears into a liquid



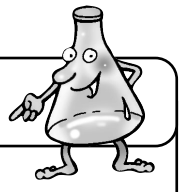
Starter A Particles loop (continued)

15 If you let a patch of lemonade dry out . . .	. . . you can't see the sugar – it's dissolved
16 A piece of solid will stay the same . . .	. . . you get a sticky patch where the sugar is left behind
17 A litre of liquid changes its shape . . .	. . . shape and size
18 A litre of liquid does not . . .	. . . to fit into a container
19 A syringe full of gas can be . . .	. . . change its volume. It always stays one litre in any container



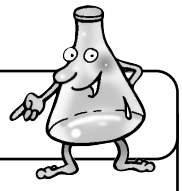
Starter A Particles loop (continued)

20 A bad smell will spread out . . .	. . . squashed into a smaller size
21 The particles in a solid are never completely still.	. . . because 'smell' particles are always moving
22 In a solid and a liquid the particles are . . .	. . . They vibrate about but stay approximately in the same place
23 . . . mostly touching each are . . .	. . . In a gas the particles other
24 Because there are gaps between the . . .	. . . far apart from each other



Starter A Particles loop (continued)

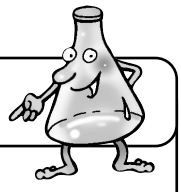
25 When solids are heated they expand . . .	. . . particles, you can squash a gas into a smaller volume
26 When you heat a liquid it expands and . . .	. . . because the particles vibrate more and move slightly apart
27 When you heat a gas . . .	. . . becomes less dense. Hot water in a kettle rises to the top.
28 In a filter the liquid particles . . .	. . . it expands a great deal. This is why hot air balloons float
29 In a filter the solid lumps . . .	. . . can get through the spaces in the fibres of the filter paper



Starter A Particles loop (continued)

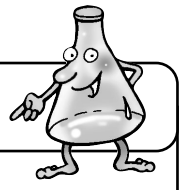
30 If a solid is . . .	. . . get caught between the fibres of the paper

Chapter 2 Starter Activity



Starter B Particles Bingo

Question	Answer
The solid that dissolves in a liquid:	solute
The liquid that does the dissolving:	solvent
The mixture of dissolved solid and liquid:	solution
A material that keeps its shape:	solid
A material that keeps its volume but takes the shape of its container:	liquid
A material that takes any volume or shape:	gas
When a solid disappears into a liquid:	dissolving
Two or more different materials together:	mixture
To make jelly dissolve more quickly you make the water:	hotter
Used to separate small lumps of solid from a liquid:	filter
What happens when you mop the floor and the wet floor dries:	evaporation
What happens when water forms inside the windows of a car:	condensation
What happens when you heat water and it turns into steam:	boiling
What happens when candle wax turns to liquid:	melting
Freezing point of water:	0 °C
Boiling point of water:	100 °C
To make jelly dissolve more quickly you make it into:	smaller lumps
When salt water boils away the salt is:	left behind
A material that contains only one type of particle:	pure
When pancake mix is heated it goes solid. This is an example of:	irreversible change



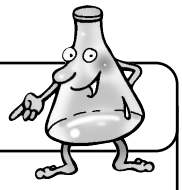
Starter B Particles Bingo (continued)

Solute	**Solvent**	**Solution**		
Gas		**Mixture**		**Filter**
Evaporation	**Condensation**		**Melting**	
100°C			**Pure**	**Irreversible change**

Solute	**Solvent**		**Solid**	
Gas			**Hotter**	**Filter**
Evaporation	**Condensation**			**0°C**
	Smaller lumps	**Left behind**	**Pure**	

Solute	**Solvent**			**Liquid**
	Dissolving	**Mixture**	**Hotter**	
Evaporation		**Boiling**	**Melting**	
	Smaller lumps	**Left behind**		**Irreversible change**

Solute		**Solution**	**Solid**	
	Dissolving	**Mixture**		**Filter**
Evaporation		**Boiling**		**0°C**
	Smaller lumps		**Pure**	**Irreversible change**



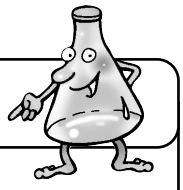
Starter B Particles Bingo (continued)

