Beef + Lamb New Zealand Reference Guide
New Zealand has a long history as a producer of quality meat. We are justly proud of the excellent reputation of our naturally reared beef and lamb, in export markets around the world, and on New Zealand dining tables.

Meat is important to New Zealanders. Beef and lamb are delicious, nutritious foods which make an important contribution to a healthy, balanced diet. The meat industry makes a very important contribution to employment and foreign exchange earnings through export, and also as more and more tourists enjoy the experience of eating New Zealand beef and lamb here.

Beef + Lamb New Zealand is responsible for the promotion of beef and lamb within New Zealand and is jointly funded by farmers, processors and retailers. Included in its activities to promote the consumption of beef and lamb is the production of leaflets on meat cuts, recipe cards and information packs for school teachers and health professionals, and the highly successful campaign to highlight awareness of the importance of iron in the diet.

Beef + Lamb New Zealand also works closely with the foodservice industry in order to promote excellence in beef and lamb cuisine.

Beef + Lamb New Zealand manages the New Zealand Beef and Lamb Quality Mark. The introduction of the Quality Mark in September 1997 put New Zealand’s domestic meat industry at the forefront of quality initiatives.

Beef and Lamb which carries the Quality Mark provides buyers with an assurance that a range of quality standards for beef and lamb, beginning at the farm and carried right through to retail level, has been met.

The Beef + Lamb New Zealand Reference Guide has been produced to give butchers, chefs and cookery students a better understanding of the characteristics of New Zealand beef and lamb quality, the range of processing options available, and the preparation and cooking methods. It includes a broad background on nutrition value and the nutritive value of beef and lamb, with both a glossary and index for easy reference.

If you would like further information on beef and lamb, contact us at Beef + Lamb New Zealand on freephone 0800 733 466 or email enquiries@beeflambnz.co.nz, or visit www.beeflambnz.co.nz.

New Zealand Beef and Lamb - Products to be Proud of

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3rd Edition, 2010
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New Zealand cattle and sheep are raised on grass. Their natural diet of lush grasses can benefit the country because of the temperate climate, and is extensive pasture and hill country.

This is not the case elsewhere in the world. In the USA and Europe, for example, many animals are fed on a grain-based diet for varying periods of time and some are housed indoors for part of the year.

Pasture-fed beef is generally lower in fat with less marbling than grain-fed beef and lamb is generally lower in part of the year.

Beef and lamb are nutritious meats considering their high quality protein. They are considered nutrient dense (i.e. a small serving gives a high concentration of many essential nutrients).

A very small percentage of New Zealand beef and lamb is grain-finished to meet specific market demand. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance. The quality of meat cannot be judged solely by its appearance.

New Zealand Beef cattle breeds in 2009 New Zealand's beef herd numbered nearly four million. The majority of New Zealand’s cattle herd evolved from traditional British breeds, including Angus and Hereford. Today the main beef breed, Angus, followed by Hereford and the crossbreeds of these.

Other beef breeds include: Simmental, Shorthorn, Charolais, Murray Grey, Devon, Limousin, Boer, Boer as'Apalathia, Belgian Blue, Dexter, Gelbvieh, Chianina, Piedmontese, Brahm Black and Red Devon to name a few.

Some beef originates from New Zealand's dairy farms (mainly Friesian/Holstein), often being crossbred to suit the dairying conditions employed in processing meat. The majority of New Zealand's dairy herds (mainly Friesian/Gelbvieh, Chianina, Piedmontese, D'Aquitaine, Belgian Blue, Holstein), often being crossbred to suit the dairying conditions employed in processing meat.

New Zealand sheep breeds in 2009 New Zealand’s sheep herd was just over 32 million. The majority of New Zealand’s sheep herd was just over 32 million. The majority of New Zealand’s sheep herd was just over 32 million. The majority of New Zealand’s sheep herd was just over 32 million. The majority of New Zealand’s sheep herd was just over 32 million. The majority of New Zealand’s sheep herd was just over 32 million. The majority of New Zealand’s sheep herd was just over 32 million. The majority of New Zealand’s sheep herd was just over 32 million.

New Zealand’s dairy herds produce quality beef and lamb, and the feeding and hygiene conditions employed in processing meat are un-pursued.

Beef and lamb are nutritious providing high quality protein. They are considered nutrient dense (i.e. a small serving gives a high concentration of many essential nutrients).

Flavour differences in meat are related to an animal’s age, feed and breed.

New Zealand research at retail level showed that meat which has achieved standards of: quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety.

Today the New Zealand Beef & Lamb Quality Mark represents a set of minimum requirements designed to deliver a consistent level of quality. It was launched to the consumer in 1997.

Beef + Lamb New Zealand's responsibility is for implementing the Quality Meat programme.

The Quality Mark label appears only on meat which has achieved standards of: quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety.

The Quality Mark programme involves producers, processors, wholesalers, retailers and marketers.

To ensure the success of the Quality Mark, regular auditing is undertaken at all points to ensure standards are being met.

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The Quality Mark programme provides for some additional requirements in these areas as well as having a specific eating quality standard.

For some years Beef + Lamb New Zealand research to retail levels showed while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety; while there was a great deal of good quality meat being sold, there was also an increasing emphasis on food safety.

Beef + Lamb New Zealand’s most recent consumer research highlights the fact consumers are unsure about what meat to buy, how to cook it and The Guide is designed to assist the understanding of these processes.

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Pre-slaughter care of livestock is the most important part of the production quality. Meat quality starts with healthy, well-nourished stock. Prevention of animal stress and maintenance of good hygiene standards are top priorities for ensuring quality meat. The process starts on the farm, with farmers required to present their stock in a clean, rested condition. Prevention of animal stress helps maintain meat quality. There are several factors which affect meat quality because the glycogen within the muscular cells is used up, resulting in a high pH (see page 16). High pH affects meat colour, texture, shelf life, flavour and tenderness.

The slaughter process

The slaughter process complies with the New Zealand slaughter regulations (controlled by the New Zealand Food Safety Authority or NZFSA). The slaughter process is fast, humane and efficient. Animals are stunned immediately prior to slaughter and experienced operators carry out slaughter. For details of what happens at each stage of processing from the carcass to packaging, see page 4 and 9 (sheep and lamb), page 8 (pork and beef) and page 7 (sheep and lamb). Pre-slaughter care

Pre-slaughter care of livestock is the most important part of the production quality. Meat quality starts with healthy, well-nourished stock. Prevention of animal stress and maintenance of good hygiene standards are top priorities for ensuring quality meat. The process starts on the farm, with farmers required to present their stock in a clean, rested condition. The farmer, the stock truck driver and processing plant staff all have a part to play in animal welfare. Livestock must be handled with care during muster, loading and transport, as well as at an arrival of the plant.

A transport code of practice has been drawn up by the Animal Welfare Advisory Committee and which also sets Recommended Plant Pre-Slaughter Standards. These codes are underpinned by animal welfare regulations.

Sub-primals are prepared by subdividing these (eg by excising which is cutting along the muscle seam). Everything from the animal is used. In addition to meat, a wide variety of by-products (co-products) are produced which range from hides and pelts to casings (used for sausages) and pharmaceuticals, eg from blood. Inedible materials may be rendered down to produce tallow and meal. Note: Plants which process meat for export will have their own Meat Export (ME) licence number. There are no plants which process this for domestic purposes only have an Abattoir (AB) licence.

The slaughter operation

The most important part of the production quality. Meat quality starts with healthy, well-nourished stock. Prevention of animal stress and maintenance of good hygiene standards are top priorities for ensuring quality meat. The process starts on the farm, with farmers required to present their stock in a clean, rested condition. Prevention of animal stress helps maintain meat quality. There are several factors which affect meat quality because the glycogen within the muscular cells is used up, resulting in a high pH (see page 16). High pH affects meat colour, texture, shelf life, flavour and tenderness. Pre-slaughter in livestock affects meat quality because the glycogen in muscle cells is used up: resulting in a high pH (see page 16). High pH affects meat colour, texture, shelf life, flavour and tenderness.
New Zealand’s export meat classification system has been designed to put product with like, this benefit both the farmer, who is paid according to what has specifically been produced and the buyer, who can give clear specifications.

Once livestock has been slaughtered, the carcasses from cattle and sheep are classified as beef or veal, or mutton, hogget or lambs.

After slaughter and dressing, meat companies classify all carcasses according to a voluntary standard, or the weight of the carcasses (and removal of head, hooves and hides or pelts).

Meat is classified by four factors:

1. Gender
2. Maturity
3. Fat content
4. Muscling (conformation)

For domestic/local market

Beef (bovine) carcasses are:

- Steer, heifer, cow, bull and bobby calf.

For the purpose of this classification the following definitions apply:

Gender and maturity:
- Steer - male over 12 months of age.
- Heifer - female over 12 months of age.
- Cow - female having a carcass weight over 160kg.
- Bull - uncastrated (entire male bovine) 12 months or older.
- Cow - female having a carcass weight over 160kg.
- Bull - uncastrated (entire male bovine) 12 months or older.

Fat:
- Fat content (finish) is based on the depth of fat over the twelfth rib, at a point 11cm over the midline of the back. This is known as the ‘GR’ measure.

Muscling:
- For the purpose of this classification the following definitions apply:
- Muscling classes. Muscling types) are graded into muscling classes. Muscling classification is based on the degree of muscling in the hindquarter.
- Selected Young Beef is a voluntary carcass category. These are young bovine animals having no more than two permanent incisors and a carcass weight between 240 to 320kg.
- New Zealand’s unique in having a substantiated export standard for table cuts. Meat from wethers, and the meat from dressing or manufacturing, although legs and tongues can be used, such as table cuts.

For Export Classification

Sheep and lambs are classified according to the maturity of the carcass (beef, hogget or mutton), sex, fat content, weight and in some cases mudcutting.

Gender and maturity:
- Lamb - a young sheep under 12 months of age, or with no more than two permanent incisors (these usually appear about 12–15 months of age),
- Ram - adult uncastrated (entire) male sheep with more than two permanent incisors.
- Four-Tooth Mutton - a wether (castrated male sheep) or ewe (female) with four permanent incisors.
- Mutton - a wether or ewe with six or more permanent incisors.

Fat:
- Fat content assessment is based on the measurement of total tissue depth over the twelfth rib, at a point 11cm over the midline of the back. This is known as the ‘GR’ measure.

Muscling:
- for table cuts. Meat from wethers, and the meat from dressing or manufacturing, although legs and tongues can be used, such as table cuts.
Beef Boning
New Zealand meat companies have a variety of beef processing systems that allow them to match products to their customers’ needs.

Two major systems, cold boning and hot boning, are used; the names referring to the time and temperature at which the carcass is processed into cuts following slaughter.

Cold boning
Cold boning is the more traditional system used for processing beef to produce quality table cuts.

After slaughter, the carcass is placed into a temperature and humidity-controlled chiller where it is held for approximately 24 hours to allow the meat to cool and go into rigor. The carcass is then processed into cuts in a temperature-controlled environment (7°C). Cuts are trimmed to specification before packing.

Hot boning
Hot boning is carried out soon after slaughter, while the muscles are still pre-rigor and the meat still warm.

The process was originally designed for the production of beef for manufacturing or further processing, eg hamburgers, ground beef for pizzas, etc. However, there has been significant research and development carried out in this area, and, as a result, many now claim hot boning is the equivalent to cold boning in terms of eating quality consistency.

Chilled and Frozen Product
The New Zealand export meat industry owes its existence to the development of refrigerated shipping. The first shipment of frozen meat from New Zealand to England was in 1882.

In the early days, almost all product exported from New Zealand was frozen, the large percentage of sheep meat as carcasses and beef as quarters.

Now, only about 35% of lamb is exported as carcasses. A huge variety of cuts, both boneless and bone-in, are prepared for export. Almost all beef is exported boneless.

The first shipments of chilled beef were in the 1930s, but chilled exports of both beef and lamb did not really begin to grow until after the development of vacuum packaging and Controlled Atmosphere Packaging (CAP).

These and other new packaging techniques, many of them developed or refined in New Zealand, make it possible for meat to be transported by sea to international markets and arrive in a fresh condition, with several weeks of shelf life remaining.

Now an increasing proportion of both beef and lamb is exported chilled.

Chilled beef
Vacuum-packed and stored at a temperature of -1°C (+ or -0.5°C) for up to 12 weeks after production.

Aged frozen beef
In this process, beef is vacuum-packed at -1°C (+ or -0.5°C) for 15 to 21 days. It is then blast frozen at -36°C and kept at a temperature of -12°C or colder.

The product has a storage life of up to 24 months. When required, it is thawed slowly under refrigeration.

Chilled lamb
Lamb cuts are vacuum-packed and held at -1°C (+ or -0.5°C) for up to 12 weeks after production.

Frozen lamb
After conditioning, lamb is chilled for up to 72 hours at -1°C (+ or -0.5°C) to ensure tenderness. After chill, the product is vacuum-packed in plastic pouches or shrink-wrapped, then frozen and stored at -12°C or colder.

