

FOOD SCIENCE & HYGIENE

Chapter 5.... Time – Temperature control

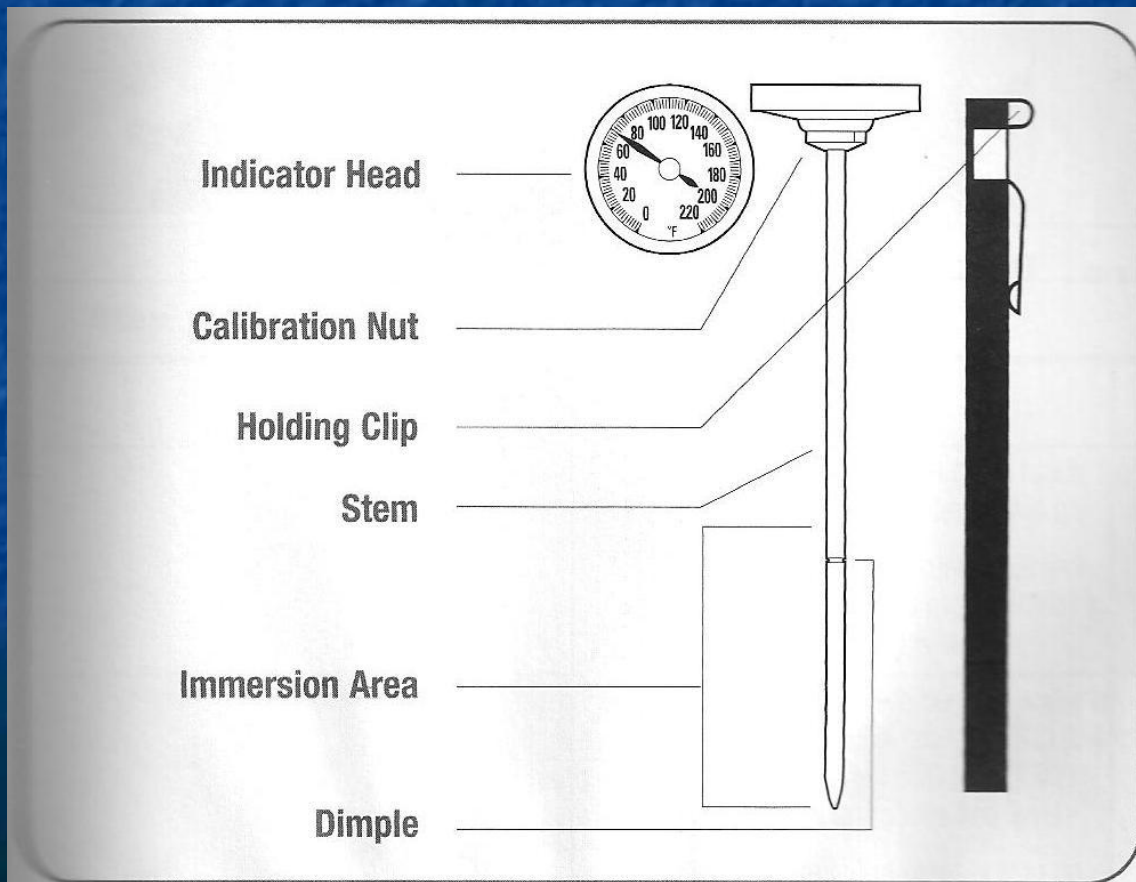
Time – Temperature control

This chapter is about killing germs with cooking and stopping their growth by keeping the food **hot or cold**.

This is called.... **time – temperature control** and you need a thermometer to check the temperature

Food thermometers

There are different types of food thermometers and are also known as **metal-stem probe thermometers** ;-



Calibrating a food Thermometer

To check the thermometer is working correctly you should do the following ;-

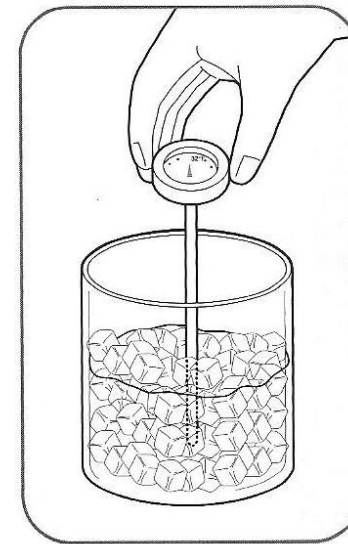
Fill a large cup with crushed ice, put the thermometer in at least 5cm for 30 seconds.... It should read 0 degrees Celsius (centigrade)

