



SILVER AWARD

HOW HEALTHY IS YOUR SPREAD?



Typically 30 hours of project work
Recommended for 14-16 year olds



**Practical
project**

Investigate the fat and salt contents of different types of spread.

#chemistry

#health

#food



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: <https://www.stem.org.uk/stem-ambassadors/local-stem-ambassador-hubs>

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

- **Develop and lead the project**
- **Complete a minimum of 30 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 Silver Award project with the name(s) of the student(s) and the title of the project. If you don't have the details yet, 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 Silver 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.

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. 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 Silver 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 Silver!

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.

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

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

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How healthy is your spread?

In this project you will investigate the fat and salt contents of various types of spread. At the end you should suggest which type of spread should be used by a patient with coronary heart disease. Before you start any tests, you should research the disease. Find out about the effects of high cholesterol and high blood pressure, and what in turn can cause these symptoms.

Getting Started

You should start this project with some research. Try finding out about the various different types of spread that are available - for example, butter, margarine and their numerous alternatives (low-fat, no-added salt etc.)

You now have to choose some spreads to test (about six should be enough). Try to get a wide variety. Find out, from the labels, how much salt and fat each one contains. Write down how much of each fat is saturated and unsaturated.

Testing your spread: You're now going to carry out some tests to find (a) the fat content of your different spreads, (b) the salt content of your spreads, and (c) how unsaturated the fats are in the spreads.

- Techniques to try include:
- Fat content - Gravimetric analysis
- Salt content - Chloride titrations
- Unsaturation - Bromine water titration

The results: Use the information gained from your results, together with your previous research, to decide which spreads would be best for somebody with heart disease. Explain why.

How did your results compare to the values given on the spreads' packaging? Can you explain why there were any discrepancies?

Suggest some improvements to your methods.

Things to think about

You could search for just how low in fat something has to be before it can claim to be low-fat on its label. Also find out what saturated and unsaturated fat means. Ask people which spread they buy, and ask for their reasons.

Useful Resources

You may need some help from your teacher to find out how to do the tests.



STUDENT BRIEF

SILVER AWARD



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.

Do not eat or taste any foods made in the laboratory

For bromine water titration you will need to use a fume cupboard as toxic bromine fumes can escape from the solution.

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.