CREST AWARDS

How much starch is in a potato?

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

Practical project

Run tests on potatoes to see how much starch they contain.

#biology

#food

#cooking

HOW TO RUN CREST USING THIS ACTIVITY

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

All potatoes contain starch; however, some varieties of potato have more starch than others. The amount of starch in a potato affects what it's used for in terms of cooking and food preparation. In this project, you will investigate the starch content of different varieties of potato and see how this affects their viscosity.

Getting Started

You should begin this project by finding out how the starch content of foodstuffs affects cooking and food preparation. Which varieties of potatoes are used to prepare certain food products, and why?

Select some spuds to test. Try to pick as wide a selection of varieties as possible, for example, new potatoes, white potatoes, red potatoes and baking potatoes.

Starch content: Test your potatoes for the presence of starch using iodine as an indicator. Use this method to see if it is possible to produce qualitative data to rank your potato varieties from those having the most to those having the least starch content.

Find out how you can use a colorimeter to determine the starch content of your potato selection. This will provide you with quantitative data.

Now rank your spuds in order of starch content from highest to lowest.

Cleaning the pan: When you boil potatoes some of the potato disintegrates and can get stuck to the saucepan. It usually sticks due to the presence of starch. Design an experiment to investigate which detergents are most effective in the removal of starch from saucepans.

See what effect detergent has on the structure of starch by examining slides of boiled potato pulp, stained with iodine with a light microscope.

Test different detergents, and different concentrations of the same detergent to determine the most cost effective way of cleaning your saucepan.

Potato starch and viscosity: Potato starch is found in a wide variety of foods, dyes, adhesives, gums and pharmaceuticals. Try finding out how potato starch is made and its uses. One key property of potato starch is its viscosity. Investigate how to use a Marsh funnel to determine the viscosity of your selection of potato varieties. Compare their viscosities and suggest which of the above applications they would be most suitable for.

Things to think about

Why not go further when selecting your types of potatoes? Try using them in different forms such as crisps and chips.

Useful Resources

You could link up with someone from the agricultural industry to find out what sorts of potatoes they grow and what they're used for. Food manufacturers may also be able to provide you with information.

www.crestawards.org

STUDENT BRIEF

GOLD 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.

Take care, even dilute solutions of iodine can stain skin and clothing.

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.