



BRONZE AWARD PROJECT IDEAS



typically 10 hours of project work



All at sea - which fabrics are best for sailing clothing?

Before you start your investigation, you should carry out a risk assessment and have it checked by your teacher. For help with this, read through our health and safety information and look out for health and safety warnings in the text.

In this project, you will investigate and compare the waterproof and breathability properties of a range of fabrics used in clothing designed for sailing. You will find out about the different fabrics used in wet weather sailing gear. In particular, you will find out how breathable waterproofs work and what advantages and disadvantages they have over conventional waterproof fabrics.

Getting started

You will need to research the names of a number of manufacturers of waterproof sailing wear and ask for samples of as many fabrics as possible including breathable and non-breathable fabrics. This will need to be done well in advance so that you have them in time for your investigation. Local outdoor shops may be able to help. You will need to devise experiments for comparing the waterproof and breathability properties of each of the fabrics. Here are some ideas to help you:



If the floor gets wet, wipe it up at once because slippery floors are dangerous.

Waterproof properties

Half fill a 250ml beaker with water, cover it with one of the sample fabrics and secure with sturdy elastic bands. Invert the beaker over a funnel placed in a measuring cylinder and record the amount of water (if any) that drips into the measuring cylinder every hour for 4 hours. Do this for each of the fabrics - one of the fabrics could be a control e.g. a sheet of polythene or some other material that you are confident is 100% waterproof.

Breathability

Half fill a 250ml beaker with water, cover it with one of the sample fabrics and secure with sturdy elastic bands. Measure the mass of the beaker plus water and fabric as accurately as possible on an electronic balance. Do this for each of the fabrics, including your 100% waterproof control, and measure their mass daily for about a week. If a fabric is breathable the mass of the beaker and water will drop as water vapour escapes from the beaker through the fabric. The drop in mass over a certain time will be a measure of the breathability of the fabric.

Taking measurements

- Use the ideas above to decide how are you going to make your measurements?
- Think about how you are going to make sure that your tests are fair?

The results

- How will you display your results? As graphs or charts?
- Was there a noticeable difference between the fabrics, how big was the difference?
- Was there any pattern in the results?
- Were the breathable fabrics more, equal to, or less, waterproof than non-breathable fabrics?

