



Filtration

Topic Summary

- Filtration is a method of separating an **insoluble solid** from a **liquid** or **gas**, leaving solid residue on the filter paper and clear liquid (the filtrate) in the flask.
- Filtration is a common technique in everyday life (e.g., coffee making, draining vegetables, water treatment*, fish pond filters). *Link to practical task and environmental chemistry module
- The apparatus needed includes a beaker (for the mixture), filter funnel, filter paper, and conical flask, to collect the filtrate.
- The filter paper works because it contains tiny pores that trap larger particles but allow liquid and smaller particles to pass through.
- The process separates anything larger than the pores in the paper from the remaining part(s) of the mixture. Dissolved substances pass through with any liquids along with some solid particles that are smaller than the pores.
- Filtration cannot remove dissolved substances or bacteria, so filtered water may not be pure or safe to drink.
- The pore size of the filter paper affects both the speed and effectiveness of the filtration — smaller pores give clearer filtrate but work more slowly.

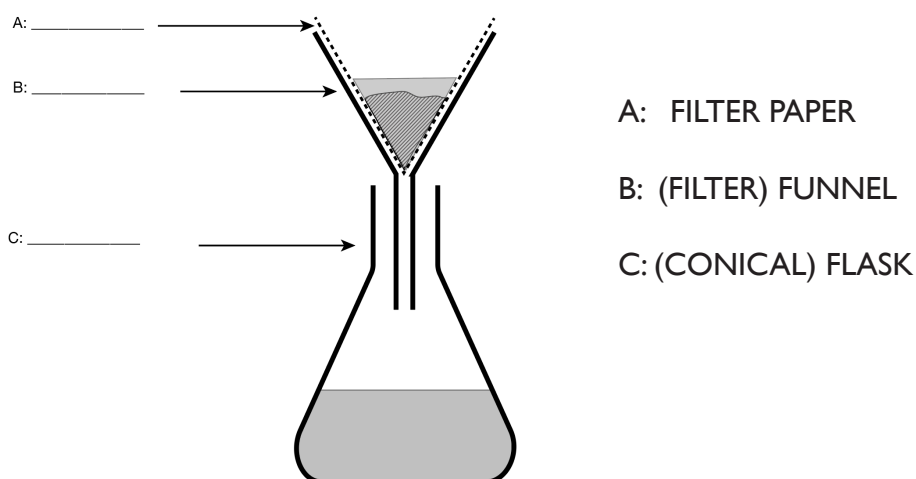


Quick Checks to Build Recall

1. Complete this definition of filtration.

Filtration is the process of separating an **Insoluble Solid** from a **Liquid** or a **Gas** by passing the mixture through **Filter** paper that traps the solid and lets the liquid pass through. (3 marks)

2. Label this diagram of the equipment needed for filtration in the laboratory. (3 marks)



3. What names are given to:

- The solid left behind on the filter paperRESIDUE.....
- The liquid that passes through into the flaskFILTRATE..... (2 marks)





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Exam Style Questions

1. A hiker filters some river water through a filter paper at a camp site before trying to drink it. Explain why this water may not be safe to drink. Include both an example of what may be present in the water and the reason it cannot be removed in your answer (2 marks)

...(Hazardous) dissolved substance (may give example, eg fertiliser) or bacteria.....(1).....
.....which are too small for the pores to stop / pass through the pores.....

2. A student has two different filter papers A and B. Paper A has large pores, paper B has small pores.

a) Which filter paper will filter 100 cm^3 of solution more quickly?

A

(1 mark)

b) Which filter paper will probably produce a clearer solution?

B

(1 mark)

c) Explain why filter papers are unlikely to remove bacteria from any liquid.

The BACTERIA are SMALLER THAN THE PORES and so PASS INTO THE FILTRATE.... (2 marks)...

.....may comment that a filter paper with small enough pores would filter far too slowly or not at all.....



Do this later...

Give your brain a break and come back to these questions later. Cover the rest of the sheet while you have a go. By doing this 24-48 hours after watching the video you will boost your chances of remembering the key points in an exam. If you struggle with these questions, re-watch the video and then try again.

1. Define what is meant by the term 'filtrate'
The substance(s) that pass through the filter paper
2. Draw a fully labelled diagram of the equipment required to carry out filtration in the lab
See diagram over the page - should include flask, funnel, filter paper, may include filtrate and residue/ initial mixture
3. Explain why river water that has passed through a filter paper would not necessarily be safe to drink.
May contain dissolved substances which could be toxic/poisonous/hazardous and bacteria
4. Suggest an advantage and a disadvantage of using a filter paper with a smaller pore size.
advantage: will trap more particles / give a clearer filtrate, disadvantage : will take longer to filter

