



## Meat safety guidelines

*An ongoing focus on food safety is*

a priority for the Australian meat industry.

MLA's activities in this area are vigorous at both industry and consumer levels. Consumers require ongoing education and reassurance about the safety of the food they enjoy away from home and the food they purchase and prepare at home.

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*It's what you need to know!*

## Meat safety

### What you need to know

Because of the biological nature of meat, it contains micro-organisms such as viruses, bacteria, yeasts and moulds. Additionally, since meat contains many nutrients, micro-organisms may survive or even multiply.

Some of these micro-organisms have beneficial effects on the meat and the people who consume it, while others have no effect at all. However, some micro-organisms cause spoilage of meat and certain bacteria can cause food poisoning. Usually two events must occur to lead to food poisoning:

- Contamination of a potentially hazardous food with food poisoning bacteria.
- Growth of the food poisoning bacteria in that food.

## How fast do bacteria grow?

When given the right food at the right temperature (danger zone) the food poisoning bacteria will grow very rapidly. Bacteria split in half, so in optimum conditions one becomes two in about 20 minutes. In this way, one single bacterium in food can be 4000 in only four hours and more than two million in seven hours.

Time	Number of bacteria
noon	1
12.20 pm	2
12.40 pm	4
1 pm	8
2 pm	64
3 pm	512
4 pm	4096
5 pm	32,766
6 pm	262,144
7 pm	2,097,152

*Food safety at home*  
*Many consumers are unaware or unsure of the basic safety principles*

## Food safety at home

Many consumers are unaware or unsure of the basic safety principles for handling fresh and frozen meat, as well as cooked meat dishes. The following points provide a detailed guide.

### The temperature of your fridge and freezer is important

Regularly check that both the fridge and freezer operate at these temps.

Fridge temperature:

**4°C to 5°C**

Freezer temperature:

**-15°C to -18°C**

### Shopping tips

- Shop for non-perishable food first. Shop for chilled and frozen meats last, and use an insulated shopping bag (particularly in hot weather) to keep meat cold.
- If you need to travel for over 30 minutes, transport your chilled and frozen food in an insulated cooler.
- Transfer chilled or frozen meat to the fridge or freezer as soon as you get home.
- Only buy meat with undamaged packaging. Ensure meat is sealed properly and that meat juices cannot run out.
- Feel or touch the packaging when buying pre-packaged meat, particularly in supermarket fridges, to determine whether they are well chilled.
- Check use-by dates. Meat may still look, smell and even taste acceptable after this date, but it may also contain dangerous numbers of pathogens.
- Avoid meat that is discoloured, looks slimy or has 'off' odours.

### Storage and handling of fresh meat

- When refrigerating fresh meat, remove from plastic wrap then place on to a plate in a single layer, covered loosely with foil to stop the meat sweating.
- Place in the meat compartment or on the bottom shelf to ensure it doesn't drip on to other foods.
- Do not put raw and cooked meat together in the same compartment of the fridge.

### Freezing fresh meat

- Freeze in meal size portions to ensure only the amount needed is defrosted.
- Use durable, strong plastic bags and good quality foil to protect meat. Expel as much air as possible. Secure with tape for an effective seal.
- Each package should carry a label showing name of cut, weight or amount and date of packaging.
- When freezing fresh meat, make sure there is plenty of space so the cold air can circulate freely around the meat, helping it to freeze quickly.

### Thawing frozen meat

- Do not defrost frozen meat at room temperature or in hot water.
- Thaw frozen meat in the fridge.
- If using a microwave oven to defrost, the outside of the meat can reach high temperatures, so the meat must be cooked immediately rather than defrosted and allowed to sit for any length of time.
- Frozen raw meat, which has thawed, can only be refrozen if it is cooked first.
- Use extra care with mince. Its greater exposed surface area means it should be cooked as soon as possible after defrosting.

