

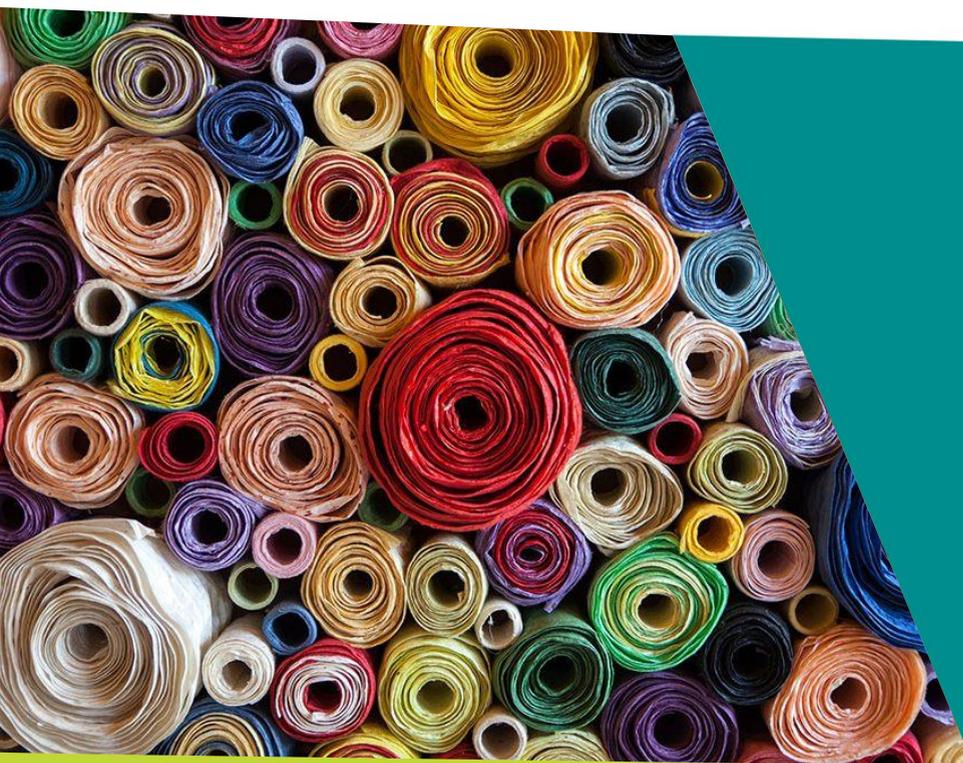


GOLD AWARD

COMPARE FABRIC PROPERTIES



Typically 70 hours of project work
Recommended for 16-18 year olds



**Practical
project**

Compare the properties of a range of fabrics made from different fibres.

#chemistry

#materials

#fashion



HOW TO RUN CREST USING THIS ACTIVITY

Entering your project without a teacher or facilitator? No problem! You can enter your work yourself by following this link: www.crestawards.org/sign-in

Looking for some support? Find a mentor by contacting your local STEM Ambassador hub: www.stem.org.uk/stem-ambassadors/local-stem-ambassador-hubs

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

- **Develop and lead the project**
- **Complete a minimum of 70 hours of project work**
- **Consider the broader impact of their project and demonstrate an innovative approach**
- **Write a project report or portfolio of evidence**
- **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 Gold Award project with the name(s) of the student(s) and the title of their project. If you don't have all these details, you can fill them in later!

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.

Run the project

Encourage your students to use the Gold student guide to plan and carry out their project. Each student involved in the project should complete their own profile form.

You don't want all their good work to go to waste, so be sure they keep a record of all their amazing progress. Keeping a regular project diary will save them precious time when writing their final project report.

The students should spend at least 70 hours on the project in total.

Remember to 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. At the end of the project, each student should complete a Gold profile form and communicate their project. This is a chance for them to reflect on all the interesting things they've learnt and the invaluable skills they have used.

Students working in a group can either submit a joint report or separate reports, but they must each complete a profile form.

Use the CREST criteria on the profile form to help the students check that they have included everything in their report.

Enter your project for a CREST Gold Award

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

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

Select your project and upload the profile form per student, project report and other evidence, such as pictures and diagrams.

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

Congratulations on submitting for CREST Gold!

What next?

Is university on the horizon for your students? They can use their project to help demonstrate their newly found STEM skills and knowledge in UCAS personal statements.

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

STUDENT BRIEF

**GOLD
AWARD**

Compare fabric properties

In this project, you will compare the properties of a range of fabrics made from different fibres. The fabrics could be woven or knitted and they could be made from natural fibres such as cotton and wool or synthetic fibres such as nylon. You should investigate both physical and chemical properties of the fabrics.

Getting Started

You should start by picking your samples.

- What sort of fabrics and fibres will you use?
- How many different types will you test?
- How many samples will you test to give accurate results?

Physical properties: You will have to decide on your testing methods. You may design or adapt these, or you may be able to use accepted standard procedures, depending on your mentor. The sorts of physical properties to test could include:

Strength: Think about what type of strength you're testing. This could include the strength of the fabric or the strength of the joins. Is it easy to join the fabric together? How strong are the seams?

Tear resistance: Abrasion - in other words, how quickly do the fabrics wear down when rubbed on a rough surface.

Thermal resistance: Chemical properties: You will need to design some tests to be able to compare the chemical properties of your fabric samples. You could:

Investigate how easily they take up different dyes both synthetic and natural. You could make your own synthetic dyes, or extract natural dyes, and use these in the tests.

Investigate how the dyes are affected by washing - do they fade? See if different types of washing powder (different brands, biological, non-biological etc.) make a difference.

Investigate how the dyes are affected by exposure to bright sunlight.

Investigate how easy it is to shift everyday stains from the fabrics - for example, red wine, chocolate or grass stains. Do different washing powders make a difference?

Investigate the different fabrics' resistance to other chemicals, such as the sorts of chemicals found in a laboratory, or 'everyday' chemicals such as bleach.

Things to think about

If you have a mentor speak to them about what properties they think you should test for.

Useful Resources

You should link up with a local university or similar institution to find out about different ways of testing physical properties of fabrics. You might try contacting somebody from a clothes manufacturer responsible for testing the clothes.

You could try linking up with a chemist from a company that manufacture washing powders. They should be able to tell you how they test their products. For example, how do they test if their washing powders make colours fade - often washing powders claim they will keep your clothes bright.



STUDENT BRIEF

**GOLD
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Health and Safety

Science project work 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.

Remember that many dyes, cleaning materials, stain removers and other chemicals are hazardous.

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.