This product has a storage life of up to 24 months.
Nitrate has several desirable effects on cured meats when added:

1. Cured meats may also have any of the following added:
   - Phosphates (retain moisture)
   - Acidity regulators
   - Preservatives (nitrates or nitrites)
   - Antioxidants (ascorbic acid, isoascorbic acid, sodium erythorbate or their sodium salts)

2. It causes reddening of the meat (delaying rancidity of animal fats).
3. It has a preservative, bactericidal effect.
4. It has an antioxidant effect.
5. It causes flavor and aroma changes. (No one has succeeded in producing the typical cured meat aroma in meat products without nitrite - harmless in small doses but poisonous at very high levels.)
6. Nitrite can form nitrosamines, which are reported to be carcinogenic in animals if taken for a long time at high concentrations. However, this has not been proven in humans.

7. Nitrate itself is not toxic. Nitrate is found in all vegetable foods. Quite high levels are found in vegetables, such as spinach and silverbeet. But nitrate is easily changed to nitrite - harmless in small doses but poisonous at very high levels.
8. Nitrite is fresh meat which has been prepared by treatment with salt or brine (or both), by treatment with nitrite, or by treatment with salt or a salt and acid mixture, abruptly turned to nitrite (in processes which is slow and time consuming) before it is dried under controlled conditions.

9. An example of dried meat is beef jerky. The process involves thinly-sliced beef being marinated to impart flavor before drying. If dried at low temperatures, the meat keeps well and does not need refrigeration.

10. Nitrate, which is a by-product of nitrogen metabolism, is a dietary constituent. It is evolved in the body of humans and animals and is excreted in the urine. Metabolism of nitrate is subject to controlling enzymes and substrates.

11. Research has demonstrated that dietary nitrate is involved in the removal of nitrite from the blood. It is metabolized into nitrite and nitric oxide (NO).

12. Nitrate has a beneficial effect on the blood pigment, haemoglobin with muscle pigment, myoglobin or the haemoproteins. It causes the removal of nitrite from the blood.

13. The removal of nitrite from the blood is facilitated by the help of nitrous compounds.)
Connective tissue

Connective tissue is the protein structure that holds muscles together. It is found:
- Between individual muscle fibres
- Bundling of fibres together
- Between whole muscles
- Anchoring muscles to bone

The amount and type of connective tissue in a cut of meat affects the tenderness of the meat. Cuts with a lot of connective tissue in their structure will be less tender than those with little connective tissue.

Connective tissue is made up of elastin and collagen in varying proportions depending on the muscle.

• Depending on the muscle.
• And collagen in varying proportions

Connective tissue is the protein structure which holds muscles together. It is found:
- Between muscle fibres in cross-cut beef blade steak.
- Between whole muscles and above 600°C it can be transformed into soluble gelatin.

Looking at various meat cuts you can see different forms of connective tissue. For example, filmy, thin and, white; thicker, cream-coloured and, less tender; more elastic and yellowish; thick and gristly.

An example of connective tissue containing a lot of elastin is the paddy wack – the yellow strip running along both sides of the spine and seen in cross-section of lamb/mutton neck chops.

An example of connective tissue containing a lot of collagen is the paddy wack – the yellow strip running along both sides of the spine and seen in cross-section of lamb/mutton neck chops.

• Collagen classifies on heating and in slow-cooking as collagen.
• Collagen is the line of gristle visible in cross-cut beef blade steak.

Fat

Fat is found on the surface of cuts and, to a lesser degree, scattered throughout the muscle.

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Fat colour is influenced mainly by natural pigments in the meat’s diet and also by age and breed. It ranges from white through to creamy white to yellow. New Zealand beef fat is generally creamy. Its yellowish tinge is the result of pigment in the grass called canthaxanthin or -pro-vitamin A. (This is the same pigment which makes orange carrots orange.) Lamb fat is a creamy-white colour.

• Lamb fat is a creamy-white colour.

Fat helps to contribute to meat flavour and succulence.

Subcutaneous fat (under the skin) is a fat cover or outer fat. It is easily trimmed off to give lean cuts.

Marbling (intramuscular fat)

• A fine network of fat sometimes visible throughout the meat is called marbling. Marbled meat is usually obtained from carcasses with a large amount of subcutaneous fat. Marbling develops with the maturity of animals. Beef animals raised on good pasture develop a lot of fat Intraculose, totally trimmed meat, juiciness depends on retaining moisture during cooking. Very lean meat will become dry if overcooked.

Conversely, lean meat cuts with a high fat content and, to a lesser degree, scattered throughout the muscle. Marbled marbling keeps meat from becoming dry when cooked to well done.

Marbling is thought to enhance the sense of succulence in several ways. Fat acts as a lubricant to the mouth. The melted fats, in combination with water, are released upon chewing, which helps stimulate the flow of saliva, creating an even greater sense of eating pleasure (known as ‘mouth feel’).

Fat in cooking

Meat cuts with a high fat content take longer to cook. Traditional large meat cuts with the fat cover off, cooked slowly for a long time so fat melts and leaves the lean meat. Marbled meat keeps from becoming dry when cooked to well done.

Conversely, lean meat cuts with virtually no marbling and with all outer fat removed, need less cooking time from smaller cuts, containing more fat Intraculose, totally trimmed meat, juiciness depends on retaining moisture during cooking. Very lean meat will become dry if overcooked.

Water

Lean meat contains 50% to 75% water. Water in meat contributes to juiciness. Water is driven out of meat during cooking. As meat is heated, proteins coagulate and shrink, drawing moisture out of meat. The water in meat contributes to juiciness. Water in meat contributes to juiciness.

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Meat in a low-oxygen package such as vacuum pack or Controlled Atmosphere Packaging (CAP) has a dark purplish colour (see page 18). Meat with a high pH level may appear dark. This meat is called ‘dark cutting’ and can have texture and flavour problems. This meat is dry and tough, and does not keep as well. It should not be used for table cuts.

Age, sex and breed of animal

Ovine animals have dark meat than young animals. The darker meat in older animals does not necessarily mean the meat has a higher pH.

Lean meat colour is affected by:
- The pH
- Processing by the pre-slaughter condition of the animal (see page 15). Meat with a high pH level may appear dark. This meat is called ‘dark cutting’ and can have texture and flavour problems. This meat is dry and tough, and does not keep as well. It should not be used for table cuts.

- Age, sex and breed of animal

Dark meat, with marbling or otherwise, can be less tender when cooked too long. Very lean cuts, if cooked too long, lose much of their moisture and the result is dry meat (see Meat Cooking, page 49).

Consumer preference

When buying meat, most consumers prefer bright red beet, and tend to reject a cut of meat with brown fat. After some days, the meat surface begins to turn brownish. This meat may still be good to eat, as long as it hasn’t spoiled.

- Exposure to oxygen

When raw meat is first exposed to air or oxygen, the freshly cut meat surface begins to turn brownish. This meat may still be good to eat, as long as it hasn’t spoiled.

- Packaging

Meat in a low-oxygen package such as vacuum pack or Controlled Atmosphere Packaging (CAP) has a dark purplish colour (see page 18). Meat with a high pH level may appear dark. This meat is called ‘dark cutting’ and can have texture and flavour problems. This meat is dry and tough, and does not keep as well. It should not be used for table cuts.
Qualifying product bringing it all together

New Zealand Beef & Lamb Quality Mark:

Identification trail

1. Animal age
2. Pre-slaughter handling
3. Post-slaughter handling
4. Aging
5. Meat cut, location on carcass
6. Cooking

Factors affecting meat tenderness:

1. Animal age
2. Pre-slaughter handling
3. Post-slaughter handling
4. Aging
5. The cut and its location on the carcass
6. Cooking

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Meat with a slightly elevated pH, between about 6.1 and 6.2, will be less tender. If the animal has been stressed even more and the pH is even higher, the toughness problem disappears but the meat has other quality defects such as ‘dark cutting’ (i.e. dark coloured) and reduced shelf life.

3. Post-slaughter handling
Correct handling and temperature control after slaughter are most important for meat tenderness. The primary aim is to avoid cold shortening, which reduces tenderness.

After slaughter the muscles gradually stiffen as rigor mortis sets in. Cold shortening occurs if muscle is chilled to low temperatures, or frozen too rapidly prior to rigor after slaughter. This causes the muscle fibre to contract and consequently the meat to toughen.

Cold-stiffened meat can be almost inedibly tough and no amount of cooking can make the meat tender. However, when animals are stressed or excessively active before slaughter, the muscles start to use up their glycogen energy stores while the animals are still alive. At death there is less glycogen, so less lactic acid is produced and the meat will be less acidic at rigor mortis, resulting in an elevated pH.

Meat with a slightly elevated pH, between 6.1 and 6.2, will be less tender. If the animal has been stressed even more and the pH is even higher, the toughness problem disappears but the meat has other quality defects such as ‘dark cutting’ (i.e. dark coloured) and reduced shelf life.

Accelerated Conditioning reduces conditioning times by at least two-thirds.
The ultimate pH (pH at rigor) level of beef and lamb will vary once the carcass has reached rigor mortis, depending from its colour, tenderness and eating quality.

The normal pH for beef and lamb is 5.4 or 5.6.

Within this range the meat is both tender and has good eating quality.

**Lower levels:** At a lower pH (below 5.6) the meat will be pale and dry.

**Higher levels:** An increase in pH (above 5.6) means more weight loss, but carcass stored for 10 days may lose from 1% to 4% in weight.

During carcass aging there is some continue to develop.

## Accelerated Conditioning & Aging (ACA)

Accelerated Conditioning and Aging is the most widely used process to determine lamb tenderness in New Zealand.

With Accelerated Conditioning, carcasses can be accelerated electronically, cooled, and then cooked. This speeds up conditioning, which is naturally a time-consuming process. Electrical stimulation works by causing the muscles to contract. This uses up muscle energy stores (glycogen) and therefore speeds the onset of rigor mortis. The carcass is placed on a controlled temperature for a while after stimulation, so cold shortening cannot occur.

With aging, hanging, chilling, the meat can be subsequently matured (aged) to a higher degree of uniform tenderness.

Note: ACA processing will not overcome toughness due to excessive slaughter stress, poor stock quality, or old age of animals.

## 4. Aging

After rigor mortis is complete, a carcass (or primal cuts of meat) should be hung, given time to hang, or be held for several days or weeks, to allow the meat to age. This poor rigor tenderness is called "aging" (ageing) to some (related to maturing or aging).

To "age" means to keep for a time under controlled temperature. This allows the naturally occurring enzymes within the meat to slowly break down and soften the muscle fibres, making the meat more tender and developing flavour.

The aging rate increases with temperature. Excessive heat or humidity during meat aging can have detrimental effects on the position of the cut on the carcass.

Controlled aging improves tenderness. Two methods are used: Aging and Vacuum-Packed Aging.

(a) Casing Aging (sometimes called "Wet Aging")

In this process the fresh/chilled carcass or any portion of the carcass is held at +1°C or +2°C. During immersion in the chilled water, the carcass is covered with a layer of water, thereby preventing microbial growth.

During aging there is a slight weight loss. A carcass stored for 10 days may lose from 1% to 4% in weight.

Surface drying can sometimes mean extra trimming is required and this means aging carcasses surfaces should not be left to dry (suitably predried with microcrystalline cellulose). Lower temperatures and higher humidity can lessen weight loss.

(b) Vacuum-Packed Aging

This process eliminates the need to hang entire carcases or portions in the meat aging to take place in vacuum bags.

Large cuts, usually primal cuts, are vacuum packed to remove the air and dried to about 1% moisture content.

This can then be stored at -1°C to +4°C for at least five to six days from the time of slaughter.

This vacuum packed, chilled, aged meat is generally aged for at least five to 10 days before being held chilled, ideally between 0°C and +4°C (for at least five to six days from the time of slaughter).

Vacuum-packed lamb, chilled, held at -1°C to +4°C, may be aged for up to 10 days. The following principles apply:-

- The meat should be held chilled, ideally between 0°C and +4°C, for at least five to six days from the time of slaughter.

- Vacuum-packed, chilled, aged lamb may be aged for up to 10 days.

A side of beef that is not vacuum-packed or chilled should be aged under controlled conditions for a longer period (maximum about 30 days) and the flavour will be superior.

Vacuum-packed beef, stored chilled, is generally aged for five to six days only, but can be aged for up to 10 to 12 weeks, providing the following principles apply:-

- The meat should be held chilled, ideally between 0°C and +4°C, for at least five to six days from the time of slaughter.

- Vacuum-packed, chilled, aged beef may be vacuum-packed, can be aged for up to 10 days.

A side of beef that is not vacuum-packed should be held chilled, ideally between 0°C and +4°C (for at least five to six days from the time of slaughter).

In recent trials, consumers rated steaks (coted) aged to a tenderness value of 11 kgF (ie the higher the better) as more tender.

Meat is less tender when it exceeds a tenderness value of 20 kgF. This result is the meat is considered to be dry and lifeless.

• The amount of connective tissue in a cut is critical. To dry out and be tender, the muscle must have a marked effect on tenderness.

• For optimum tenderness, the cooking method must suit the cut. If a meat cut containing large amounts of connective tissue is cooked quickly by a dry heat method, it will not be tender. However, cooked slowly by moist heat method, the same meat cut can be tender and melt in the mouth.