### Care in meal preparation

- Wash hands in hot soapy water for about 30 seconds before preparing food.
- Avoid preparing food if you have symptoms such as vomiting and diarrhoea.
- Make sure all cooking utensils, preparation boards, knives etc., are washed between handling raw and cooked meat and vegetables. Never handle cooked and uncooked meats together. Do not cut them up on the same boards or with the same utensils.
- Wash hands in warm soapy water between tasks.

### Cooking meat

- It is best to keep meat in the fridge until you are ready to cook it. However it can be taken from the fridge to lose a little of its chill before cooking. Be aware of the temperature of the kitchen or the heat of day. About 10 minutes is sufficient.
- Special rules for barbecuing - never stand meat in direct sunlight for any length of time. Keep both raw and cooked meat covered to protect it from contamination.

- Never use the same plate for raw and cooked meat.
- When cooking mince, sausages or hamburger patties, there should be no pink meat visible and the juices should run clear.
- Be particularly careful with hamburgers or meat patties. They should be thoroughly cooked to an internal temperature of 75°C; not served undercooked, rare or pink. If a meat thermometer is unavailable, a guide to ensure meat patties are cooked is that the juices run clear when a skewer is inserted into the thickest part.
- When cooking rolled or stuffed roasts ensure they are cooked evenly throughout. It is a good idea to check the internal temperature of these meats with a meat thermometer. Aim for 75°C.
- The cooking of steaks or primal cut roasts is a matter of preference and can range from rare to well done. Regardless of the degree of doneness, the meat surface should always be brown in case bacteria is lurking on the surface. Since the meat below the surface has not been exposed to air or bacteria, it is safe to only cook these cuts to a rare stage.
- Never pour raw marinade mixture over cooked meat. It must always be brought to boiling point and boiled for a few minutes before using to avoid food poisoning.

### Cooling cooked meat and meat dishes

- Cooked meat dishes such as casseroles and mince dishes should be refrigerated immediately after steam has evaporated. Do not leave to cool completely on the bench.
- Cool cooked dishes as quickly as possible by placing into a shallow container and then into the fridge or freezer.
- Refrigerate leftover cooked meats such as roasts and barbecued cuts as soon as possible.

### How to freeze cooked meat dishes

Stews and casseroles freeze very well, as do mince dishes such as meat sauce for pasta and meatballs in sauce. Dishes such as meatloaf and fully cooked braised meat dishes are best not frozen. The general rule is that the meat dish should have sufficient liquid to cover the meat; you can add a little boiled water to the sauce if needed. This can be reduced when reheating the dish.

If you plan to cook larger quantities of these dishes ahead and freeze them it's best to:

- Line cake tins or other suitable containers with strong plastic bags.
- Ladle into each bag a sufficient amount for one meal.
- Seal each bag and label. Freeze with bag and contents still in container.
- When frozen, remove from container, reseal to expel as much air as possible, and return to freezer.
- This way a greater amount of food can be stored without using a large number of containers.
- Containers such as plastic ice cream buckets and aluminium foil trays can have food packed directly into them.

### Reheating meat dishes

- When reheating cooked meat dishes it is best to heat until thoroughly hot (above 75°C).
- Reheat in the microwave or oven, or on the cooktop, making certain that not only the liquid but also the meat is fully heated. Stir occasionally until the contents have bubbled for at least two minutes. This should ensure that the liquid and the meat are fully heated.

### Storage times

	<i>Refrigerator</i>	<i>Freezer</i>
Sausages	2 days	1-2 months
Mince	2 days	2-3 months
Meat strips	2 days	2-3 months
Diced meat	2 days	2-3 months
Thin steaks (minute)	2 days	2-3 months
Steaks	2-3 days	3-4 months
Roasts (boned and rolled)	2-3 days	4-6 months
Roasts (bone-in)	3-4 days	4-6 months
Corned beef (fresh)	1 week	4-6 months
Vacuum-packed meat (unopened)	4-6 weeks	4-6 months
Pasta sauce (mince) and casseroles	2-3 days	2-3 months

## Commonly asked questions

### Q What's the best way to thaw meat?

A It takes a bit of planning but frozen meat is best thawed in the fridge. Thawing time for a large roast is about four to seven hours per 500g. A smaller roast such as a rack of lamb will take about three to five hours per 500g. Steaks (about 3cm thick) will take about 12 hours or overnight. If time is short use the microwave oven on defrost setting. Cook meat immediately.