Solute		**Solution**		**Liquid**
	Dissolving		**Hotter**	**Filter**
Evaporation			**Melting**	**0°C**
		Left behind	**Pure**	**Irreversible change**

Solute			**Solid**	**Liquid**
		Mixture	**Hotter**	**Filter**
	Condensation	**Boiling**	**Melting**	
100°C	**Smaller lumps**	**Left behind**		

	Solvent	**Solution**	**Solid**	
Gas	**Dissolving**	**Mixture**		
	Condensation	**Boiling**		**0°C**
100°C	**Smaller lumps**		**Pure**	

	Solvent	**Solution**		**Liquid**
Gas	**Dissolving**		**Hotter**	
	Condensation		**Melting**	**0°C**
100°C	**Smaller lumps**			**Irreversible change**



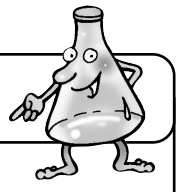
Starter B Particles Bingo (continued)

	Solvent		**Solid**	**Liquid**
Gas	**Dissolving**			**Filter**
		Boiling	**Melting**	**0°C**
100°C		**Left behind**	**Pure**	

		Solution	**Solid**	**Liquid**
Gas		**Mixture**	**Hotter**	
Evaporation	**Condensation**	**Boiling**		
100°C		**Left behind**		**Irreversible change**

Solute		**Solution**		**Liquid**
Gas	**Dissolving**	**Mixture**		
Evaporation	**Condensation**			**0°C**
	Smaller lumps		**Pure**	**Irreversible change**

Solute			**Solid**	**Liquid**
Gas	**Dissolving**		**Hotter**	
Evaporation		**Boiling**	**Melting**	
		Left behind	**Pure**	**Irreversible change**



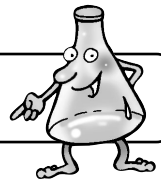
Starter B Particles Bingo (continued)

	Solvent	**Solution**	**Solid**	
Gas	**Dissolving**			**Filter**
Evaporation		**Boiling**		**0°C**
100°C	**Smaller lumps**	**Left behind**		

	Solvent	**Solution**		**Liquid**
Gas		**Mixture**	**Hotter**	
Evaporation			**Melting**	**0°C**
100°C	**Smaller lumps**		**Pure**	

	Solvent		**Solid**	**Liquid**
Gas		**Mixture**		**Filter**
	Condensation	**Boiling**	**Melting**	
100°C	**Smaller lumps**			**Irreversible change**

		Solution	**Solid**	**Liquid**
Gas			**Hotter**	**Filter**
	Condensation	**Boiling**		**0°C**
100°C		**Left behind**	**Pure**	



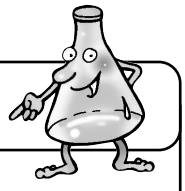
Starter B Particles Bingo (continued)

Solute	**Solvent**	**Solution**		
	Dissolving	**Mixture**	**Hotter**	
	Condensation		**Melting**	**0°C**
100°C		**Left behind**		**Irreversible change**

Solute	**Solvent**		**Solid**	
	Dissolving	**Mixture**		**Filter**
		Boiling	**Melting**	**0°C**
100°C			**Pure**	**Irreversible change**

Solute	**Solvent**			**Liquid**
	Dissolving		**Hotter**	**Filter**
Evaporation	**Condensation**	**Boiling**		
	Smaller lumps	**Left behind**	**Pure**	

Solute		**Solution**	**Solid**	
		Mixture	**Hotter**	**Filter**
Evaporation	**Condensation**		**Melting**	
	Smaller lumps	**Left behind**		**Irreversible change**



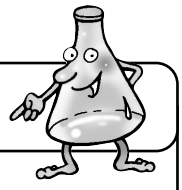
Starter B Particles Bingo (continued)

	Solvent		Solid	Liquid
Gas	Dissolving	Mixture		
Evaporation		Boiling	Melting	
100°C			Pure	Irreversible change

		Solution	Solid	Liquid
Gas	Dissolving		Hotter	
Evaporation		Boiling		0°C
	Smaller lumps	Left behind	Pure	

Solute	Solvent	Solution		
Gas	Dissolving			Filter
Evaporation			Melting	0°C
	Smaller lumps	Left behind		Irreversible change

Solute	Solvent		Solid	
Gas		Mixture	Hotter	
	Condensation	Boiling	Melting	
	Smaller lumps		Pure	Irreversible change



