

4 Cooking Principles

CATERING IN THEORY

Food preservation

Physical methods

Physical food preservation methods tend to affect food by changing its temperature or water content.

Process	Description	Food preserved
1 Air drying	natural process	herbs
2 Sun drying	natural process	fruit, stockfish
3 Spray drying	using a hot gas to reduce products to powder	milk, eggs
4 Freeze drying	drying food quickly at very low temperatures	freeze-dried ice cream or instant coffee, food for astronauts and athletes
5 Microfiltration	removing solid particles in a liquid or gas to purify liquids	milk, juices, specialist beers and wine
6 Pasteurisation	thermal treatment that heats food to a specific temperature and then cools it, slowing the growth of microorganisms	canned food, dairy products, juices, wine and beer
7 Sterilisation	thermal treatment that kills harmful microorganisms at a very high temperature but for a short time, preserving the flavour	canned food, jam, marmalade, pickles and long-life milk

Chemical methods

Chemical preservation methods include both natural and artificial substances.

Natural additives used to preserve food are sugar, salt, vinegar and alcoholic while **artificial additives** are preservatives, antioxidants and antimicrobial substances.

- **Salt curing:** can be dry (for hams and sausages) or wet (for cheese and fish).
- **Sugar curing:** uses sweet substances like honey to cure meat or syrup to preserve fruit.

- **Marinating:** consists of immersing the product in an acid substance like vinegar, lemon juice or wine, sometimes mixed with oil and spices (lemon or vinegar for carpaccio or anchovies, wine for meat).
- **Preserving in vinegar:** common for vegetables such as onions or gherkins.
- **Alcohol:** can be used to preserve fruits like cherries, apricots and plums, with the addition of sugar.
- **Packaging in a protected atmosphere:** used on many products such as cheese, coffee, powdered milk, lemon juice, vegetables.

Physicochemical and biological methods

Physicochemical and biological methods of food preservation utilise preserving agents.

- **Smoking:** exposing food to smoke from wood or aromatic plants. Mostly used to preserve fish, meat and sausages. It combines the dehydration caused by smoke with a chemical reaction.
- **Fermentation:** biological preserving method which produces a chemical transformation of raw materials to obtain new products (yoghurt, vinegar and alcoholic drinks).
- **Food additives:** can be natural (citric acid, lecithin and pectin) or chemical (indicated by E numbers to show they are authorised by the EU and are classified according to their technical function).

Cooking techniques

Water cooking techniques

- **Poaching:** gently cooking food in a little liquid (water, milk, wine) at a constant temperature (eggs, fish and crustaceans).
- **Blanching:** quick process preceding food preservation or cooking, which you can do in hot or cold water. Blanching can tenderise food or fix the colour of green vegetables and it is an effective preservation method before freezing.
- **Boiling:** immersing food in water or other liquid until it forms bubbles. Used to cook rice, pasta, vegetables and boiled meats.
- **Steaming:** cooking food in the vapour or steam that rises from the water boiling under it with the advantage that few vitamins are lost, nutrients and aromas are preserved. You can steam almost any food: meat, poultry, vegetables, cereals or rice.

Techniques for cooking with fat

- **Deep fat frying:** immersing food in a very hot fat, about 200°C, in a container with a lid on it so it becomes very crispy. Fast method but too much deep fat frying is bad for health.
- **Frying:** similar procedure but using less fat, without a lid and at a lower temperature (160°-180°C). Food can be oily if you do not drain and dry it properly before serving.

- **Sautéing**: cooking something quickly in a small amount of butter or oil and liquid, such as wine. The products are cut into pieces, chopped or sliced.
- **Griddle** or **fry top cooking**: requires small amounts of fat or no additional fat at all, healthy way to cook food. Griddles are made of cast iron, steel or chrome steel and reach temperatures between 140° and 250° C.

Heat cooking techniques

- **Grilling**: contact of strong heat, excess fat drains away under it. Suitable for small and medium-sized pieces of tender red or white meats, small fish, crustaceans, poultry and vegetables.
- **Barbecuing**: on a metal grill over an open fire, usually in the open air, the food takes on a particular flavour from the charcoal it is cooked over.
- **Spit roasting**: food pieces are continuously turned to ensure slow cooking on all sides, used with large game, poultry or whole animals.
- **Cooking au gratin**: browning food at very high temperatures (250°-300°C) without a lid so that the food rapidly forms a crunchy golden crust. You need to use fat (butter, cheese, cream, etc.).
- **Baking**: cooking by dry heat in an oven without direct contact with a flame, usually done to bread, cakes, biscuits, etc.
- **Roasting**: cooking in an oven in direct heat, typical roast dishes are meat, large fish, potatoes, etc.
- **Microwaving**: cooking food quickly by using waves of energy. It is good for reheating and defrosting.

Mixed cooking techniques

Mixed cooking methods use gentle heat and add liquid during cooking.

- **Stewing**: slow cooking in a deep, lidded pot of liquid (used to simmer stews, goulash, fricassee, fish, fruit or vegetables).
- **Glazing**: slow cooking where water evaporates or is reabsorbed into the food so that it becomes jelly-like (for vegetables, white meats and poultry).
- **Braising**: roasting food in a concentrated liquid, such as a marinade or its juices. Long and slow type of cooking on a gentle heat with a lid on (for meats, poultry or fish).
- **Casseroling**: similar to stewing, but it requires the use of the natural food juices with no added liquids (ideal for tender poultry or lean game).

New cooking techniques

- **Vacuum cooking**: cooking food in sealed containers with the air partially extracted. This reduces oxygen content, preventing oxidation and enables us to preserve food for a long time.
- **Impregnation cooking**: uses a special appliance, a casserole dish equipped with a thermostat, inside which you can reduce the pressure, thus lowering water boiling temperature and create tender textured food.

At the end of the process, the re-injection of air generates a sponge-effect (impregnation).

CASE STUDY

Preserving food: tin cans

The first commercial canned food was produced in 1813. Tin cans were easy to transport, resistant and could preserve different types of food. By the 1900s the US was the biggest producer of canned foods, but in more recent times the tin can has had competition from other containers and food preservation techniques such as refrigeration and freezing.