Food Manufacture

Temperature Control

Lesson 1

Understand the importance of temperature control in food manufacturing to ensure food safety is never compromised.

Learning Objectives

- Recognise the role of temperature control in a HACCP system
- State the conditions required for pathogenic bacteria to grow
- Identify the temperature danger zone and the role it plays in the growth of bacteria
- Define heat processing and understand the legal time and temperature combinations for food safety
- List the different methods of heat processing

Learning Objectives

- Describe how to cool products safely
- Summarise the temperature requirements of chilled products
- Explain how to store products in a refrigerator and freezer safety
- Define the temperature requirements of frozen products
- Describe the three main methods of freezing and list the different types of freezers

Learning Objectives

- Explain what freezer burn is and how to prevent it
- Identify the main methods to defrost product and explain how to do it safely
- Recognise how to reheat products safely
- State the importance of monitoring temperature and list the different monitoring methods
- Understand how to perform a product core temperature check correctly

Food should be kept under specific temperature controls in order to maintain product safety, quality and nutritional value.

As the temperature of food can have an affect on food safety, controlling it forms part of the Hazard Analysis and Critical Control Point (HACCP) system.

At any point throughout the factory where temperature can compromise the safety of the product then a control will be in place to prevent it. This is known as a critical control point (CCP). An example is regular checks carried out during the cooking process to ensure the correct core temperature has been achieved.

Bacteria can be found on food naturally or by contamination. Dangerous levels of bacteria if eaten can cause food poisoning and can result in death.

Pathogenic bacteria is very small and cannot be seen on food you would need a microscope to detect it. This makes it very dangerous as it can harm people without them knowing.

If bacteria has the ideal conditions it will grow, these conditions are:

- Food source
- Moisture
- Warmth (temperature danger zone)
- Time

Most bacteria will multiply every 10 to 20 minutes with all four of the ideal conditions, this is known as binary fission. Therefore, it is important to remove one of the conditions. Temperature control is an effective way of doing this.

FOODSPHERE

Keeping food out of or minimizing the time it is in the temperature danger zone is critical to food safety.

Temperature Danger Zone

Boiling point 100°C

Reheating 75°C

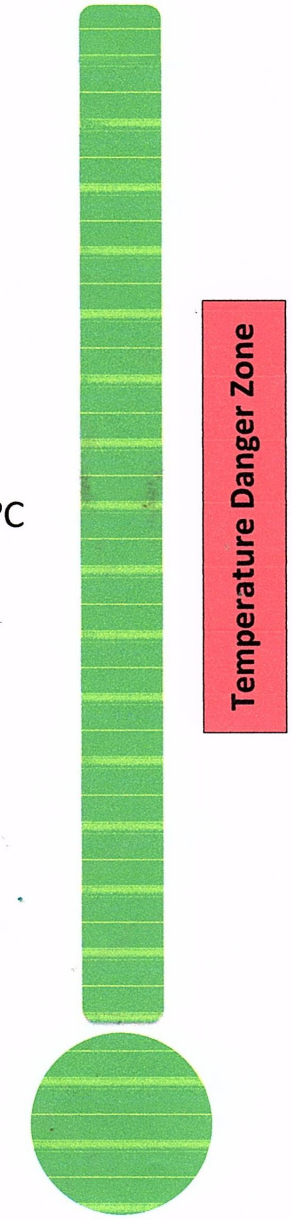
Cooking 70°C

Hot holding 63°C

Body Temperature 37°C

Refrigeration 8°C

Freezer -18°C



The temperature danger zone is between 8°C and 63°C, an optimal temperature for bacteria growth is 37°C.

Below 8°C growth is stopped or significantly slowed down. Above 60°C bacteria starts to die. It is advised to cook food until it reaches a core temperature of 70°C for 2 minutes.

Food changes temperature when it is:

- Cooked
- Cooled
- Chilled
- Frozen
- Defrosted
- Reheated

Some processes require a constant temperature such as fermentation rather than reaching a core temperature.

Revision Activity 1

What conditions does bacteria need to multiply?