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| Chemical Investigations |
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| Pupil Guide |

A picture containing indoor, container, glass

Description automatically generatedA picture containing room, drawing

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Burning Carbohydrates

*UNIT 3 PPA 2*

**INTRODUCTION**

Carbohydrates are compounds of carbon, hydrogen and oxygen. Starch and sugar are carbohydrates and they provide us with the energy our bodies need.

The aim of this experiment is to show that heat energy is produced when starch and sugar are burned and to compare how much heat energy each produces.

We will burn flour as the 'starch' carbohydrate and icing sugar as the 'sugar' carbohydrate. The energy produced when they burn will be used to heat water. The rise in temperature of the water will give us some idea of how much heat energy has been produced.

To make the experiment fair the same amount of flour and icing sugar will be burned and the same volume of water will be heated.

**You will need**

|  |  |
| --- | --- |
| Boiling tube | beaker |
| spatula | thermometer |
| measuring cylinder | Bunsen burner and heating mat |
| clamp stand and clamp | flour |
| icing sugar |  |

**Safety**

Avoid inhaling dust.

Diagram

Description automatically generated**Procedure (what you do)**

1. Fill the beaker half full with water

Shape

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1. Add water to the measuring cylinder up to the 10 cm3 mark.
2. A picture containing text

   Description automatically generatedPour this water into the boiling tube.

A picture containing diagram

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1. Clamp the boiling tube in a vertical position. Measure the temperature of the water in the boiling tube. Record this temperature by writing it down in the table.
2. Light the Bunsen burner and add flour to the spatula to give a level spatulaful.
3. A picture containing text, table

   Description automatically generatedHeat the flour in the Bunsen flame until it just catches fire.
4. Quickly place the burning flour underneath the boiling tube so that the flames are touching the bottom of the boiling tube.
5. When the flour has stopped burning, stir the water with thermometer. Measure and record the final temperature of the water.
6. Repeat the experiment using icing sugar. Make sure the amount of icing sugar you burn is the same as the amount of flour you burned.

Remember to measure and record the starting temperature of the water and the final temperature of the water.

**Results sheet**

*What was the aim of the experiment? (Remember to say which factor you were investigating)*

**Procedure**

*Draw and label a diagram showing the water in the boiling tube being heated by the burning carbohydrate. (In other words, draw a labelled diagram that would go with step 7 on the instructions sheet).*

*Complete the following table:*

*Graphical user interface, text, application

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**Conclusion**

*What did you find out from this experiment?*