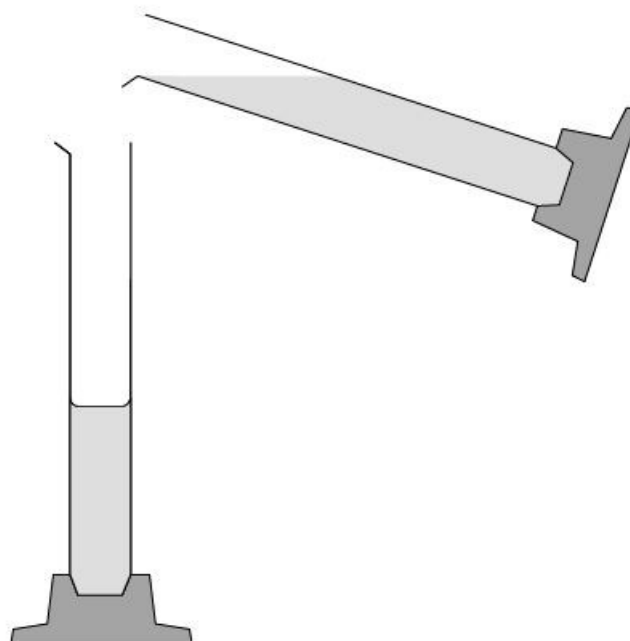


Experiments with particles – student sheet

Introduction

When materials are added together, they may acquire new properties. When a solid and a liquid are mixed, the solid may or may not dissolve. When two liquids are mixed they may become one liquid or stay separate. These experiments provide an opportunity to predict and then observe what happens.

Take measurements when eye is level with liquid surface



Equipment

Apparatus

- Eye protection
- Stirring rod
- Measuring cylinders, 100 cm³, x2
- Spatula

Chemicals

- Sodium chloride
- Water
- Sand
- Dried peas
- Ethanol

Health, safety and technical notes

- Read our standard health and safety guidance here <https://rsc.li/3W2bO5u>
- Always wear eye protection.
- Ethanol is flammable, see CLEAPSS Hazcard [HC040a](https://rsc.li/3HtbjNJ).

Procedure

Activity 1

1. Add approximately 25 cm³ of dried peas and 25 cm³ of sand to separate measuring cylinders. Accurately measure and record the volumes.
2. The contents of one cylinder is added to the other and shaken until the two substances are mixed together.
3. Place the measuring cylinder on the bench and gently shake from side to side to allow the mixture to settle.
4. Read the combined volume.

Activity 2

1. Add approximately 25 cm³ of ethanol and 25 cm³ of water to separate measuring cylinders. Accurately measure and record the volumes.
2. The contents of one cylinder is added to the other and shaken from side to side for 15–30 seconds until the two substances are mixed together, and then left to stand for one minute.
3. Read the combined volume.

Activity 3

1. To the measuring cylinder, add approximately 75 cm³ of water. Accurately measure and record the volume.
2. Spatulas of salt should then be added one at a time until the salt begins to be left at the bottom of the cylinder, despite continued stirring.
3. The volume reading on the side of the cylinder should again be recorded.

What to record

Activity 1

Volume of peas/ cm ³	Volume of sand/ cm ³	combined volume/ cm ³
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Activity 2

Volume of alcohol/ cm ³	Volume of water/ cm ³	Combined volume/ cm ³
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Activity 3

Initial volume of water/ cm ³	Final volume of salt solution/ cm ³
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Questions

1. What is the similarity between the first two activities?
2. What is an explanation for the result in the last activity?