• A meat thermometer is a handy tool to monitor internal meat temperature during cooking, to avoid overcooking which results in meat toughening. A meat thermometer is particularly useful for accurately judging degrees of doneness. Lamb shows a slight increase in temperature during cooking, so is cooked to lower internal temperature than beef.

• Jean meat contains more fat, which dry out and be less tender. Even the leanest cuts of meat (meat cuts [e.g. rib], leaner meat) will dry out and be less tender.

Meat cut/location on the carcass varies according to their position on the carcass, as this determines the end use for eating. Understanding meat cut structure helps to determine the cooking method suited to the cut.

### Measuring Tenderness

A good level of tenderness is indicated by a firm, smooth mechanical testing device and resulting cuts with sensory characteristics of medium well to well done. A meat tenderness meter is the device usually used. This is a mechanical testing device that records the force required to shear through samples of meat.

Meat tenderness meters can be measured by a firm, smooth mechanical testing device and resulting cuts with sensory characteristics of medium well to well done.
The New Zealand Beef and Lamb Quality Mark is a comprehensive programme for domestic consumers to ensure New Zealand beef and lamb complies with quality standards at every stage from entering the processing plant through to retail sale.

Shoppers can look for the Quality Mark sticker to identify product which has earned the Mark. Among other things, it shows the meat has been processed in a way to ensure tenderness.

To earn the Quality Mark, beef must have a pH value of 5.8 or less at rigor. Beef and lamb product that qualifies for the Quality Mark:

- Product must be derived from animals grown in New Zealand.
- All categories of steers, heifers, veal, lamb and hogget may qualify for the Quality Mark.
- Mutton, cow and bull are excluded from the Quality Mark.
- The Quality Mark may be used on carcasses, parts of carcasses, cuts, boneless product, whole muscle table meat and value-added speciality cuts (e.g. marinated stir-fry, crumbed schnitzel and seasoned roasts).
- The Quality Mark may not be used on processed meat, eg sausage, paté, sausages, kippers, kippered fish, paté, cutlets, pies and meat balls, whether or not they are made from pure meat product.
- Product is derived from animals that have not been treated with Growth Promotants (GPs) and have not reacted positively to Tuberculin tests.
- Product is processed in licensed ME or AB plants certified as Quality Mark approved processors. It must not be prepared and retailed in premises that has uninspected meat from any source, including wild game meats, present on the premises at any time.
- Product is processed in licensed ME or AB plants certified as Quality Mark approved processors. It must not be prepared and retailed in premises that has uninspected meat from any source, including wild game meats, present on the premises at any time.

Farmers and retailers can choose to apply the Quality Mark sticker or signage to the point of sale, or to use the Quality Mark logo on packaging and/or signage.

What is “Retail Ready”? “Retail Ready” refers to the date and time at which meat will have reached acceptable tenderness. Each processing plant has determined the “Retail Ready” date and time as appropriate for meat processed through their operating system.

Retail Ready times differ from plant to plant because systems differ. Retail Ready applies to all lamb cuts but only five beef cuts: eye fillet (tenderloin), sirloin, ribeye (scotch fillet), rump, thick flank (knuckle). Retail Ready does not apply to veal.

New Zealand Beef & Lamb Quality Mark: Bringing it all together

Quality Mark Identification Trail

**Farmer**

- Farming: Stock from the farm.

**Processors**

- Processors assess suitability for Quality Mark status.
- Carrion-stamped (stamp provided free to Quality Mark holders by Beef + Lamb New Zealand).
- A ticketing system used (company’s own system, approved by Quality Mark auditors).
- Delivery docket must specify “Quality Mark - quality meat” and the “Retail Ready” date/time (staff need to be aware of this - it is essential for retail-level auditing).

**Wholesaler**

- Contoured/boxed meat: Package also stamped with similar stamp to carcass stamp (stamp provided free to Quality Mark holders by Beef + Lamb NZ).
- Packaging labelled (company’s own system, approved by Quality Mark auditors).
- Delivery docket must specify “Quality Mark - quality meat” and the “Retail Ready” date/time.

**Retailer**

- Retailer checks Quality Mark status by means of visual carcass/form and delivery docket identification.
- Further processed, as applicable, and stored in designated Quality Mark qualifying holding areas (chilled or frozen).
- Quality Mark beef and lamb must not be presented to the consumer until at least the “Retail Ready” date.
- (“Retail Ready” does not apply to veal).
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Beef Skeletal Diagram

- HOCK
- AITCH BONE (Ischium)
- TAIL BONES (Coccygeal Vertebrae)
- SACRUM (Sacral Vertebrae) (5)
- HIP BONE (Ilium)
- LUMBAR VERTEBRAE (6)
- CHINE BONE
- FEATHER BONES (Thoracic Vertebrae)
- BLADE BONE CARTILAGE (Scapula Cartilage)
- BLADE BONE (Scapula)
- NECK BONES (Cervical Vertebrae) (7)
- HINDSHANK BONE (Tibia and Fibula)
- KNEE JOINT (Patella)
- LEG BONE (Femur)
- RIB BONES (13, 12, 11, 10, 9, 8, 7, 6, 5)
- BREAST BONE (Sternum)
- ARM (CLOD) BONE (Humerus)
- FORESHANK BONES (Ulna and Radius)
- KNEE JOINT (Carpus)
Beef Cuts and Tenderness

New Zealand descriptions are used here. Some cuts have alternative names - see following pages.

For detailed advice on Cooking Techniques for each cut, see page 74 onwards.
Beef Primal and Sub-Primal Cuts

A side of beef consists of the forequarter and the hindquarter. The separation point is between the eleventh and twelfth rib, leaving 11 ribs on the forequarter and two ribs on the hindquarter.

The first large cuts made from the carcass are the whole muscle cuts, known as primal cuts (such as rump). Sub-primals are prepared by subdividing these (eg by seaming, which is cutting along the muscle seam).

- Shank meat
- Thick flank cap off (knuckle)
- Thick flank (knuckle)
- Flank skirt
- Spare ribs/short ribs
- Brisket navel end
- Brisket point end
- Blade shoulder
Beef Primal and Sub-Primal Cuts

- Blade roll/chuck tender
- Topside
- Whole rump/sirloin butt
- Shortloin
- Prime ribs/oven-prepared ribs
- Chuck
- Outside round/silverside
- Eye of round/silverside
- Silverside
- Sirloin/striploin
- Tenderloin
- Ribeye/cube roll/Scotch fillet
- Prime ribs/oven-prepared ribs
- Chuck
Beef Sub-Primal Rump

The primal cuts can be further broken down into smaller cuts. With connective tissue removed, these offer enhanced tenderness and variety.

Some examples of sub-primal cuts

Beef rump (under)

A&B  Tritip and underlying muscle
C    Eye of rump
D    Rump centre
E    Rump cap

Muscle C  
Eye of rump

Muscle D  
Rump centre

Muscle E  
Rump cap

Eye of rump medallions

Rump centre steaks

Rump cap schnitzels
Beef Sub-Primal Thick Flank

Thick flank/knuckle

A  Knuckle undercut
B  Eye of knuckle
C  Knuckle cover/cap

Muscle A
Knuckle undercut

Muscle B
Eye of knuckle

Muscle C
Knuckle cover/cap

Eye of knuckle medallions

Cover minute steaks/schnitzel

Strips and cubes
Beef Sub-Primal Blade

- Cross-cut (oyster blade)
- Bolar blade

Cross-cut blade/ oyster blade

Bolar blade

Cross-cut blade steak

Bolar blade steak
Beef cuts (thick flank/knuckle, ribs, brisket)

- Beef knuckle (round cap) cover
- Beef knuckle cover minute steak or schnitzel
- Beef knuckle (cap removed)
- Beef knuckle undercut
- Beef eye of knuckle
- Beef eye of knuckle medallion
- Beef rib ends
- Beef short ribs (whole)
- Beef short ribs (sliced)
- Beef brisket
Beef cuts (flank skirt, tenderloin ribeye, blade)

- Beef flank steak (skirt)
- Beef tenderloin (fillet)
- Beef butt tenderloin/fillet
- Beef tenderloin centre cut
- Beef tenderloin medallion
- Beef Spencer roll (Australian)
- Beef cube roll (ribeye)
- Beef cube roll steak (Scotch fillet)
- Beef blade
- Beef bolar blade
- Beef blade cross-cut blade
- Beef oyster blade (blade roll)
- Blade steak
Beef cuts: shin - hindshank, topside, striploin, shin - foreshin

- Beef hindshank
- Beef foreshin
- Beef shin bone-in
- Beef topside (inside)
- Beef shortloin
- Beef T-bone steak
- Beef striploin
- Beef striploin steak (sirloin/porterhouse)
- Beef foreshin
- Beef shin bone-in
Veal: popular catering cuts

Two types of veal are produced in New Zealand: Bobby veal, the very pale meat from calves slaughtered at only a few days old; and Veal, which is defined as the meat from bovine animals of either sex under 12 months of age and having a carcass weight of no more than 160kg.

White (milk-fed) veal and grain-fed veal are imported products. For a variety of reasons, including the seasonality of production, veal may not always be readily available to local buyers.

Cuts from the boneless leg, clockwise from top left: silverside; topside (cushion); butt tenderloin; rump; and think flank cap off (knuckle)

Veal rack, Frenched
Veal backstrap
Veal tenderloin
Veal shin shank
Veal shank, Frenched (jarret de veau)
Osso bucco (knuckles or shin)
Lamb Cuts and Tenderness

New Zealand descriptions are used here. Some cuts have alternative names - see following pages.

For detailed advice on Cooking Techniques for each cut, see page 74 onwards.
Lamb primal cuts (principally retail)

The first large cuts made from the carcass are the whole muscle cuts known as primal cuts (such as leg or forequarter). Sub-primals are prepared by subdividing these (eg by seaming, which is cutting along the muscle seam).
Lamb primal cuts (retail and foodservice)

- Flap
- Boned, rolled, netted (BRN) shoulder
- Side
- 5 rib forequarter
- Chump on long loin
- Chump
- Leg (short-cut)
- Part-boned short leg
- 1 rib short loin
- Chump off long loin
- Boneless loin
- 7 rib rack
- Chump
- Boneless chump
- Oyster shoulder
- Chined French rack (cap off)
- Chined French rack
- Tenderloin
Lamb sub-primals

The leg of lamb, when boned and seamed out into various cuts (the same sub-primal cuts we know from the beef hindquarter), offers many options for quick cooking and tasty dishes to suit today’s cooking styles.

The whole leg of lamb may be divided into these sub-primals:

1. Shank
2. Silverside
3. Thick flank (knuckle)
4. Topside
5. Rump
Lamb cuts: silverside, topside, thick flank/knuckle, rump, shortloin/tenderloin

- Lamb silverside
- Lamb silverside schnitzel (Paillard)
- Lamb eye of silverside (Girello)
- Lamb topside (inside round)
- Lamb topside steak
- Lamb topside schnitzel
- Lamb thick flank knuckle (sirloin tip)
- Lamb thick flank knuckle steak
- Lamb knuckle schnitzel
- Lamb rump
- Lamb shortloin (backstrap)
- Lamb tenderloin - butt off
Lamb cuts: shank, short-cut leg, carvery leg, loin, rack, shoulder

- Short-cut lamb leg chump/rump off
- Lamb carvery leg (easy carve)
- Lamb shortloin (mid-loin) boned and rolled
- Lamb loin noisettes
- Lamb mid-loin chops
- Full lamb loin
- Lamb rack
- Lamb rack - Frenched (chined)
- Lamb French cutlets
- Lamb Forequarter
- Lamb square cut shoulder
- Lamb square cut shoulder chops
- Lamb shoulder - boneless and rolled
Lamb cuts: leg, rump (bone-in), saddle, neck fillet, shoulder rack, foreshank

- Lamb leg - chump on
- Lamb leg chops
- Lamb leg boned and rolled
- Lamb chump (rump)
- Lamb chump chops
- Lamb short saddle/ double mid-loin
- Lamb short saddle/ double mid-loin chops
- Lamb neck fillet roast boned and rolled
- Lamb shoulder rack (Australian)
- Lamb foreshank (hindshank also used), also called knuckles
Edible offal or variety meats

Offal meats (also called variety or fancy meats) are generally rich in minerals and vitamins, and most are full of flavour. Many chefs find offal dishes are popular items on their menus.

Preparation and cooking notes on beef and veal offal

### Beef/ox and calf liver
The complete liver with gall bladder, large blood vessel and all fat removed. Young calf liver is slightly paler and more tender, with more delicate flavour than beef liver.

**Cooking notes:** Remove outer, thin membrane and tubes. Thinly sliced liver may be dusted with flour and pan-seared to medium-pink, or slowly braised until tender.

### Beef and veal kidney
The whole kidney with blood vessels, ureter and capsule removed. Beef kidney is darker in colour with stronger flavour than veal/young calf kidney.

**Cooking notes:** Remove any outer thin membranes, cut in half and remove fat and sinew. Dice and pan-sear veal kidneys until pink. Dark coloured kidneys should be braised or simmered slowly until tender.

### Beef tripe
Comes from the first two stomachs of the beef animal and consists of the complete paunch or rumen (seamy tripe) and reticulum (honeycomb tripe).