If it does not report it to your supervisor immediately

This should be done every week or if it is bumped

Ice-Point Method

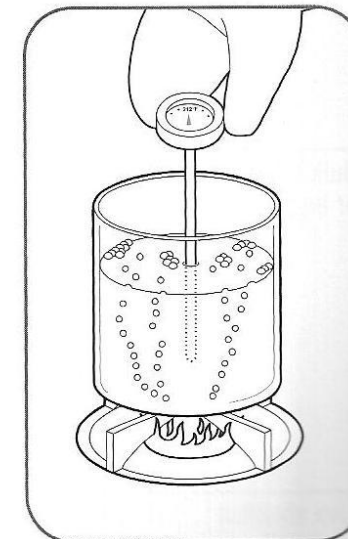
Step	Process	Notes
1	Fill a large glass with crushed ice. Add clean tap water until the glass is full.	Stir the mixture well.
2	Put the thermometer or probe stem into the ice water so that the sensing area is completely submerged. Wait 30 seconds.	Do not let the stem touch the bottom or sides of the glass. The thermometer stem or probe stem must remain in the ice water.
3	Hold the adjusting nut securely with a wrench or other tool and rotate the head of the thermometer until it reads 32°F (0°C).	Press the reset button on a digital thermometer to adjust the readout.



Using the Ice-Point Method

Boiling-Point Method

Step	Process	Notes
1	Bring clean tap water to a boil in a deep pan.	
2	Put the thermometer or probe stem into the boiling water so that the sensing area is completely submerged. Wait 30 seconds.	Do not let the stem touch the bottom or sides of the pan. The thermometer stem or probe stem must remain in the boiling water.
3	Hold the adjusting nut securely with a wrench or other tool and rotate the head of the thermometer until it reads 212°F (100°C) or the appropriate boiling temperature.	The boiling point of water is about 1°F (about 0.5°C) lower for every 550 feet (168 m) you are above sea level. Press the reset button on a digital thermometer to adjust the readout.



Using the Boiling-Point Method

Food or probe thermometer





Using a thermometer is the only way to know the temperature of food.

Take temperatures **in the thickest** part of the food.

When taking temperatures of large amounts of food like large pieces of meat, be sure to take the temperatures in **2 or more places**.

Always **wash and sanitize** the thermometer each time you use it

Checking the Temperatures of Various Foods

Item	Method	Example
Meat, Poultry, Fish	Insert the thermometer or probe directly into the thickest part of the product (usually the center).	
Packaged food (refrigerated and frozen)	Insert the thermometer stem or probe between two packages, being careful not to puncture them.	
Milk and other liquids	Insert the thermometer stem or probe until at least 2 inches (5 cm) are submersed. Don't let the thermometer or probe touch the sides of the container.	
Bulk milk or liquids	Fold the bag over the stem of the thermometer or probe.	
Live shellfish	Insert the thermometer stem or probe into the middle of the carton or case, between the shellfish.	
Shucked shellfish	Insert the thermometer stem or probe into the container until the sensing area is completely submersed.	

Preparing food



Always wash your hands first

Only bring out the amount of food that you can work on at one time

Always place the thermometer in the thickest part of the meat or the center of the food to get a true reading

Do not touch the bone with the stem of the thermometer as this will give you a false reading

Cooling and reheating of foods

It is very important to know how to get **cooked foods cold (cooling)** and how to get **cold foods hot (reheating)** in a way to keep food safe while it gets past the **Temperature danger zone**

It is safest to make food fresh each day and serve it immediately

Speed is important with cooling

If you must make food in advance cool it **as fast as possible** to prevent bacteria growth and toxin production...

Reheating will **not** destroy toxins

Cooling soft/thick food

Examples of soft/thick food are **beans, rice, potatoes, stews, chilli, thick soups or thick sauces.**



You can cool these in the following ways;-

- **Pouring** into shallow metal containers
- **Spread** as thin as possible
- **Stirring** food speeds up cooling time



Cooling liquid foods

When **cooling liquids** you can cool them in the following ways;-

- **Place** container in a Ice bath



- **Stir** the food to ensure the food in the middle is moved around to the outside of the container



Cold holding

Always keep cold food at 5 degrees or colder

Date food when putting into the refrigerator

Remember refrigerators can go above the set temperature if warm food is added.

Check food with a probe when preparing to reheat food



Thawing frozen foods

Plan ahead to allow enough time to thaw food in one of the following ways;-

- Thaw food in a refrigerator
- Under cold running water
- Defrost in a microwave



Beware the 'Temperature danger zone'
Ensure the food is thoroughly thawed

Hot holding

When food is cooked and ready to serve you must ensure that you **keep it above 60 degrees**

Check food temperature if you move it from the kitchen to a service area

Stir liquids to ensure there is no cold-spots.
Ensure the equipment is up to temperature

Ways to keep hot food hot

- Check food with thermometer
- Stir food to keep the food on top hot
- Keep covered
- Don't leave food stood on the service-top as it will loose temperature and become cold

Holding in temperature danger zone

Food that is kept in the Temperature danger zone for **more than 4 hours** is considered adulterated and should be destroyed

Always **reheat quickly to over 74 degrees** and hold for more than 15 seconds

Check temperature before serving

Never reheat food twice

Freezing

Products which are not thoroughly cooked and are intended for **raw, marinated, or partially cooked consumption** (eg sushi) must be blast frozen to **at least -1 degree for 15 hours** or **conventionally frozen to -20 degrees C for 7 days** in order to kill parasitic worms in the flesh