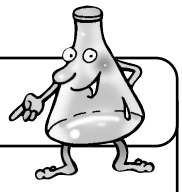
Starter B Particles Bingo (continued)

Solute	**Solvent**			**Liquid**
Gas		**Mixture**		**Filter**
	Condensation	**Boiling**		**0°C**
		Left behind	**Pure**	**Irreversible change**

Solute		**Solution**	**Solid**	
Gas			**Hotter**	**Filter**
	Condensation		**Melting**	**0°C**
100°C	**Smaller lumps**	**Left behind**		

Solute		**Solution**		**Liquid**
	Dissolving	**Mixture**	**Hotter**	
		Boiling	**Melting**	**0°C**
100°C	**Smaller lumps**		**Pure**	

Solute			**Solid**	**Liquid**
	Dissolving	**Mixture**		**Filter**
Evaporation	**Condensation**	**Boiling**		
100°C	**Smaller lumps**			**Irreversible change**



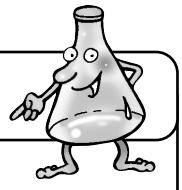
Starter B Particles Bingo (continued)

	Solvent	Solution	Solid	
	Dissolving		Hotter	Filter
Evaporation	Condensation		Melting	
100°C		Left behind	Pure	

	Solvent	Solution		Liquid
		Mixture	Hotter	Filter
Evaporation	Condensation			0°C
100°C		Left behind		Irreversible change

Solute	Solvent	Solution		
	Dissolving		Hotter	Filter
Evaporation		Boiling		0°C
	Smaller lumps	Left behind	Pure	

Solute	Solvent		Solid	
		Mixture	Hotter	Filter
Evaporation			Melting	0°C
	Smaller lumps	Left behind		Irreversible change



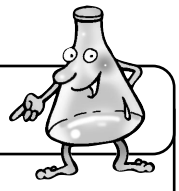
Starter B Particles Bingo (continued)

Solute	**Solvent**			**Liquid**
Gas	**Dissolving**	**Mixture**		
	Condensation	**Boiling**	**Melting**	
	Smaller lumps		**Pure**	**Irreversible change**

Solute		**Solution**	**Solid**	
Gas	**Dissolving**		**Hotter**	
	Condensation	**Boiling**		**0°C**
		Left behind	**Pure**	**Irreversible change**

Solute		**Solution**		**Liquid**
Gas	**Dissolving**			**Filter**
	Condensation		**Melting**	**0°C**
100°C	**Smaller lumps**	**Left behind**		

Solute			**Solid**	**Liquid**
Gas		**Mixture**	**Hotter**	
		Boiling	**Melting**	**0°C**
100°C	**Smaller lumps**		**Pure**	



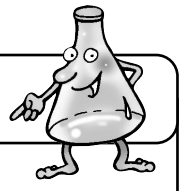
Starter B Particles Bingo (continued)

	Solvent	**Solution**	**Solid**	
Gas		**Mixture**		**Filter**
Evaporation	**Condensation**	**Boiling**		
100°C	**Smaller lumps**			**Irreversible change**

	Solvent	**Solution**		**Liquid**
Gas			**Hotter**	**Filter**
Evaporation	**Condensation**		**Melting**	
100°C		**Left behind**	**Pure**	

	Solvent		**Solid**	**Liquid**
	Dissolving	**Mixture**	**Hotter**	
Evaporation	**Condensation**			**0°C**
100°C		**Left behind**		**Irreversible change**

		Solution	**Solid**	**Liquid**
	Dissolving	**Mixture**		**Filter**
Evaporation		**Boiling**	**Melting**	
100°C			**Pure**	**Irreversible change**



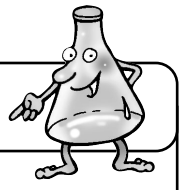
Starter B Particles Bingo (continued)

Solute	**Solvent**	**Solution**		
Gas		**Mixture**	**Hotter**	
	Condensation	**Boiling**		**0°C**
100°C	**Smaller lumps**		**Pure**	

Solute	**Solvent**		**Solid**	
Gas		**Mixture**		**Filter**
	Condensation		**Melting**	**0°C**
100°C	**Smaller lumps**			**Irreversible change**