**Cooking notes:** Wash tripe well, cut into strips or dice and simmer until tender. It requires long, slow cooking or pressure-cooking to tenderise.
<table>
<thead>
<tr>
<th>Meat Type</th>
<th>Description</th>
<th>Cooking Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beef/ox heart</strong></td>
<td>The complete heart with blood vessels cut at their entry point into the heart. Heart muscle structure is unique with no readily distinguishable grain, very dense-textured meat.</td>
<td>Cooking notes: Remove tubes and fat, cut into strips and simmer or braise for two to three hours until tender. Can be pot-roasted.</td>
</tr>
<tr>
<td><strong>Beef/ox tongue</strong></td>
<td>Whole tongue with root, and usually hyoid bones, removed. Excess muscle from underneath the tongue may be removed and fat is well trimmed. Tongue skin is very tough and must be peeled off after cooking. The cooked meat is very tender. Tongue is usually purchased corned (cured).</td>
<td>Cooking notes: Rinse well in cold water, simmer gently for about three hours (or pressure cook for 45 minutes) until tender. Peel off skin while still warm. Remove any tiny bones and fat. Chill under weights for improved shape and easy carving.</td>
</tr>
<tr>
<td><strong>Beef tail (oxtail)</strong></td>
<td>Removed from the carcass at the junction between sacral and coccygeal vertebrae. Normally sold cut into sections between joints. Oxtail contains a high amount of fat, bone and connective tissue relative to the lean. Requires moist heat and long slow cooking.</td>
<td>Cooking notes: Trim outside fat, brown (in pan or oven), then slow simmer for two to three hours until fork tender. Remove surface fat before thickening.</td>
</tr>
<tr>
<td><strong>Veal sweetbread</strong></td>
<td>The thymus gland from young animals. The gland is in two parts: a long lobular structure lying along the neck (called headbread), and a triangular part at the base of the heart (called heartbread). Sweetbreads are sold with all fat removed. Pale, very tender meat.</td>
<td>Cooking notes: Soak in cold water with lemon juice for one to two hours, changing water frequently. Blanch until white, refresh, remove membrane and tubes. Press in fridge until cold before cooking.</td>
</tr>
</tbody>
</table>
**Beef cheek**
The cheek is the muscle, together with the mouth lining, that lines the upper and lower jaw bones. The thinner part of the cheek (called the lips) has papillae attached and is sold separately. Purchase cheek with membrane and fat removed. More often used for stock, but can be braised.

**Cooking notes:** Soak in cold water with lemon juice for one to two hours. Remove any sinews, dice and slow simmer for two to three hours until fork tender.

---

**Beef bones**
Any bones removed from the carcass. Beef marrow bones may be any round bone from fore or hind leg, but are most commonly cut from the hind shank. The femur is sawn into short lengths across the bone, resulting in sections each with a central round of fatty marrow exposed at the end.

**Cooking notes:** Use bones in stock making. Poach marrow bones then extract the marrow. May be used as garnish for beef steaks.

---

**Beef suet**
Fat derived from around the kidneys.

**Cooking notes:** Suet can be grated and used for pastry and steamed puddings.
Preparation and cooking notes on lamb offal

**Lamb kidney**
Whole kidneys sold with fat cover removed, then usually skinned. Medium-tender, very lean meat.

*Cooking notes:* Remove any outer remaining thin membrane, cut in half and remove fatty, white core. May be briefly cooked by pan-searing to pink, or simmered slowly until tender.

**Lamb liver (lamb’s fry)**
The complete liver with gall bladder and all fat removed. Tender, very lean meat with a very fine covering of almost invisible membrane/skin which toughens on cooking.

*Cooking notes:* Peel away the outer thin membrane before slicing and remove large tubes. Best briefly cooked by pan-frying to medium-pink.

**Lamb heart**
The whole heart with blood vessels removed at their entry point to the heart. Muscle structure is unique, meat very dense with no obvious grain.

*Cooking notes:* Needs long, slow cooking. Remove any outer fat, cut in half and remove tubes and fat. Braise for two hours until tender.
| **Lamb tongue** | **The portion of the tongue remaining after removal of hyoid bones, excess muscle underneath and fat trimmed. Tough skin removed after cooking. Tender meat when cooked by moist heat methods.**  
**Cooking notes:** Blanch and simmer gently for one to two hours until fork tender. Peel off skin while warm. Press for neat shape and to make for easier slicing. |
|---|---|
| **Lamb sweetbread** | **The thymus gland which lies along the neck of each side of the trachea (windpipe) and extends to the heart region in young animals. Pale and lobulated, sold with fat removed, very tender, delicate meat.**  
**Cooking notes:** Soak in cold water for one to two hours, changing water frequently. Blanch in simmering lemon water until white, refresh, remove membrane and tubes, then press in refrigerator until cold before cooking. |
| **Lamb brains** | **Usually only the cerebral hemisphere (larger part of the brain) with covering membrane intact. Pale greyish in colour before cooking, but whitens on cooking, very delicate and tender meat.**  
**Cooking notes:** Soak in cold water for one to two hours, changing water frequently. Blanch in simmering lemon water. Refresh, remove membrane then press in refrigerator until cold. Brains can then be quickly pan-fried. |
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Notes for Meat Buyers (Foodservice)

Exact savings guarantee you money. Discount agreements with your supplier. Specifying exactly what you want to purchase helps you to improve your profitability.

The New Zealand Beef and Lamb Quality is your guarantee of quality.

1. Define the cut

Learning the New Zealand names for all the meat cuts and being precise when ordering is essential. The order should be clear and precise.

2. Portion cuts

Portion cuts are large muscle groups such as whole rump, whole sirloin or topside of beef, or packed lamb. They are not suitable for individual use.

3. Sub-primals

Sub-primals are divided primals; smaller cuts from processing to preparation for cooking (‘the cold chain’).

Maintaining the quality: packaging, storage & handling

From the moment meat is processed, the aim of effective packaging and storage is to keep it in aseptic condition as far as possible, to allow you to control contamination that might occur. The right temperature is critical to the quality of the meat. Incorrect temperatures can affect the meat’s overall product appearance, and quality.

1. Cling-film overwrap packaging

With this packaging, used for retail display, fresh chilled meat is placed on a plastic tray, then both tray and meat are vacuum sealed and shrunk to a snug fit. The oxygen-free environment protects the meat from oxidation and dehydration during storage and transportation. Vacuum packaging significantly reduces the amount of oxygen that can spoil quickly (by aerobic bacteria). Once the seal is broken, use the meat promptly.

2. Vacuum packaging

Vacuum packaging is a process that removes air from the package, and to ensure the meat maintains its fresh colour.

Maintaining the right temperature.

Fluctuating temperature is harmful to the overall product appearance, and quality. Damage that occurs can affect the meat’s overall product appearance, and quality. Fluctuating temperature is harmful to the overall product appearance, and quality. Damage that occurs can affect the meat’s overall product appearance, and quality.

Vacuum packaging allows meat to be in a controlled environment, maintaining weight loss through evaporation, preventing meat from becoming freezer burn.

Vacuum packaging significantly reduces the amount of oxygen that can spoil quickly (by aerobic bacteria). Once the seal is broken, use the meat promptly.

Vacuum packaging prevents air from entering the package, and to ensure the meat maintains its fresh colour. Since the packaging is effective for a certain period of time, the meat quality will be able to maintain its quality for a certain period of time.

Vacuum packaging is a process that removes air from the package, and to ensure the meat maintains its fresh colour. Since the packaging is effective for a certain period of time, the meat quality will be able to maintain its quality for a certain period of time.

Hints for users of vacuum-packed meat

A normal amount of drip from vacuum-packed meat aged for the first 2 days is around 1-2%. This is far less than the drip from fresh meat, which reaches around 7-10% for three weeks or more is normal. Vacuum packing significantly reduces the amount of oxygen that can spoil quickly (by aerobic bacteria). Once the seal is broken, use the meat promptly.

Vacuum packaging prevents air from entering the package, and to ensure the meat maintains its fresh colour. Since the packaging is effective for a certain period of time, the meat quality will be able to maintain its quality for a certain period of time. This is far less than the drip from fresh meat, which reaches around 7-10% for three weeks or more is normal.
3. Controlled Atmosphere Packaging (CAP)

This is a packaging technology in which meat is kept in 100% carbon dioxide (CO₂) in packs containing impermeable materials such as foil laminate or double metallised films (in which the meat cannot be seen). The CO₂ controls bacterial growth and gives a longer storage life than vacuum packaging, especially for lamb. CAP gives a longer storage life than vacuum packaging. Once the pack is opened the meat ‘blooms’ to a same purple colour as that in saturated CAP and held at a constant temperature of -1.5°C (has a storage life of up to 20 weeks).

Meat packaging film:
- Bright red colour.
- Odour: with CAP there is little or no confinement odour when the pack is opened. Meat stored for long periods in CAP tends to have a mild odour and flavour, and does not become as red or fresh or vacuum-packed meat.

4. High-Oxygen Modified Atmosphere Packaging (High O₂ MAP)

This is a multilayer plastic packaging system. The pack contains oxygen to ensure the meat develops and maintains a bright red colour and carbon dioxide to retard the growth of aerobic spoilage bacteria. This packaging works well for retail display of chilled/fresh meat allowing good colour visibility and longer storage life than meat over-wrapped with cling-wrap.

Packaging, storage and handling: frozen meat

Frozen beef or lamb can be as good in eating quality as fresh/chilled meat provided it has been correctly handled through all processes.

Defects in meat handling procedures before freezing can cause meat to go off. The freezing process itself will not affect bacterial growth and will not make tender meat tough. However, correct procedures must be followed to prevent loss of juices and deterioration in flavour and texture.

The time of defrosting before freezing, the packaging material, method and rate of cooling and freezing, and the temperature during storage are all important. So is care in thawing and stuf. cooling.

Average Expected Life of Chilled Meat Cuts

<table>
<thead>
<tr>
<th>Storage packaging</th>
<th>Suitable Application</th>
<th>Life to Spoilage</th>
<th>Spoilage Bacteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuums</td>
<td>Bone-in or extra cuts</td>
<td>8 to 12 weeks**</td>
<td>Slow, aerobic</td>
</tr>
<tr>
<td>High O₂ MAP</td>
<td>Cuts and steaks</td>
<td>12-20 weeks*</td>
<td>Very slow, anaerobic</td>
</tr>
</tbody>
</table>

Hints on Freezing

- Before freezing, beef or lamb should be thoroughly chilled so the meat does not continue to change in colour during freezing.
- Meat should be well trimmed so that it can become necrotic on long storage.
- The ends of bones which may protrude from the meat after packaging (cut with fillet or plastic bags) should be covered.
- Frozen large cuts will keep better than small cuts, undergoing flavour change. From frozen, small cut, lean cuts or mince.
- Again, it is important to ensure temperatures don’t fluctuate to more than 5°C above the normal temperature which can damage the structure of the meat.
Thawing

If at all possible, plan ahead when you intend using frozen meat. The best way to maintain quality of frozen meat is to keep it frozen. Have the meat stored in its original wrapping.

Store there is no possibility meat drip during thawing can contaminate other foods. For example, thaw meat on a tray if the shapes are packaging loose. The meat. The best way to store thawed meat

• Remove freeze packaging or vacuum bag and blot meat dry with clean paper towels if necessary. Place meat on a tray (with sides to prevent dripping onto other foods). Loosely cover and return to the refrigerator.
• Do not store raw meat above food that will not be cooked before it eaten (for example, pre-cooked meat or salad vegetables).
• Do not allow meat to sit in a pool of meat juices. The juices will go off faster than the meat itself and can taint the flavour of the meat.

Remember for best results, those meat slowly in the refrigerator or chiller.

Safe ways to speed thawing

If you need to hurry thawing, leave the meat in its original wrapping and dry. Change regularly so water does not collect. Fluctuations in temperature can reduce shelf life.

Your cool room is the key

- The right temperature for storing fresh, raw meat is ideally -1.5°C to 2°C.
- Keep a visible temperature gauge in your cool room.
- Keep cool room entry and door closed when not in use. Stack product so air flow is not blocked.
- Keep cool room trays clean and dry. Change regularly as meat products are not left scaling in excess moisture.
- Ensure adequate lighting inside the cool room, but turn lights off when room is not in use.
- Have a scheduled cool room maintenance programme.

Never re-thaw meat that has been thawed and held at room temperature.

Meat which has been thawed using a ‘speed-thaw’ technique should be cooked straight after thawing.

The best way to store thawed meat

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• Do not allow meat to sit in a pool of meat juices. The juices will go off faster than the meat itself and can taint the flavour of the meat.

Remember for best results, those meat slowly in the refrigerator or chiller.

Approximate thawing times in the refrigerator

| Large meat | 4-7 hours per 500g | 5-8 hours per 550g | 7-10 hours per 550g |
| Small roast | 2-3 hours per 500g |
| Chilled meat: | 3-5 hours per 500g |

Avoid refreezing thawed meats

• Defrosting thawed meat is not recommended. Both the meat and the juices escape.

Never re-thaw meat which is not in a sealed vacuum pack, in water in an attempt to speed up thawing. This will cause flavour and colour loss and may encourage bacterial growth.

But meat is not properly frozen, badly stored and roughly thawed meat to give top quality eating results.