Thawing meat at room temperature encourages bacterial growth as the outside will defrost before the centre of the cut.

We do not recommend that you defrost meat in water. Placing frozen meat in hot (or cold) water to defrost causes bacterial growth as well as flavour and colour loss.

**Q Does freezing kill bacteria?**

A No, it only prevents any further growth. Heat destroys bacteria.

**Q If frozen meat has defrosted, can it be refrozen?**

A It is not recommended, unless the meat is cooked first.

The reasons for this are:

- There can be microbial risk as a result of refreezing; this is avoided if the meat is cooked before refreezing.
- The quality of the meat is affected. Freezing creates ice crystals within the structure of the meat (as meat contains a high percentage of water). These tiny ice crystals rupture the fibre of the meat, which causes the meat to lose a little of this water when defrosted. If repeated freezing occurs the meat will be very dry.

**Q What happens if meat goes beyond the maximum recommended freezing time?**

A Freezing prolongs storage time because it prevents microbial growth. Recommended times are related more to optimum eating quality than food safety. After a certain period of time frozen food starts to dry out – the smaller the item of food the faster the effect. That's why it is recommended to freeze mince for up to three months and roasts up to six months. Beyond this time meat will be safe to eat but it will be very dry.

**Q Why is it recommended to freeze large quantities of meat in batches?**

A The larger the load added to the freezer, the slower the rate of freezing. This results in larger ice crystals forming and excessive moisture loss when the meat defrosts.

If freezing large quantities of fresh meat:

- Do so over a period of 24 hours.
- Wait until each batch of meat has fully frozen before adding more.
- Avoid fresh meat touching frozen meat.

**Q Why are freezer storage times for cooked meats shorter than raw meat?**

A It's due to what is known as flavour taint. Certain flavours oxidise in the freezer after a period of time. The most common are onion and garlic. As many cooked dishes contain one or both of these ingredients, it's recommended to store cooked dishes for no longer than one month to prevent 'off' flavours occurring.

**Q Why is it recommended to take meat out of plastic when storing it in the fridge (as opposed to the freezer)?**

A Plastic will make meat sweat. If you intend to cook the meat the day it's purchased, there isn't any need to take it out of the plastic wrap. However, if you are planning to store the meat for longer, it is best transferred to a non-plastic dish and covered with foil or loosely covered with plastic to allow some airflow.

**Q Can I store fresh meat in plastic containers?**

A Yes as long as air can circulate around the meat.

And remember to:

- Store raw meat near the bottom of the fridge and ensure any juices, which may contain pathogens, do not drip on to other foods.
- Cover cooked and ready-to-eat food.
- Store meat with the fat side up if it's a large roast.

**Q How long can I store vacuum-packed meat at home?**

A Long-term storage of vacuum-packed meat is not advised at home. It must always be stored in the refrigerator. Certainly check its use-by date and use within that time. Large pieces such as a whole sirloin should be stored with the fat side up to prevent the juices in the package seeping into the fat.

**Q What causes the smell in vacuum-packed meat?**

A Vacuum-packed meat has a longer storage life than other fresh meat because all air is removed from the packaging, thus retarding any microbial growth. However, as a result, the meat develops what's known as 'confinement odour'. This does not mean the meat is spoiled; the odour will disappear a few minutes after opening.

Once opened, vacuum-packed meat must be used as soon as possible – within two days is best.

**Q Why is vacuum-packed meat purple in colour?**

A It's due to the lack of oxygen in the packaging. Once removed from the package and exposed to oxygen, the red colour or 'bloom' will return.