BRONZE AWARD

SAILING CLOTHING

10H Typically 10 hours of project work
Recommended for 11-14 year olds

Practical project

Test breathability and water resistance to decide which fabrics are best for sailing.

#chemistry

#materials

#sport

HOW TO RUN CREST USING THIS ACTIVITY

To use their project to achieve a CREST Bronze Award your students will need to:

- **Complete a minimum of 10 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Complete the project workbook or short report in another medium**
- **Reflect on their work during the project using a student profile form**

Preparation

Ready to get going with CREST? Sign up for a CREST account here: **www.crestawards.org/sign-in**

Create a new Bronze Award project with the name(s) of the student(s) and the title of their project. If you don't have all the details, you can fill these in later!

Run the project

We have some super handy workbooks and profiles for your students to use when running a CREST Award. You can download these when you create your CREST account by following the link above.

Encourage your students to use the workbook or profile to plan and carry out their project, keeping a record of all their amazing progress.

Make sure you consider safety and risks!

Reflection

So, your students have been hard at work and completed their CREST project, but don't let this be the end of their learning. They should now fill in any remaining sections of their workbook. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Enter your project for a CREST Bronze Award

Hard work deserves a reward! Celebrate and certify your student's achievements by entering their project for a CREST Bronze Award. Simply:

Log in to your CREST account at **www.crestawards.org/sign-in**

Select the project and upload a sample of the students' workbooks or other project evidence.

Check the participating students have met each of the criteria on the teacher assessment page.

Finally, complete the delivery and payment details to order your snazzy certificates.

Congratulations on completing CREST Bronze!

What next?

The scientific discovery doesn't need to end here. Students can have a go at the next level up – CREST Silver.

Don't keep all the fun to yourselves, encourage others to take part in CREST projects and share the wonder of science. For free ideas on how to get started, see **www.crestawards.org**

www.crestawards.org

STUDENT BRIEF

BRONZE AWARD

What fabrics are best for sailing gear?

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 and how breathable waterproofs work including the advantages and disadvantages over conventional waterproof fabrics.

Getting started

You will need to research the names of a number of manufacturers of waterproof sailing wear. You will need to devise experiments for comparing the waterproof and breathability properties of various sample fabrics which are similar to those used in sailing clothing. Here are some ideas to help you:

Waterproof: 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.

Things to think about

What are the most important features of sailing clothing?

What makes a fabric waterproof?

What are breathable fabrics and what are their advantages and disadvantages?

What are the best clothing products currently available for sailing?

What was sailing clothing like in the past?

What new technologies might be used in sailing clothing in the future?

Useful resources

You could ask for samples of different fabrics including breathable and non-breathable ones from manufacturers. 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. Alternatively, you could use samples of similar fabrics from old clothing or other recycled textiles.

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Health and safety

A science project is both dynamic and exciting but can also carry some risk. To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- find out if any of the materials, equipment or methods are hazardous;
- assess the risks (think about what could go wrong and how serious it might be);
- decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on);
- make sure your teacher agrees with your plan and risk assessment.

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

Remember!

Science isn't just about data. The most successful projects will demonstrate good communication skills and show original ideas that address a real-world problem.

Look at the world around you and consider all the innovative ways that you could address the challenge. Even if things go wrong, use this to show what you have learned. Don't forget to use the student profile form to help structure your project.