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Summary of storage and handling temperatures

| 7°C | For the transport of fresh/chilled meat, ideal storage temperatures. |
| 2°C | Maximum storage temperature for fresh/chilled meat. |
| 0°C | Ideal maximum storage temperature for fresh/chilled vacuum-packed beef or lamb products. |
| -1.5°C | Ideal minimum storage temperature for fresh/chilled vacuum-packed beef or lamb products. |
| -12°C | For Controlled Atmosphere Packed product, ideal storage temperature. |
| -18°C | Frozen meat should be stored AT or BELOW this temperature. |
Food Safety and Meat Hygiene

- Bacteria and spoilage ........................................... 58
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- Meat Hygiene .................................................. 59
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- Food temperature guide ..................................... 60
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- Fresh meat storage guide .................................... 61
Food Safety and Meat Hygiene

Meat from healthy animals is safe to eat. However, despite the most stringent hygiene during and after slaughter, meat is subject to contamination by micro-organisms [microbes]. Most contamination will be on the surface; the deep meat tissue normally remains sterile.

Regular testing shows New Zealand meat is microbially sound. This is a tribute to the care taken by everyone from the farmer to the processing plant workers who follow procedures designed to maintain food safety. A meat processing plant is a strictly controlled environment with a high-level of cleanliness. The surroundings are clean and wholesome food. Unless it is handled with care, meat is much greater risk than if left in the processing plant.

Bacteria and spoilage

The bacteria which can contaminate food are extremely small organisms and survive in a wide environmental area. Proper handling, good personal cleanliness and appropriate cooking protect against bacterial contamination.

Some bacteria grow on meat and produce chemicals or chemical changes we recognise as spoilage. When bacteria grow to high enough numbers, they can cause offensive odours or flavours, or they can discolor the meat or produce a layer of slime.

Food poisoning can destroy it all. Your reputation and your business depend upon providing your customers with safe, delicious, high quality food. Food poisoning can destroy it all.

Pathogens and disease

The most publicised human health problem recently is bovine spongiform encephalopathy, is caused by an organism called a prion. Although harmful bacteria can’t be seen, they can be controlled. By knowing what conditions they need to multiply and keeping them away from their growth can be prevented.

Bacteria don’t like their environment too hot. Most bacteria begin to die or temperatures above 60°C. Bacteria do not grow in very cold environments. Cold does not destroy bacteria (but may not destroy their toxins).

For food safety, keep fresh/chilled meat at less than 4°C. If holding cooked, hot food, its temperature should be above 60°C.

Bacteria multiply quickly in moist, nutritious and warm. They thrive in high protein foods. Rich foods are readily affected because they are the ones which require refrigeration to stop them spoiling.

Pathogens at risk include:

- Campylobacter
- Salmonella
- E. coli 0157:H7
- Listeria
- Staphylococcus on food surfaces

Bacillus cereus on vegetables, pasta and rice. E. coli 0157:H7, which has been linked with some high profile collapses of food poisoning outbreaks, is known to be associated with food poisoning from New Zealand meat.

Meaty hygiene

Keep it cool.

Safe temperatures for food

If holding cooked, hot food, its temperature should be above 60°C.

For food safety, keep fresh/chilled food below 4°C. For a good storage life, keep the storage temperature as low as is practical. For example, keep your cool room temperature as low as is practical.

For food safety, keep fresh/chilled meat at less than 4°C.

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Toxins that, when eaten, make people sick by giving them food poisoning.

Food poisoning is avoidable

Food poisoning is avoidable. Personal hygiene is the least expensive, probably the least convenient, but the most effective way to prevent food poisoning, one of the world’s top killers of children. To prevent food poisoning, you must take certain steps to stop it.

A single Escherichia coli or Pseudomonas bacterium can multiply very rapidly. With optimum conditions bacteria can double in number every 20 minutes to 40 minutes.

E. coli 0157, which has been linked with some high profile collapses of food poisoning outbreaks, is known to be associated with food poisoning from New Zealand meat.

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Food Temperature Guide

100°C
Boiling point of water

75-80°C
Acceptable reheating and serving temperature

65°C
Minimum holding temperature for bain-maries, hot cupboards

65°C
Foods stored hot must be AT or ABOVE this temperature

75-80°C
Acceptable reheating and serving temperature

65°C
Minimum holding temperature for bain-maries, hot cupboards

63°C
Bacteria multiply AT and BELOW this temperature

50°C
Many food poisoning bacteria multiply AT and ABOVE this temperature

2°C
Ideal storage temperature for fresh/chilled meat

-1.5 to 0°C
Ideal storage temperature for vacuum-packed beef or lamb products

-12°C
Frozen meat on display for sale should be maintained AT or BELOW this temperature

-18°C
Frozen meat should be stored AT or BELOW this temperature

Food safety checklist

- Always check food and meat before use to ensure it has not spoiled. It should smell fresh and look healthy. Remember however, food poisoning bacteria can be present on food that looks and smells fresh.
- Meat should be stored separately. Use a strict rotation programme based on first-in, first-out.
- Store raw and cooked foods separately. Use separate chopping boards and knives.
- Clean work surfaces, chopping boards and knives frequently and always after the preparation of raw foods.
- Operate freezers at -18°C or below and keep them clean.
- Operate refrigerators at 0 to 4°C (32°F to 39°F) or below and clean them weekly or as required.
- Fresh meat loses up to 1 % daily. Once thawed, should either be refrigerated or cooked and served promptly.
- Chill cooked meat to below 2°C in less than two hours.
- Avoid cross-contamination with harmful bacteria: follow a strict personal hygiene regime, always exercise clean working procedures and clean as you go.
- Do not use the same utensils or cutting boards to prepare raw meat and food not to be cooked (eg salad vegetables, cooked meat) to prevent cross-contamination from raw to ready-to-eat foods.
- Store cooked meat in a clean, spark clean fridge.
- Cook food to be stored quickly and store in a clean, spark clean fridge.

Working with meat

- Keep temperatures of the preparation area as low as possible (ideally under 18°C) before freezing meat as quickly as possible from refrigerated or frozen storage. Keep all work surfaces, utensils and cutting boards clean.
- Always use a clean, sharp knife for preparing cuts.
- Temperature control is crucial to the maintenance of food safety standards.

Meat is a perishable food requiring high standards of hygiene

Before and after handling meat:
- Wash equipment thoroughly in hot water.
- Wash hands with soap and water.

Food safety checklist

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- Always use a clean, sharp knife for preparing cuts.
- Temperature control is crucial to the maintenance of food safety standards.

Remember, when storing fresh/chilled meat, the lower the temperature the longer the shelf life:
- Keep fresh raw meat at the lowest practical temperature that does not cause freezing, and at a humidity of around 85 to 89%.
- Keep handling of meat to a minimum. Place fresh raw meat flat side up, in single layers on trays.
- Loosely cover meat with plastic wrap. Change trays regularly to prevent pools of drip.
- Keep different raw meats and meat cuts separate.
- Have a cold store with a temperature of 0 to 4°C (32°F to 39°F) or below and keep this cold to prevent spoiling of meats.
- Ensure all meat is labelled and dated.
- Restaurant portions can be stored for approximately three to four days under correct storage conditions.
- Primal and sub-primal cuts may be kept for up to 10 days (if packaged correctly and kept at low temperatures).
- Remember, actual storage life depends not only on the temperature, but also on how long the meat has been stored and under what conditions, of the time you received it.

Fresh meat storage guide

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Fresh meat storage guide
# Good Nutrition with Beef and Lamb

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<td>Iron</td>
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<td>Zinc</td>
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<td>Vitamins</td>
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Nature's Power Pack

Red meat has been part of the diet for at least 4 to 5 million years, and is believed to be one of the main factors contributing to our large and well-developed brain.

The Paleolithic diet of our hunter-gatherer ancestors is also recognised as protective against the diseases of today.

We still have several physical indicators showing we are designed to eat a mixed diet of both animal and plant foods.

One of these is our teeth, made up of canine teeth for eating meat, and molars for grinding plants.

New Zealand beef and lamb are more than just wholesome, versatile ingredients. They are rich sources of protein, iron, zinc and vitamins, such as vitamin B12 and vitamin D.

Being naturally ‘nutrient-rich’, beef and lamb contain a unique package of essential nutrients providing ‘a lot in a little’, making them an important part of a healthy, balanced diet.

Protein

The protein in red meat is the best quality, containing a complete range of amino acids – the building blocks for growth and repair.

A 100g serving of cooked beef or lamb provides 20-25g of protein. New Zealanders obtain the greatest amount of protein from beef and lamb.

Iron

Some of the iron found in beef and lamb is used by the body in the iron in vegetables and cereals. Iron is needed for healthy blood, giving us energy, and for brain development in babies.

Many women, and in particular number of our brothers and young children, go short of iron. Eating red meat will help them get enough.

Why do we need iron?

Iron is a mineral essential for good health and wellbeing. It helps carry oxygen to the brain and muscles, keeping us physically and mentally strong.

Food

<table>
<thead>
<tr>
<th>Iron (mg)</th>
<th>Absorbed iron (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120g cooked lean beef (average all cuts)</td>
<td>4.6</td>
</tr>
<tr>
<td>½ cup green muscel, marinated</td>
<td>4.6</td>
</tr>
<tr>
<td>40g slice lamb liver</td>
<td>4.0</td>
</tr>
<tr>
<td>½ cup stewed lean beef mince</td>
<td>3.5</td>
</tr>
<tr>
<td>120g cooked lean lamb (average all cuts)</td>
<td>3.0</td>
</tr>
<tr>
<td>2 roasted chicken thighs (172g)</td>
<td>1.8</td>
</tr>
<tr>
<td>1 grilled lean pork leg steak (82g)</td>
<td>1.6</td>
</tr>
<tr>
<td>120g baked tarakiti filet</td>
<td>0.6</td>
</tr>
<tr>
<td>¼ cup baked beans</td>
<td>2.0</td>
</tr>
<tr>
<td>1 cup cornflakes</td>
<td>2.0</td>
</tr>
<tr>
<td>½ cup walnuts</td>
<td>1.9</td>
</tr>
<tr>
<td>½ cup cooked red lentils</td>
<td>1.8</td>
</tr>
<tr>
<td>90g can tuna in brine</td>
<td>0.5</td>
</tr>
<tr>
<td>1 tsp pumpkin seeds</td>
<td>1.3</td>
</tr>
<tr>
<td>1 boiled egg (50g)</td>
<td>1.1</td>
</tr>
<tr>
<td>1 cup boiled brown rice</td>
<td>1.0</td>
</tr>
<tr>
<td>1 tsp pine nuts</td>
<td>0.9</td>
</tr>
<tr>
<td>½ cup boiled spinach</td>
<td>0.6</td>
</tr>
<tr>
<td>1 slice wholemeal bread</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Vitamin B12 is important for the manufacture of red blood cells. Vitamin B12 in New Zealand is found naturally only in foods containing animal tissue such as beef and lamb. The amount of Vitamin B12 available through the action of sunlight on our skin is small. With increased exposure to the dangers of over-exposure to the sun, foods containing this vitamin are becoming more important.

Vitamin C also has a similar effect. Red meat can help to increase absorption, boosting the use of non-iron forms of vitamin C from foods, and you can eat the equivalent of 2-3 times as much vitamin C in roast beef.  Because lean beef and lamb are low in fat, a significant amount of the vitamin C from foods is retained.

Lean lamb contains more vitamin B2 (riboflavin), vitamin B5 (pantothenic acid), vitamin B6 (pyridoxine), vitamin B7 (biotin), vitamin B9 (folate) and vitamin D than the zinc in other foods. Beef and lamb are the most common animal sources of zinc in New Zealand. There are several B group vitamins that help to maintain body functions. Some help release energy in beef and lamb, all with different functions. Some help contain a more potent type of vitamin D, vitamin A, vitamin C and vitamin E.

Lean red meat contains about a 9th of the fat of the old fat foods such as cheddar cheese. Less than 1% of the fat in our national diet comes from lean beef and lamb. If you trim 100g lean beef brisket about a quarter (1.2µg/100g). A 100g lamb leg steak provides up to half the amount of vitamin D needed each day (2.6µg/100g); 100g lean beef brisket about a quarter (1.2µg/100g).

Zinc

Zinc is needed to fight infection and to heat wounds, as well as numerous other body functions. Like iron, the zinc in red meat is used more easily by the body than the zinc in other foods. Beef and lamb are the most common animal sources of zinc in New Zealand.

There are several B group vitamins that help to maintain body functions. Some help release energy in beef and lamb, all with different functions. Some help contain a more potent type of vitamin D, vitamin A, vitamin C and vitamin E.

Fat content of Protein Foods

<table>
<thead>
<tr>
<th></th>
<th>gramms fat per 100g</th>
<th>gramms fat per serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baked spinach (110g)</td>
<td>3.4</td>
<td>(3.6)</td>
</tr>
<tr>
<td>Lean roast beef topside (2 slices)</td>
<td>5.3</td>
<td>(4.4)</td>
</tr>
<tr>
<td>Lean grilled rump steak (150g steak)</td>
<td>5.5</td>
<td>(8.3)</td>
</tr>
<tr>
<td>Lean stewed mince (1 cup)</td>
<td>6.0</td>
<td>(10.2)</td>
</tr>
<tr>
<td>Grilled chicken drumstick no skin (2 drumsticks)</td>
<td>6.8</td>
<td>(6.0)</td>
</tr>
<tr>
<td>Lean grilled lamb leg (1 steak)</td>
<td>7.8</td>
<td>(4.5)</td>
</tr>
</tbody>
</table>


Nutrients offer a great deal of saturated fat in the diet is the main cause of high blood cholesterol, not cholesterole in foods.

