

Title: caramelisation

Aims:

All will prepare and cook
honey comb

Most will identify and explain
key terms

Some will describe the science
behind honeycomb.

**DNA: why is sugar
added to foods?**

*Thank you for being
ready to learn!*



Overview of course

WJEC Level 3 Certificate in Food Science and Nutrition			
Unit number	Unit title	structure	Assessment
1 (Year 12)	Meeting nutritional needs of specific groups	Mandatory	Internal and external
2 (Year 13)	Ensuring food is safe to eat	Mandatory	External
3 (Year 13)	Experimenting to solve food production problems	Optional	Internal
4	Current issues in food science and nutrition	Optional	Internal

Overview of year 12

- Unit 1: meeting nutritional needs of specific groups
- Explore the functions of nutrients and why they are needed by the body
- Look at nutritional requirements for different life stages
- Develop practical skills to plan and prepare nutritionally balanced dishes
- Identify and demonstrating the importance of food safety

Overview of year 13

Unit 2: Ensuring food is safe to eat

- You will look at the hazards and risks in relation to storage, preparation and cooking of food in different environments
- Understand what control measures need to be put into place

Unit 3: experimenting to solve food production problems

- You will develop skills to plan and carry out experiments to address food production issues

Job opportunities

- This course is designed for those wanting to progress to university but also to those wanting to pursue careers or learning in related areas such as:
- Food industry
- Hospitality and Catering
- Teacher
- Dietician
- Nutritionist
- Food scientist
- Chef
- Research and development officer.

University courses

- By studying for this certificate at A level, you will gain the required knowledge to use the qualification to support entry to higher education courses such as
 - BSc Human Nutrition
 - BSc (Hons) Public Health Nutrition
 - BSc (Hons) Food with nutrition
 - BSc (Hons) Food Science and Technology

Practical- honeycomb

- In today's lesson you will be making honeycomb.
- Before we start we need to ensure we are prepared for a practical.

Aprons will need to be worn and tied up at the back. These can be found at the back of the room on the pegs.



Long hair that goes past the shoulders will need to be tied up. Spare hair bands are at the front



All hands need to be washed in the white sink at the door.



Honeycomb

175g granulated sugar
87g golden syrup
1 tsp bicarbonate of
soda

- Place the sugar and golden syrup in a large deep saucepan. Cook over a medium heat and swirl the pan to dissolve the sugar. (CAUTION: boiling sugar is extremely hot. Handle very carefully. Use a deep pan to avoid bubbling over.)
- Keep the heat steady and not too high otherwise the sugar can burn and do not stir with a spoon or the sugar will crystallise. Keep tilting the pan to evenly melt the sugar. Clip a sugar thermometer to the side of the saucepan and when the temperature reaches 146C, remove the pan from the heat.
- Pop an oven glove on, or preferably two heatproof gloves - you really don't want to get this on your skin. Add the bicarbonate of soda and whisk aggressively to thoroughly mix it through the sugar. The mixture will expand immediately. Quickly and carefully scrape it into the baking tin using a heatproof spatula or wooden spoon. Leave to harden for 2 hours.
- Wash up, leave all equipment out on your desk to be checked.

Caramelisation- definition

- The breaking up of sucrose molecules when they are heated which changes the colour, flavour and texture of the sugar as it turns into caramel



Stages of caramelisation

Sugar used in cooking is a disaccharide made from glucose and fructose

When sugar is heated, it firstly melts then forms a syrup and boils

As heating continues the hydrogen and oxygen atoms in the sugar form water they evaporate

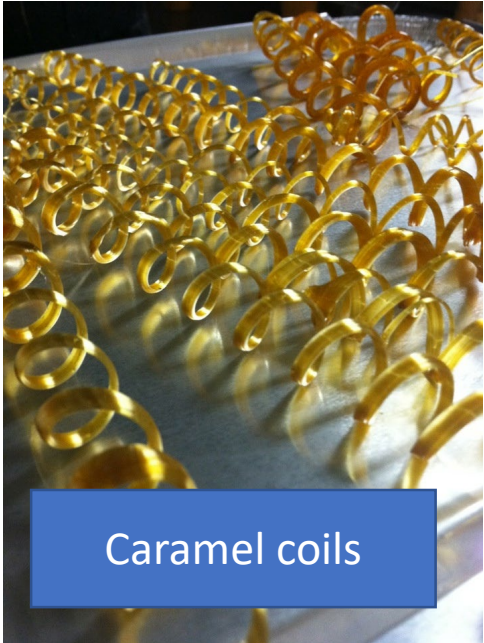
this causes the colour of sugar to gradually change from colourless and clear to golden brown to dark brown and eventually black (this is carbon)

As this happens the molecules of sucrose start to break up

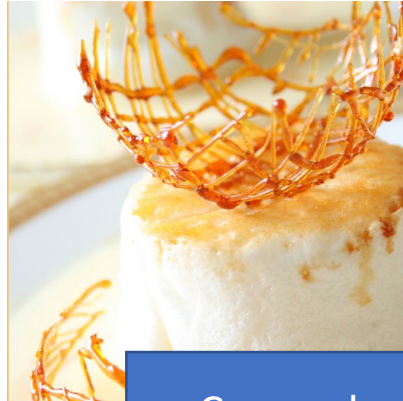
Cooking caramel

- When you make caramel it is usual to add water to the sugar in a pan and heat gently on the hob until the water evaporates
- This avoids the risk of burning the sugar
- The texture of sugar also changes from crystals of sugar, to a syrup which when it cools down it becomes brittle
- It is important not to stir the syrup with a spoon- it will crystallise
- Temperature of caramelising sugar is 160C to 170C

Products of caramelisation



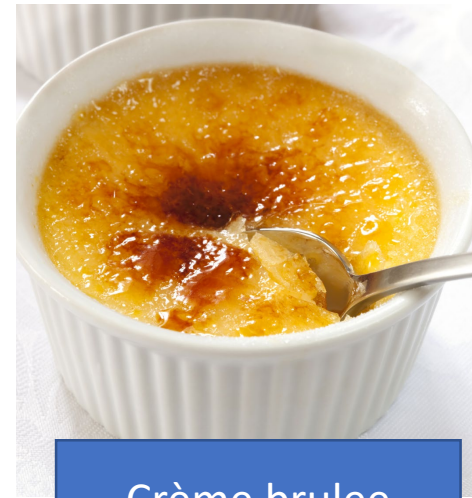
Caramel coils



Caramel cage



Caramelised
onions



Crème brulee



Spun sugar



Crème caramel



Banoffee pie

What are raising agents?

- Raising agent is added to uncooked mixtures to introduce lots of gas bubbles which expand when the mixture is baked in the oven
- Gases can be introduced in 3 ways
 - Chemical- by using baking powder, bicarbonate of soda
 - Mechanical- by whisking, beating, sieving, creaming or rubbing in to trap air or add moisture
 - Biological- by adding yeast

How do raising agents work?

- Action of moisture, heat or acidity triggers a reaction with raising agents to produce gas bubbles
- Within baked goods, gas bubbles given off by raising agent make the products rise by expanding and pushing it upwards
- Gas bubbles then become set in it and provide the soft sponge like texture

Carbon dioxide- bicarbonate of soda

- Bicarbonate of soda produces CO₂ when it is heated
- CO₂ bubbles help to expand any air bubbles in the mixture and enable the mixture to rise

To make baking powder bicarbonate of soda and cream of tartar are added together- this prevents the soapy taste in bicarbonate of soda

Baking soda + plain flour= self raising flour