Liquid mixtures

Chemistry | General Chemistry | Substances mixtures & separation

Difficulty level	Group size	Preparation time	Execution time
easy	1	10 minutes	10 minutes

This content can also be found online at:

http://localhost:1337/c/6165817188d1350003fc75ac

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Teacher information

Application

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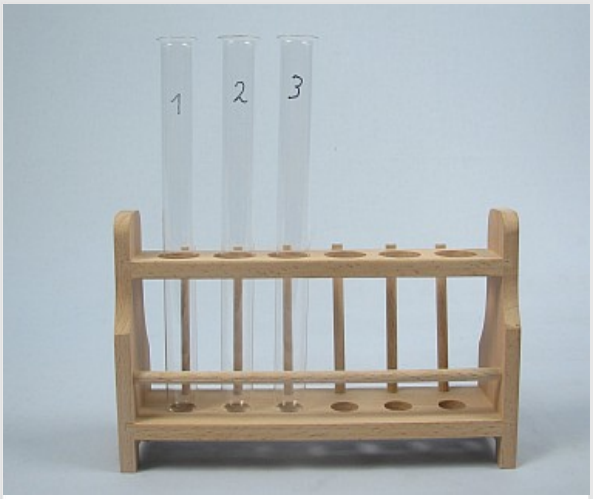

Test setup

Mixtures can consist of solids, liquids or gases. Finely dispersed solids or gases can be mixed together as required. In contrast, some liquids cannot be mixed arbitrarily. There are liquids that mix completely with each other and others that can hardly be mixed at all.

If the individual components of a mixture of liquids and substances are to be separated, different separation processes must be selected depending on how the mixtures of liquids and substances are present (as a pure solution or as an emulsion). Therefore, it must be known in advance of a separation process in which form the liquid-matter mixture is present (e.g. as emulsion or as pure solution).

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Other teacher information (1/2)

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Prior knowledge

- Mixtures of liquid substances can be present as pure solution or as emulsion.
- Pure solutions are homogeneous mixtures such as solutions of salts or acids (soda solution, vinegar).
- An emulsion is a mixture of two immiscible liquids such as milk.

Scientific principle

The pupils produce mixtures of water, methylated spirits and petrol with different proportions of substances and investigate their properties.

Preparations:

Other teacher information (2/2)

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Learning objective

- In this experiment the students learn that the liquids do not mix arbitrarily.
- There are liquids that mix completely and others that can hardly be mixed.

Tasks

1. Production of substance mixtures from different liquids.
2. Investigation of the properties of these substance mixtures.

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Safety instructions

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- Make sure that the students do not mix up the pipettes.
- Wear protective goggles !
- Methylated spirits are highly flammable. Extinguish all open flames!
- The general instructions for safe experimentation in science lessons apply to this experiment.
- For H- and P-phrases please consult the safety data sheet of the respective chemical.

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Student Information

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Motivation

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Milk is an emulsion

Milk is part of our daily diet. But if you drink milk, you are eating a delicious emulsion.

This means that milk is a liquid mixture consisting of water and fat. The reason why the fat does not float to the top is because of the emulsifiers contained in the milk.

There are still many mixtures that are part of our everyday life. This experiment serves to better understand the mixtures of liquids and their properties.

Tasks

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Can all substances be mixed together?

- Produce mixtures of substances from liquids and investigate their properties.
- Write down your observations and answer the questions in the minutes.

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Equipment

Position	Material	Item No.	Quantity
1	Protecting glasses, clear glass	39316-00	1
2	Rubber gloves, size M (8), one pair	39323-00	1
3	Wash bottle, 250 ml, plastic	33930-00	1
4	Test tube, 180x18 mm,100pcs	37658-10	1
5	Test tube rack f. 6 tubes, wood	37685-10	1
6	Test tube brush w. wool tip,d20mm	38762-00	1
7	Rubber stopper, d=22/17 mm, without hole	39255-00	1
8	Laboratory pen, waterproof, black	38711-00	1
9	Denaturated alcohol (spirit for burning), 1000 ml	31150-70	1
10	Pipette with rubber bulb, long	64821-00	1
11	Petroleum ether, 100-140 C,500 ml	30037-50	1

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Set-up

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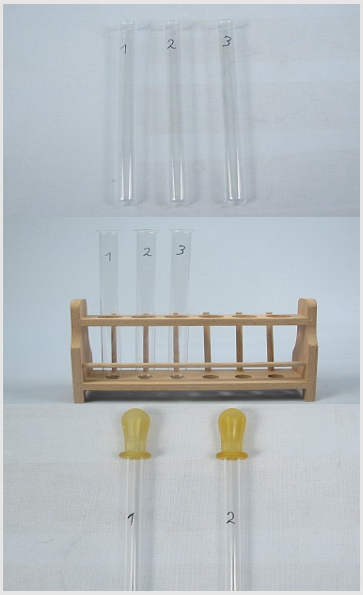

- Take three test tubes and label them with 1, 2 and 3.
- Place the test tubes side by side in the test tube rack so that the numbers are visible.
- Number the pipettes with 1 and 2 .

Procedure (1/2)

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- Fill the first test tube 1 cm high with water.
- Take out 1 methylated spirits with a pipette and put it on the water (height also 1cm).
- Close the test tube with a stopper and shake vigorously.
- Procedure also with water and petrol (pipette 2) in test tube 2.
- Prepare such a mixture of methylated spirits (pipette 1) and petrol (pipette 2) in test tube 3 and shake vigorously.

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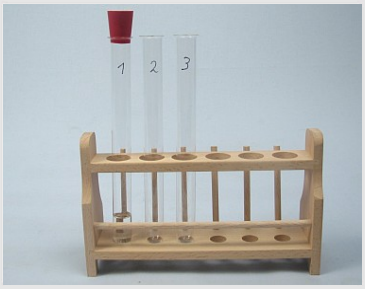
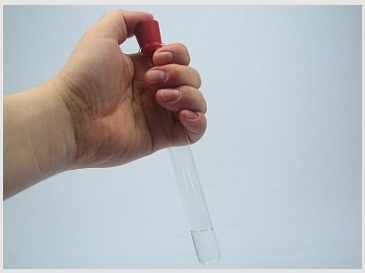
Procedure (2/2)





- Write down your observations on all three test tubes.
- Enter the results in Table 1.

Disposal

- Transfer the contents of the test tubes to the collection container for flammable organic substances.

Report

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Table

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Enter the observations in the table.

Test tube	Substance 1	Substance 2	State of aggregation		Monitoring
			Substance 1	Substance 2	
1					
2					
3					

Task 1

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Water and alcohol are...

- miscible liquids.
- non-miscible liquids.

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Task 2

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Complete the cloze with the adjacent terms!

Mixtures that are liquid/liquid can be _____ or _____. Examples of homogeneous mixtures are _____. Examples of heterogeneous mixtures are _____.

homogeneous
milk/broth
heterogeneous
juice/beer/wine

Check

Slide	Score / Total
Slide 15: Liquids	0/5
Slide 16: Mixtures	0/4

Total amount 0 / 9

Solutions Repeat Exporting text

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