Lean lamb can be included in a diet designed to lower blood cholesterol.

**Carbohydrates**

Lean meat muscle contains 50-75% water. Lean meat contains no added cereal, eg sausages. Lean meat is low in energy and caloric content compared to most overseas. Lean meat muscle contains 50-75% water. Lean meat contains no added cereal, eg sausages.

**Water**

Lean meat muscle contains 50-75% water. Lean meat contains no added cereal, eg sausages.
Meat Cookery

How meat changes during cooking................................................... 70
Tenderising meat before cooking.................................................... 70

Dry and moist heat cooking methods...............................71
Dry heat methods........................................................................ 72
Moist heat methods................................................................... 72
Methods combining moist and dry heat.............................. 72
The aims in cooking meat are to:

1. Make it safe to eat - kill any harmful bacteria it may have picked up during handling.
2. Make it more tender.
3. Develop or improve flavour, colour and texture of meat.
4. Make it delicious/appetising to eat.
5. Tenderise meat before cooking.
Dry Heat Methods

- Roasting: Meat is cooked uncovered, in hot air, in an oven. Meat may also be roasted revolving on an spit over the fire.
- Grilling (Broiling): Quick cooking by direct heat from a gas flame or electric element. Meat may be placed under or over the heat source.
- Barbecuding: Meat is cooked on a grid or spit over glowing coals or gas flame.
- Fan-grilling: Cooking in a multi-function oven using radiant heat from the grill (upper) element and heated air circulated by a fan. A thermostat controls the temperature and the oven door is kept closed. Suitable for tender grilling cuts and some roasts.
- Pan-grilling: Meat is cooked on a pre-heated heavy, dry frypan or ridged iron grill pan (griddle pan), or metal hot plate. This is not frying. The cooking surface may be lightly greased, or the meat brushed with oil before cooking, but no further fat is added. Any fat drippings should be poured off as they accumulate. The meat is cooked uncovered.
- Pan-frying (shallow frying): Meat is cooked in a small amount of hot fat or oil (usually about 3-12mm depth), in an uncovered pan. A suitable method for thin cuts of tender meat.
- Stir-frying: Finely cut food is rapidly stirred and tossed as it is fast-cooked in a little hot oil, usually in a wok, over high heat.
- Sautéing: ‘Sauté’ literally means, to ‘jump’. Small pieces of food are tossed either by shaking the pan or tossing in the air. A little hot oil or fat in a sauce pan file a burn but lightly deeper. A suitable method for thinly sliced, small pieces of tender meat. A sauce may be finished with a sauce cooked in the pan.
- Deep-frying: Food cooked by being immersed in hot oil or fat.

Mold Heat Methods

- Braising: Meat is first browned in a minimum of fat or oil, then cooked gently with vegetables and a small amount of liquid in a tightly covered pot or casserole on the stove top or in the oven. Used for serving-sized pieces of meat as well as for larger cuts.
- Pot-Roasting: The term used for larger cuts or joints of meat cooked as for braising, but without any (or with barely any) liquid. A good method for less tender roasting cuts such as fresh beef silverside, topside and chuck roasts.
- Stewing or Casseroling: Meat cut into small pieces or cubes is cooked at a low temperature or gentle simmer in liquid, usually with vegetables, in a covered pan on the stove top or in the oven. The meat may be browned first.
- Simmering: Gentle cooking in liquid just below simmering point so the surface barely ripples. Meats for simmering may be cut either in small, or large pieces, eg corned beef silverside.

Moist Heat Methods

- Braising: Meat is cooked in a small amount of fat or oil (usually about 3-12mm depth), in an uncovered pan. Suitable method for thin cuts of tender meat.
- Stewing or Casseroling: Meat cut into small pieces or cubes is cooked in a small amount of fat or oil (usually about 3-12mm depth), in an uncovered pan. Suitable method for thin cuts of tender meat.

Methods Combining Moist and Dry Heat

- Microwave Cookery: Microwave cookery is electro-magnetic. It is neither a dry nor moist technique, but the microwave oven can be used to roast, simmer, braise and casserole meats. However, it gives different results from conventional cooking methods and does not always save time. Generally, meat cooks better and more evenly, at a lower power setting. The size and shape of the meat cut affects evenness of cooking and the time required.
- Covered Roasting: This is not true roasting, as the meat is enclosed, either in an ovenbag or covered roasting pan, and then cooked in the oven. A variation is a ‘frypan roasting’, eg small lamb leg cuts are first browned in a hot frypan. Heat is then reduced, the lid put on and cooking is completed.
- Poaching: Food is cooked very gently in liquid below simmering point. Liquid is hot but should not exceed simmering point). A suitable method for less tender roasting cuts which normally need long, most heat cooking, eg ox tongue and beef shin.
Roasting

Roasting techniques

Roasting is a dry heat method that may use a small amount of fat or oil as a base. The meat is cooked in an oven or on a roasting spit over a fire, gas flame or electric grill bars.

Different roasting methods

Some meat cuts suit high temperature roasting while others are better roasted at low temperatures.

Beef and lamb cuts with plenty of outer fat cover, for sears or marbling are best roasted at low to moderate temperatures. This results in less shrinkage and better serving yields.

Very lean or totally trimmed cuts are better rare-roasted at a higher temperature, or first seared then roasted.

Slow roast: low temperature 100 to 120°C

Moderate roast: 140 to 160°C

Fast roast: high temperature 200°C or over

Low to moderate temperature or slow roasting in a convection oven (with or without fan-forced function):

Hot air circulates at high speed, giving fast, even cooking temperatures between 70 to 160°C.

Moderate to high temperature roasting in a convection oven:

Hot air circulates at high speed, giving fast, even cooking temperatures between 140 to 200°C.

Combination oven roasting

This method uses a combination of dry heat plus moist heat, eg meat joint covered in foil and roasting pan or oven bag.

Oven roast:

- Electronically-operated split turns slowly over charcoal embers, electric or gas grill bars. Heat must be boosted constantly.

Oven spit roasting:

- Electronically-operated split in convection oven or in front of radiant-heated spits.

Note: Pot-roasting is a moist heat method (see page 100).

Roasting cooking times in oven preheated to 140-170°C

Portly, note the weight of the meat to calculate cooking time:

- A large piece of meat requires lower minutes per 500g than a small piece of meat
- The thickness of the meat cut affects the cooking time. Thick, chunky pieces require longer than thin cuts of the same weight
- Meat with bones in cook more quickly than boned and roasted cuts.

<table>
<thead>
<tr>
<th>Weight</th>
<th>Minutes per 500g</th>
<th>Internal temp. of cooked meat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>25 – 35</td>
<td>60°C (140°F)</td>
</tr>
<tr>
<td>Medium</td>
<td>25 – 30</td>
<td>75°C (160°F)</td>
</tr>
<tr>
<td>Well done</td>
<td>30 – 35</td>
<td>80°C (175°F)</td>
</tr>
</tbody>
</table>

Roasting Tips for Top Results

- If possible, take meat from the refrigerator about 20 minutes before cooking, to bring it to room temperature.

- Trim excess fat and silverskin if necessary.

- Very lean cuts: score or make lean cuts first. Searing a roasting cut in a hot pan improves colour and flavour, particularly when using small, lean, leaner cuts that need only short cooking.

- Roast on a rack: when practical, place meat on a rack to roast. This allows even heat circulation and browning. You can use a root vegetable medley, trimmed bones or metal trivet as a base for the meat.

- Self-basting: place roast beef or lamb with fat side uppermost to allow natural basting.

- Nailing and hanging: collagen fibers, cool fat, netting or hame may be used to hold stalls or fixed roasting cut in an oven shelf for cooking, parboiling and cooking.

- Resting after roasting: after cooking, before carving or serving beef or lamb, allow meat to rest, approximately five minutes for every 500g of meat, for example, 15 minutes for a 1.5kg roast beef.

- Resting enables temperature to even out and the meat fibres to relax and re-absorb some of the juices. The released meat becomes more tender and easier to carve, with less loss of juices.
Fillet (eye fillet, tenderloin, the undercut of the sirloin, taken from under sirloin and part of the rump). Most tender, fine-grained, juicy cut. Whole fillet weights around 2-2.5kg. Long, log shape, tapering from thick end to thin, tail end. A strip of slightly coarser textured meat (the chain) joined to the main muscle by a strip of connective tissue, runs from the tail end, about three-quarters of the way along one side. Cooking Point: The chain is often removed before cooking to improve presentation of the roasted meat. Beef fillet may be roasted whole, or cut into shorter lengths.

The whole beef fillet may be divided across into three sections:
1. The thick (a) butt end, or head (tête de filet).
2. The centre portion, middle fillet of heart (coeur de filet). Tournedos are cut from this.
3. The tail, thin end (filet mignon). This end is too thin to roast on its own.

Cooking Point: Before roasting, the tail end may be cut off, or folded under on itself and tied in place to give more even thickness throughout.

A roasting cut taken from the beef fillet is the (b) Châteaubriand (Châteaubriand may also be used as a grilling cut, see page 85). This is usually taken from the thick end of the fillet (about 800g) and will serve two to three people. It can also be cut into pieces about 400g each and flattened slightly before cooking.

Châteaubriand can also be cut from the centre of the fillet, a large double fillet steak weighing from 400g to 800g. This is gilled whole, then cooked. The beef fillet’s shape, with its lengthwise grain, makes it an easy roast to carve into neat slices.

Cooking Point: Fast, high temperature roast, or pan-sear then oven roast. Best rare or medium rare.

Ribeye (Scotch fillet, cube roll). Tender, fine grain (more open-grained than sirloin), with some marbling and a small strip of fat running lengthwise with the lean, but very little outer fat cover. Boneless log shape (around 2.3-2.5kg), well-flavoured roasting cut which carve into neat slices.

Cooking Point: Slow or high temperature roast.

Standing rib. Tender, fine grain. A large, impressive cut of meat on the rib - maximum size, but may be cut to four. Chined, Frenched and tied for easy carving.

Cooking Point: Slow or high temperature roast.

Rolled rib. Tender and medium tender meat, from boned ribs, rolled and tied. Prime rolled rib must include the ribeye. (Some rolled rib roasts have the ribeye replaced by less tender chuck or blade.) Has some exterior fat.

Cooking Point: Slow roast.

Wing rib. Tender, fine grain. Triangular cut from the rib end of the sirloin roasting joint. Includes a maximum of three rib bones.

Cooking Point: Slow or high temperature roast.
Sirloin. Tender, fine grain (closer texture than ribeye), lean, may have some marbling, with outer fat cover. Sirloin-on-bone consists of the upper cut of sirloin on one side of the T-shaped backbone and smaller undercut (fillet) on the other. Striploin, the boned-out sirloin, has the fat removed. A flattish piece (around 4.5kg) which may be tied before roasting. 

Cooking Point: Slow or high temperature roast.

Rump. Medium tender, medium-fine grain, boneless, lean. With outer fat cover on one side. Sometimes slow roasted as the whole primal (around 4-7kg), or halved. Difficult to carve neatly and produces very large slices.

Smaller, seam-cut out - rump eye, centre rump and rump cap - are easier to carve across the grain into neat slices.

(a) Rump eye. A short, lean, leg-shaped piece (resembles the middle cut of the beef fillet), grain running lengthwise. No fat cover, silverskin removed. The most tender of the rump cuts, this is excellent roasted whole.

Cooking Point: Sear then fast roast, best served rare.

(b) Centre rump. A compact, chunky piece (about 1.4kg) and thicker than rump eye. It may have fat cover on or off.

Cooking Point: With fat on, slow or fast roast. If totally trimmed, sear then roast.

(c) Rump cap. A flat, almost triangular piece, thinner at one end (ranging from 2-4cm thick), coarser grain and less tender than rump eye or centre rump. With fat cover and underlying gristle removed, weighs about 0.8kg.

Cooking Point: May be seared, then fast roasted to rare. Can be carved into narrow strips.

Topside, cornercut or eye. Medium tender, boneless, lean, rather coarse grain. Can be dry if cooked to well done. Best medium rare. Slow roast or, if well trimmed, sear then roast.

Cooking Point: May be pot roasted.

Bolar. Medium tender, boneless, large piece, lean with a central line of gristle and some exterior fat. 

Cooking Point: Slow roast or pot roast.

Chuck, rolled and tied. A less tender, cheaper cut, lean with some fat. 

Cooking Point: Slow roast or pot roast.
Lamb, Hogget or Mutton Cuts to Roast
Frenched rack, striploin or backstrap, rump, thick flank, topside, silverside and ribeye. These small, tender, well trimmed cuts suit high temperature, fast roasting.

Leg cuts, rack (traditional), mid-loin, shoulder roast and shanks. These traditional cuts can be slow-roasted at an oven temperature of 160°C.