Solute	**Solvent**			**Liquid**
Gas			**Hotter**	**Filter**
		Boiling	**Melting**	**0°C**
100°C		**Left behind**	**Pure**	

Solute		**Solution**	**Solid**	
	Dissolving	**Mixture**	**Hotter**	
Evaporation	**Condensation**	**Boiling**		
100°C		**Left behind**		**Irreversible change**



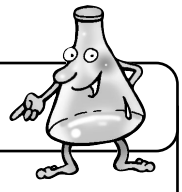
Starter B Particles Bingo (continued)

Solute		**Solution**		**Liquid**
	Dissolving	**Mixture**		**Filter**
Evaporation	**Condensation**		**Melting**	
100°C			**Pure**	**Irreversible change**

Solute			**Solid**	**Liquid**
	Dissolving		**Hotter**	**Filter**
Evaporation	**Condensation**			**0°C**
	Smaller lumps	**Left behind**	**Pure**	

	Solvent	**Solution**	**Solid**	
		Mixture	**Hotter**	**Filter**
Evaporation		**Boiling**	**Melting**	
	Smaller lumps	**Left behind**		**Irreversible change**

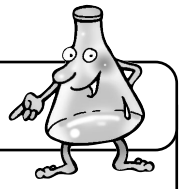
	Solvent	**Solution**		**Liquid**
Gas	**Dissolving**	**Mixture**		
Evaporation		**Boiling**		**0°C**
	Smaller lumps		**Pure**	**Irreversible change**



Starter B Particles Bingo (continued)

	Solvent		Solid	Liquid
Gas	Dissolving		Hotter	
Evaporation			Melting	0°C
		Left behind	Pure	Irreversible change

		Solution	Solid	Liquid
Gas	Dissolving			Filter
	Condensation	Boiling	Melting	
100°C	Smaller lumps	Left behind		



Finisher A States of matter traffic lights

Teachers note

Give pupils a red, an orange and a green card. Read out a substance from the list. Count '1, 2, 3 hold up your card'. The pupils hold up red for a solid, orange for a liquid, green for a gas, or a combination of these.

1 **Rock**
solid

2 **Water**
liquid

3 **Air**
gas

4 **Oxygen**
gas

5 **Ice**
solid

6 **Helium**
gas

7 **Sand**
solid

8 **Cement**
solid

9 **Carbon dioxide**
gas

10 **Skin**
solid

11 **Petrol**
liquid

12 **Cooking oil**
liquid

13 **Rubber**
solid

14 **Jelly**
liquid in a solid lattice

15 **Cream**
two liquids in an emulsion, they can separate when the cream turns to butter

16 **Whipped cream**
gas in a liquid

17 **Clouds**
liquid suspended in a gas

18 **Toothpaste**
solid in a liquid

19 **Paint**
solid in a liquid if school paint
emulsion paints are two liquids, one watery one oily.

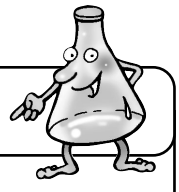
20 **Vaseline**
liquid, but a thick liquid

21 **Sponge cake**
gas in an elastic solid

22 **Meringue**
gas in a hard solid

23 **Cloth**
solid

24 **Bonfire smoke**
solid particles (soot) and liquid droplets (tar) suspended in a gas



Finisher B materials A–Z quiz

A_____ soaks things up

B_____ water at 100 oC

C_____ used to make ceramics

D_____ heaviness for its size

E_____ a material that is stretchy

F_____ flows, like liquid or gas

G_____ Scottish rock

H_____ this describes lead

I_____ water in deepest winter

J_____ in science the proper name for this is a beaker

K_____ used to make water hot

L_____ water, petrol and oil are all. . .

M_____ wax does this when it is hot

N_____ wood and leather are this sort of substance

O_____ doesn't let light through

P_____ man-made modern material

Q_____ crystal used in watches

R_____ elastic material for bands

S_____ you can do this to a sponge because it contains gas

T_____ see-through

U_____ an ideal property for a material

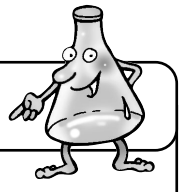
V_____ another word for gas

W_____ ice melts quickest where it is. . .

