



► **School Lessons with Pritt**

These materials are part of the Researchers' World education initiative. The teaching concept and program were developed under the guidance of Prof. Dr. Katrin Sommer, Chair of Chemistry Didactics at Ruhr University Bochum, Germany, with the support of Henkel adhesive experts. The experiment is suitable for third or fourth grade students.

► **Lesson 4: Obtaining starch from food**

Once the students have found a starchy raw material (potatoes, wheat or corn), they move on to the next step of isolating the starch from this raw material. Once again, they work in groups of two or four. You can start the class by discussing with the students how they could get the starch out of the food.

Materials needed

- 3-6 potatoes
- 150 g (5 oz.) cornmeal
- Old dish towels
- 4 medium sized plastic bowls
- 1-2 kitchen graters
- 2 china dishes or heat-resistant crystallizing dishes
- Measuring jug
- Water

Part 1: Observation

The observation that water becomes cloudy if a starchy food is left to soak in it for several hours can be a helpful starting point. This phenomenon is particularly noticeable when grains of rice are left to soak in water. The cloudiness means that something has "migrated" from the food into the water. It is useful to prepare a sample beforehand illustrating this effect.

Once the students have realized that you can use water to obtain the starch from the food, you can start the actual experiment:



Part 2: Experiment instructions for the students

1. Choose one of the foods (3-6 potatoes or 150 g (5 oz.) of cornmeal) and grate if necessary (into a plastic bowl).
2. Add 300 ml (10 fl. oz.) of water to the grated food in the plastic bowl and stir with a glass rod.
3. Put a dish towel above a second plastic bowl, pour in the mixture and squeeze out the water (liquid). Collect this liquid in a bowl and wait until some sediment settles at the bottom.
4. Put the remaining mixture back into the first bowl and repeat steps two and three, but using only 200 ml (7 fl. oz.) of water. Wait five minutes and then carefully strain off the liquid. Leave the white residue at the bottom in the bowl.
5. Put the residue into a dish and place the dish in the oven at 180°C (350°F) for 20 minutes.

It is helpful if there is an oven available in which the starch extract can be dried. The starch can be extracted most effectively from potatoes, which can be used peeled or unpeeled. After the drying step, a hard whitish substance remains in the dishes: the starch.



► Worksheets for students

► Lesson 4: Obtaining starch from food

You have now learned that starch is present in potatoes, wheat, rice and corn. To use this starch to make an adhesive, you must first find a way of getting the starch out of the food.

Here are the instructions you need to conduct the experiment – but somehow they have gotten mixed up. First put the sentences below in the correct order. Then cut out the individual boxes and glue them in the right order into your notebook or onto a new sheet of paper in your science folder.

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