Lamb Cuts to Fast Roast
Either:
1. High temperature roast at 300-330°C or
2. Sear then roast. Cuts with no exterior fat are best seared or browned first in a pan, then transferred to the oven at a moderate temperature of 170-180°C, or hot at 200°C.

Frenched rack, modern. Full rack, six or eight ribs, well trimmed, backbone removed (chined). May be cut to three or four rib. Most tender, lean meat, trimmed of exterior fat.

Cooking Point: Needs brief oven roast, best served medium rare.

Striploin (backstrap, boneless eye of the long loin). Most tender, lean, fine-textured piece from the eye of the loin. A flat, log shape, grain running lengthwise. Boneless, no exterior fat. Eye of shortloin is boneless, lean meat from the lamb mid-loin only, by removal of the rack, cutting down between the 12th and 13th rib. This is about half the length of the full backstrap.

Cooking Point: Best seared then roasted and cooked to medium rare.

Rump. Tender and lean, but some fat and connective tissue throughout. Exterior fat cover easily removed. Boned weight 225-250g, a mini roast for one or two. May be tied to compact shape for fast roasting. May be further seamed out to give the smaller, heart of rump with less connective tissue.

Cooking Point: Brief high temperature roast.

Thick flank. Medium-tender, lean, fine grain. A plump, boneless piece, around 325-350g. No outer fat cover.

Cooking Point: Sear then roast.

Topside. The largest of the seamed-out lamb leg cuts, 350-500g. Medium-tender. A lean, chunky boneless piece, which makes a good mini roast for three or four.

Silverside. Medium-tender, rather thin, flatish piece, lean with exterior fat easily trimmed. Two distinct muscles with fine grain in one (eye of the silverside) and coarser grain in the other.

Cooking Point: Sear then short roast. Come in two sections, across the different grains.

Thick flank. Medium-tender, lengthwise. A plump, boneless piece, around 325-350g. No fat, no exterior fat cover.

Cooking Point: Sear then roast.

Ribeye. Medium-tender, well marbled, no exterior fat. A small, boneless roll shape, about 270g.

Cooking Point: Sear then roast.
Traditional Lamb Cuts to Slow Roast

Leg, whole. Tender rump end, medium-tender middle leg, to less tender shank. Includes the aitch bone (hip bone), femur and shank bone. Lean with some small pockets of intramuscular fat and exterior fat easily trimmed.

A fully-boned leg may be (a) tunnel-boned, which keeps the shape of the leg intact and the boned cavity is ideal for stuffing, or (b) butterflied.

Butterflied Leg. All bones are removed and the meat opened out flat. Being thinner, it cooks more quickly than bone-in leg.

Carvery leg. A semi-boned leg, usually with rump and thick flank removed. Consists of topside, silverside and shank, including shank bone with the end sawn off. Tied in shape, this is a meaty, easy-carve roast.

Mid-loin, bone-in (as pictured). Includes the lean striploin (backstrap) and flanks with backbone. Most tender. Exterior fat easily trimmed, but lean interspersed with fat on the flaps.

Mid-loin, boned. Fillet is usually removed and the loin rolled and tied.

Shoulder roast. Lean and fat interspersed. Bones make carving difficult. Medium-tender. Shoulder may have rib bones removed for semi-boned shoulder. It may be tunnel-boned, or boned, rolled and tied for boneless shoulder roast (as pictured).

Cooking Point: Slow roast, covered roast, or pot roast. May also be simmered.

Shanks (knuckles). Lean tender. High proportion of connective tissue and bone to lean, but fatty, juicy meat.

Cooking Point: Best covered and roasted slowly. May also be simmered.
Roasting Temperature/Time Guide

The degree of doneness of both large and small meat cuts is always measured at the very centre of the cut.

Ways to check a roast for readiness.

1. Use of Meat Thermometer. You can place the thermometer in a large cut of meat before roasting; insert it into the thickest part, away from fat or bone. For example, with a medium-rare beef eye of striploin, you can be sure it’s done when the internal core temperature (ICT) has reached approximately 60°C (140°F).

2. Press meat with tongue. Lightly press the outside centre or thickest part of the meat.

3. A test lift. Meat juices are an indication of doneness. If you are still unsure, as a last resort, use a meat thermometer.

When is the roast ready?

<table>
<thead>
<tr>
<th>Doneness Level</th>
<th>Internal Core Temperature (ICT)</th>
<th>ICT Range</th>
<th>Approximate Oven Time</th>
<th>Touch Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>Very rare 40 - 45°C</td>
<td>104 - 119°F</td>
<td>18-20 minutes per 500g</td>
<td>Very soft to touch</td>
</tr>
<tr>
<td></td>
<td>Very rare, very moist with warm, red-coloured juices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20-25 minutes per 500g (1.1lb) plus 10-15 minutes resting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soft to touch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25-30 minutes per 500g (1.1lb) plus 10-15 minutes resting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soft and springy to touch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30-35 minutes per 500g (1.1lb) plus 10-15 minutes resting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Firm and spongy to touch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30-40 minutes per 500g (1.1lb) plus 10-15 minutes resting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Firm to touch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40-45 minutes per 500g (1.1lb) plus 10-15 minutes resting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very firm to touch</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Use as a guide only. Cooking times are approximate and depend on the type of cut, thickness and temperature of the meat and the type of equipment used. Follow oven manufacturer’s instructions.

Grilling & Barbecuing

Grilling is a fast, dry method of cooking tender cuts with radiant heat directed from below or above the meat. Char-grilling, barbecuing and fan-grilling are variations of the method (see Dry Meat Methods, page 72).

Beef and lamb cuts which are rare for grilling are suitable for char-grilling. Barbecued cuts are appropriate for fan-grilling.

When Can Go Wrong?

Overcooking lean, tender grilling or roasting cuts of beef and lamb can make them dry and less tender. Avoided sauce to hold in heat and reduce moisture in the meat and results in poor portion yields. Overcooking less tender cuts (those with a high amount of connective tissue), can cause the meat to break up and fall apart.

When the meat is removed from the heat, the internal temperature will continue to rise by 1-2°C after 10-15 minutes resting. In large joints, the internal core temperature can rise by 1-2°C after 15-20 minutes in the oven. Therefore, allowing for this ‘carry-over’ cooking, roast meat can be cooked to slightly below the desired degree of doneness.
Season at the last minute: if adding salt or salt/spice mixtures, do this immediately before cooking. If salt is left on the meat surface it draws out the juices. Be careful not to burn spices.

With dry herb/spice rubs used to impart flavour, brush off excess before grilling. An option is to brush over the surface with all before cooking to prevent burning dry rub ingredients.

Marinating and basting: before cooking beef or lamb, steaks may be marinated in mixtures of oil with vinegar, wine or citrus juice, herbs and spices to help tenderise and add flavour. Drain meat of marinade and blot dry before pan-grilling.

Searing and browning: always pre-heat your grill so the meat browns quickly. Because the heat is intense, care should be taken to avoid overcooking lean meats that can dry out.

Resting times: before serving, allow beef or lamb to rest in a warm place for a short time, depending on size. Larger cuts cannot rest longer than smaller, thinner ones. For example, a 200g steak should rest for two to three minutes. Resting allows the muscle fibres to relax and more juices are retained in the meat.

For best results with thinner beef or lamb steaks, wear them fast to develop colour and flavour, then let them rest in a warm place for a few minutes before serving. Thick steaks or cuts can be seared quickly, then heat reduced to medium or low to complete cooking at a more gentle heat.

Cooking times: knowing correct cooking times to achieve the correct degree of doneness comes with experience. Factors determining cooking time include the temperature of the raw meat before cooking, grill heat, type of equipment, and the type of meat cut - its size, thickness and amount of fat and bone.

Resting times: before serving, allow beef or lamb to rest in a warm place for a short time, depending on size. Larger cuts cannot rest longer than smaller, thinner ones. For example, a 200g steak should rest for two to three minutes. Resting allows the muscle fibres to relax and more juices are retained in the meat.

Trellising: beef or lamb steaks can be marked in a lattice pattern (sometimes called quadrillage) by searing each side twice (turn it at right angles) on a ridged griddle pan or barbecue grid. Use tongs when turning the meat and grill the presentation side first as it gives a better appearance.

Cooking Point: Best rare or medium-rare.

Beef Steaks to Grill, Pan-Grill, Char-Grill or Barbecue
The tender, fine-grained cuts of fillet, t-bone, sirloin, and seamed rump are suitable for grilling, as is the less tender flank and silverskin. These cuts are also good for pan-frying (see page 10).

Fillet steak (eye fillet, tenderloin). The most tender beef cut. Fine grain, juicy with very little exterior fat but some silverskin (removed before cutting into steaks). Whole fillet (a long, log shape), tapers from a thin ‘tail’ end to a thick ‘butt’ (rump) end. Steaks vary in diameter from small, rather flat (fillet mignon) to larger, plump rounds called humpsteaks, which are cut from the middle of the fillet. The Chateaubriand is a large piece, usually for two servings, cut from the thickest part of the fillet.

Cooking Point: Best rare or medium-rare.

Sirloin steak (eye fillet or Scotch fillet). Tender, succulent steaks cut across the whole boneless fillet. Round or oval shape, larger than fillet with fine, slightly open grain and some marbling. A strip of fat within the lean runs through the length of the fillet, tapering slightly towards the chuck end.

Cooking Point: Many chefs consider it the best grilling steak, but due to the internal fat/tenderness, it is usually cooked to medium-rare or medium.

Ribeye steak (cote roll or Scotch fillet). Tender, succulent steaks cut across the whole boneless fillet. Round or oval shape, larger than fillet with fine, slightly open grain and some marbling. A strip of fat within the lean runs through the length of the fillet, tapering slightly towards the chuck end.

Cooking Point: Many chefs consider it the best grilling steak, but due to the internal fat/tenderness, it is usually cooked to medium-rare or medium.
T-bone steak. Cut from the bone-in loin, consists of tender striploin on one side of a T-shaped bone, plus very tender fillet on the other. Exterior fat along one side, easily trimmed. When ordering, specify tail length, fat depth and steak thickness.

Cooking Point: Because of prominent bone, not an ideal cut to pan-grill as the meat may not of evenly flat on pan-grill (griddle pan), resulting in uneven searing lines. Even evenc cooking can be achieved by radiant heat grilling.

Roast beef. Medium tender, medium-fine, dense grain. The traditional slice of roast beef cut across the whole primal is a very large steak with a fat border along the curved side. Too big for one portion. It consists of sections of several muscles with grain running slightly different ways, so there is some variation in tenderness within the steak.

Cooking Point: Roast beef should be well aged and marinated with acid and/or enzyme content can help to improve tenderness.

Seamed rump steaks. The whole rump may be divided along natural seams of connective tissue into individual muscles. The three main ones are (a) centre rump; (b) rump eye; and (c) cap. Once connective tissue is removed, these sub-primals can be sliced across the grain to produce smaller, neater, more evenly tender steaks.

(a) Centre rump steak: generous-sized, lean steak, medium tender.

(b) Rump eye steak: most tender and smallest of the rump steaks, similar in shape to fillet steak, though firmer in texture.

Cooking Point: Both cuts best cooked to medium-rare and well rested.

(c) Rump cap: this sub-primal is easily removed from the top/slower side of the rump primal. A fat, almost triangular piece (about 3.4cm thick, weighing 800g or more), with grain running horizontally. Not quite as tender as rump eye. Fat cover and underlying connective tissue on one side usually removed.

Cooking Point: Due to thin shape and lengthwise grain, this is a good cut to barbecue then carve into thin slices across the grain after cooking. Produces meat slivers for beef salads. Before cooking, the cap can be halved horizontally so it takes less cooking time. Cook to rare and rest well before slicing.

Lamb steaks, chops and cuts to grill, pan-grill or barbecue

A lamb steak is a boneless cut, whereas a chop has bone-in. Cutlets, short loin and mid-loin chops, eye of short loin, rump steaks, thick flank and topside steaks, lamb schnitzel and lamb topside or silverside steaks, are all good to grill. These cuts are also good to pan-fry (see page 93).

Cutlet. Frenched cutlet. Rack cutlets. Cut from frenched lamb rack. The bone is cleanly removed (ie chined). ‘Frenched’ means its bones are scrapped bone of flesh almost to the eye of meat. Meat is well trimmed of fat, leaving just enough to hold on the rib bone during cooking. Chops sometimes cut double cutlets. Both loin and rack remove one of the ribs before cooking.

Cooking Point: Very tender, lean meat needing only brief cooking. Best rare or medium rare.

Short loin or mid-loin chop. Cut from short loin (mid-loin) portion of the loin from 13th to 9th rib near to point of hip bone, ie between rump and skull (top end of leg). A short loin chop consists of a central L-shaped bone with a small lean fillet on one side, and on the other, the lean eye of loin, with its outer fat cover (easily trimmed). The chop has the lean, boneless ‘ril’ (fat and lean interspersed) but it may be removed.

Cooking Point: The chop tail is not nearly as tender as the meat around the T bone and, due to fat content, needs longer cooking.

Eye of short loin. Boneless, lean meat from lamb mid-loin (short loin) only. It is the shortened side of the full loin or backstrap (boneless eye of the long loin). Eye of short loin is a flat, log-shaped chop of tender meat (grain running lengthways) without any fat cover. Usually sold with silverskin on.