X_____ a very rare gas in the air

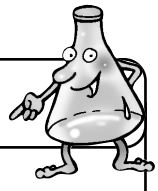
Y_____ colour of sulphur

Z_____ metal used in galvanising



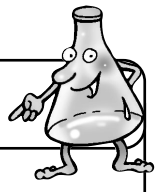
Finisher C States of matter – starts and ends

Start Even if there is no mist . . .	**Start** If you heat up a pan of . . .
Middle . . . dampness in the air will condense. . .	**Middle** . . . water there will be currents that carry the heat . . .
End . . . on a cold surface to make the surface wet.	**End** . . . throughout the whole pan.
Start Water stays at 0 °C all the time . . .	**Start** If you put a pan of milk . . .
Middle . . . while it is freezing and . . .	**Middle** . . . on the cooker the temperature . . .
End . . . turning into a block of ice.	**End** . . . of the milk will rise.



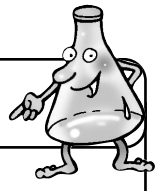
Finisher C States of matter – starts and ends (continued)

Start Water will evaporate . . .	**Start** Water from the sea will . . .
Middle . . . faster from a wet floor . . .	**Middle** . . . evaporate and rise. It cools . . .
End . . . if it is spread with a mop.	**End** . . . and forms clouds that bring us rain.
Start When water boils the temperature stays . . .	**Start** When steam rises from the spout . . .
Middle . . . at 100 °C until all the . . .	**Middle** . . . of a kettle it cools . . . .
End . . . water has turned to steam.	**End** . . . and forms clouds of mist.



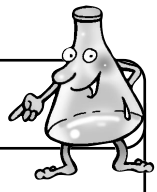
Finisher C States of matter – starts and ends (continued)

Start Ice cubes . . .	**Start** Air is a mixture of . . .
Middle . . . lose their shape . . .	**Middle** . . . oxygen, nitrogen . . .
End . . . when they melt.	**End** . . . and other gases.
Start Air is not nothing, . . .	**Start** Air gets pushed . . .
Middle . . . it weighs . . .	**Middle** . . . out of the way by moving . . .
End . . . about one kilogram per cubic metre.	**End** . . . objects. This is called air resistance.



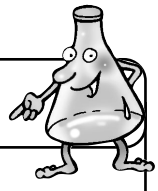
Finisher C States of matter – starts and ends (continued)

Start A smell will spread . . .	**Start** A gas will escape unless you keep it . . .
Middle . . . through the air because . . .	**Middle** . . . in a sealed container . . .
End . . . the particles are moving.	**End** . . . like a camping gas cylinder.
Start Petrol and perfume . . .	**Start** We can only smell . . .
Middle . . . evaporate very easily . . .	**Middle** . . . substances that have . . .
End . . . and make the air smell.	**End** . . . turned into a gas.



Finisher C States of matter – starts and ends (continued)

Start A bottle full of gas . . .	**Start** A helium balloon . . .
Middle . . . can be squashed into . . .	**Middle** . . . floats upwards because . . .
End . . . a smaller size.	**End** . . . helium is much lighter than air.
Start An ordinary balloon goes down . . .	**Start** The proper name for natural . . .
Middle . . . because the air particles . . .	**Middle** . . . gas is methane, but it does not . . .
End . . . can leak out through the rubber skin.	**End** . . . smell, so a smelly gas gets added to it.



Finisher D Science Poem

Task

You are going to write a science poem. Here are some simple rules for you to follow:

1 The 1st line is **one** word and names the concept in science.
2 The 2nd line has **two** words and describes the first line.
3 The 3rd line has **three** words and tells what the first line is doing.
4 The 4th line has **four** words and tells how the writer feels about the first line.
5 The 5th line uses another single word for the first line.

Examples

FRICTION
Retarding force
Slow things down
Often wastes any energy
RUBBING

EROSION
Soil moving
Destroys arable land
We must stop it
DESERTIFICATION

RESPIRATION
Breaking down
Food giving energy
Oxygenated blood via lungs
EFFICIENCY

REACTION
Chemical change
Makes new substances
Fizz for froth foam
CHANGE!

Suggested starting words

Solid Liquid Gas Vibrating Moving Melting Boiling Evaporating Subliming Diffusion Randomly Matter Compressed Hard Flexible Expanding Heating Stretchy Smell Dense Pressure Burst Brittle