Cooking Point: Remove silverskin before cooking. This cut is often cooked whole then carved. Alternatively, cut across the grain via small medallions or ‘nibs’ of meat to fast-fry, or butterfly across the grain to give larger medallions.
Lamb fillet (tenderloin). Whole fillet [the equivalent of the beef fillet], boned from under the saddle of lamb, ie from under loin and extending into rump. Lamb tenderloin is a small lean strip, 2-3cm thick, grain running lengthwise. The whole tenderloin, including butt end and rump, is about 25cm long. However, it is usually cut just from the loin, and measures about 25cm. Allow at least two per portion. Remove small covering of silverskin before cooking.

Cooking Point: The most tender lamb cut, this needs only brief cooking. Baste with oil, sear in hot pan until rare, then rest before slicing.

Rump (chump) chop. From the leg, cut across rump with bone in. Has a fat cover running along one side (easily trimmed), a small piece of bone on the other. Tender meat, good barbecued or grilled, though not as popular today as boneless rump steak.

Lamb rump steak. Thick slice cut across boned rump. Usually has outer fat cover left on. For smaller steaks with less connective tissue, the rump cap with fat cover is removed, leaving heart of rump, a compact piece which slices into neat medallions. Popular with chefs.

Cooking Point: Degree of trim determines cooking method and time. A lean medalion from well trimmed rump is best cooked rare.

Lamb thick flank (knuckle or round) steak. The whole thick flank, trimmed of fat, weighs about 350-400g, a neat shape to cut across the grain into steaks. Best steaks are from the broad end. Near the knee joint they have more connective tissue. Finer-grained meat than lamb topside but both are medium-tender.

Cooking Point: A lamb thick flank makes an excellent small roast to serve two. Sliced thinly, it makes neat schnitzels.

Lamb topside steak. The whole lamb topside, the largest of the seamed leg cuts, when trimmed of fat, weighs around 350-525g. Meat is medium-tender, slightly coarser in grain than rump or thick flank. It cuts into good-sized steaks. The topside cap can be removed first to give tidier steaks.

Cooking Point: A whole lamb topside makes a good mini-roast, seared, roasted, rested then carved.

Lamb schnitzel from thick flank or topside. Thin slices cut across grain of well trimmed, boned topside or thick flank, make neat, portion-sized lamb schnitzels. When cutting schnitzels, work from the broad end of the thick flank, so nearer the knee joint (narrow end) there is more connective tissue and slices become too small. Use trim for curries or simmered dishes. For larger lamb schnitzels, use butterfly cut (see below).

Cooking Point: Pound with a mallet to even the meat. Make small incisions into connective tissue around edges to prevent thick flank meat curling during cooking. Best lightly coated before pan-frying.

Lamb topside/silverside steak. A boneless leg steak cut from topside and silverside together. The leg is fat-seam boned (tump, thick flank and femur removed, then topside and silverside taken off the shank). These steaks are a generous size and a neat shape, better than steaks cut from tunnel boned leg (with central hole in the medei).

To butterfly cut: When slicing a small boneless piece of meat, take the knife almost through the meat to the cutting board on every second cut. This produces hinged slices (like butterfly wings) that can be opened out flat like a book, thus giving double-sized pieces. A butterflyed leg is boned leg, opened out flat (see page 82).
**Steak:** What is the correct degree of doneness?

<table>
<thead>
<tr>
<th>Degree</th>
<th>Description</th>
<th>Touch test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>Internal very red colour, very meaty, warm juice</td>
<td>Soft to touch</td>
</tr>
<tr>
<td>Medium Rare</td>
<td>Internal lighter red colour, pink warm touch</td>
<td>Soft and springy to touch</td>
</tr>
<tr>
<td>Medium</td>
<td>Internal pink red colour, a little moist, firm and springy</td>
<td>Soft to touch</td>
</tr>
<tr>
<td>Well Done</td>
<td>Internal light grey colour, different meat, clear no pink juices, firm to touch</td>
<td></td>
</tr>
</tbody>
</table>
Braising

Braising is a moist heat cooking method recommended for less tender cuts of meat. Braising is an excellent method for cuts with high amounts of connective tissue, making them succulent and tender. For braising, meat is usually cut into serving size portions, rather than just cubes (as in a stew).

Brown braising: the meat is browned if it may be dusted with seasoned flour) in a small amount of oil, fat or butter in a heavy pan or casserole dish. The browned meat is placed on top of vegetables, or with them, and a relatively small amount of liquid is added. The meat is covered and cooked slowly at low temperature on the top of the stove or in the oven. At the end of cooking, the braising vegetables are removed and a sauce is made from the cooking liquid. Sometimes the vegetables are used in the sauce.

Tips on braising

Use the appropriate meat cut: meat cuts with a certain amount of marbling and gelatinous connective tissue retain juiciness better than very lean cuts, when cooked long and slowly.

Browning meat: although browning is not essential, it is desirable as it not only improves colour, but develops flavour.

Tightly cover: a tight-fitting lid holds in the steam, which helps to soften the connective tissue, making the meat more tender. A sheet of buttered baking paper placed over the meat, under the lid, helps to prevent the surface from drying. To make a loose lid more tight-fitting, put a sheet of foil over the pan then cover it with the lid.

Temperature control: after initial browning of low temperature, maintaining a sub-simmer is important. While prolonged simmering, or cooking close to the boil is necessary to soften connective tissue, as in stewing, the meat will become stringy and dry. If the meat is ready, but the cooking liquid has not reduced enough to give a good sauce consistency, remove the meat (keep it covered if the sauce does not dry) while you complete the sauce. Then return the meat to the hot sauce.

Cooking time: overcooking can make braised meat dry and stringy. Cook a braise just until tender. Check for readiness at intervals. If the meat is ready but the cooking liquid has not reduced enough to give a good sauce consistency, remove the meat (keep it covered if the sauce does not dry) while you complete the sauce. Then return the meat to the hot sauce.

Beef Steaks and Cuts to Braise

Shin steak, chuck steak, blade steak, thick skirt steak, flank skirt steak, topside silverside, thick flank steak and oxtail are all less tender but tasty beef cuts suitable for braising.

Shin steak. Slice cut across the leg, bone-in or boneless. Coarse-grained, fatty meat with high proportion of gelatinous connective tissue, which softens to succulence with slow, moist heat. Size of bone varies depending on age of animal (eg smaller in veal as used in osso bucco), and position on the leg. Some Shin steaks are meaty and compact with a high proportion of bone, some are very large with a high proportion of bone.

Cooking Point: Remove large bone and thick cover of connective tissue before coating. Shin like chuck and blade, makes flavorful, succulent stews.

Chuck steak. Boneless cut taken from the first three ribs of the forequarter. A less tender, open-grained meat with minimal fat, easily trimmed.

Cooking Point: A good, fatty cut to cube for stews and curries.

Cross-cut blade steak. Boneless cut from the shoulder blade area of the forequarter. A succulent cut, medium tender to soft tender, with medium grain. The distinctive line of gristle through the meat softens to gelatine on slow, moist cooking. Though cross-cut blade steak is not a prime grilling cut, meat retains some tenderness because of mechanical manitivation and sells as a cheaper barbecue cut. Australians call this cut top blade steak. In New Zealand, cut is called oyster blade. Australians call this cut top blade steak. In New Zealand, cut is known as oyster blade, usually sold as a large piece for roasting or pot-roasting (see page 103).

Cooking Point: Slices of blade steaks are excellent braised, retaining their succulence.
Thick skirt steak. Coarse-grained, least tender meat with rich flavour. This must be cooked long and slowly by moist methods. Not to be confused with flank skirt steak.

Cooking Point: Gives rich, dark stock or gravy.

Flank skirt steak (sometimes called teardrop steak). A lean, thin, flat-leaf-shaped steak around 20cm long, medium-tender meat, having distinctive coarse, lengthwise grain. Well flavoured meat for stewing. Sometimes thinly sliced across the grain for stir-frying but tends to be chewy rather than really tender.

Cooking Point: Flank skirt can also be used as a roasting steak if it is well-aged and tenderised or marinated, then cooked rare. Slice across the grain.

Topside steak. Lean, medium-tender meat with rather coarse grain. May be braised or casseroled but not as succulent as sirloin, chuck or blade. Makes good quality mince.

Cooking Point: Makes good casseroles, but topside tends to dry so take care not to overcook.

Silverside steak (fresh). Medium-tender, lean meat. The whole silverside is made up of two main muscles with distinctly different grain. Silverside eye is the smaller 'bag-shaped' piece with fine grain. It can be cut into small, neat oval steaks. Silverside, lamp-end and centre-cut are coarse-grained.

Cooking Point: Silverside eye is sometimes thinly sliced and sold as 'sandwich' or 'minute' steaks, but is not considered a tender grilling steak. Fresh silverside steaks may be braised, although not as succulent as the more gelatinous cuts (blade, chuck, oxtail). A larger cut (e.g. piece around 1.5kg) makes a good pot-roast (see page 100).

Thick flank steak (Australian name ‘round steak’). From the hindquarter, this primal is most often sold thinly sliced as beef schnitzel. Medium tender with finer grain than topside. A good grilling steak, more tender than most stewing steaks.

Cooking Point: If using thick flank for braised beef olives, slices should be thin, but not wafer-thin.

Oxtail. Sold joined into short pieces. Medium-grained, least tender cut but very gelatinous, so braising or slow moist heat produces great succulence. A high proportion of bone and fat to lean, but much of the fat can be trimmed and the remainder removed after cooking. Very flavourful and an excellent braising cut.

Cooking Point: After braising oxtail, drain sauce into a jug so fat can be removed from the top. Alternatively, refrigerate the braised oxtail in its sauce overnight then remove solidified fat from the surface.

Offal
Kidneys, liver, heart and tripe are also suitable for braising (see Offal, page 44).
Lamb Steaks and Cuts to Braise

Medium-tender and least tender lamb, hogget and mutton cuts, such as boned and cubed forequarter, round neck, shoulder and forequarter chops, leg chops and shank or knuckle, suit moist heat cooking such as braising.

Forequarter. Boned, cubed. Medium-tender to least tender, depending on age of animal (eg young lamb or older mutton). Exterior and intermuscular fat. Needs trimming, but juicy meat for stews and curries.

Round neck chops. Least tender, with high proportion of bone and fat to lean.

Cooking Point: Needs long, slow cooking to tenderise.

Forequarter chops, shoulder chops. Least tender, although young lamb shoulder can be tender enough to barbecue. Some bone and fat within the lean. Good braising chops.

Leg chops. Medium-tender, lean, with small round central bone. Leg steaks cut from boned leg.

Shank or knuckle. Least tender, with high proportion of bone and gelatinous connective tissue, which, when braised, becomes juicy and tender.
Pot-Roasting

Pot-roasting is the term applied to cooking larger joints or cuts (eg beef topside or fresh silverside in a 1.5-2kg piece) in a covered casserole in the oven. The small amount of liquid and the vegetables produce sufficient steam to make this a moist heat method ideal for the medium-tender roasting cuts.

Stewing

In stewing, meat cut into smaller pieces or cubes is cooked gently in liquid to complete the tenderisation of connective tissue. A stew can be simmered in a pot on the stove top or cooked in a covered casserole in the oven. Stewing is suitable for the less tender cuts of meat which become tender and juicy as a result of moist heat method. Cuts having a certain amount of marbling and gelatinous connective tissue give moist, juicy stews.

Brown Stews

Brown stews are made with pieces of red meat which are first seared or browned. A browned mirepoix (and sometimes browned flour), plus liquids such as stock and wine are added, and the dish simmered gently until tender.

Thickening Stews

The cooking liquid may be drained from the cooked meat at the end of cooking. A roux is used, or beurre manie (uncooked flour and butter paste) added. A liaison of egg yolks and cream may be added.

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**Steaming and combination steaming.**

Steaming is a dry heat-cooking process. The meat does not come into contact with the cooking liquid, but instead is cooked by surrounding steam, sometimes under pressure. Steam, sometimes under pressure, but instead is cooked by surrounding steam in a steam cooker that is fed into chambers from a separate boiler.

**Tips on Steaming**

- Use a tight-fitting lid or have steam deflectors and steam vents on the sides.
- Cover the steamers with clear plastic wrap or foil to prevent sticking, or moisture penetrating food. Greaseproof kitchen paper, cloth or grease these well and firmly cover with greaseproof kitchen paper, cloth or foil to prevent sticking, or moisture penetrating food.
- Steam cooks meat evenly and quickly.
- Food and liquids absorb this energy and cook quickly. Food and liquids evaporate from the surface of the food. The microwave is useful for quickly reheating and defrosting meats.
- Steam cooks meat evenly, so the outside of the meat, dry, shrink and皱纹, dry, shrink and wrinkles less than boiled meats. Gentle simmering cooks meat evenly and significantly reduces meat loss, less cooking loss than boiling meats.

### Various Steaming Methods

1. **Atmosphere steaming**
   - Cook food directly or indirectly in contact with steam in a steamer.
   - In a covered pan.
   - Indirectly or in a covered pan.
   - Steam is fed into steamers from a separate boiler.

2. **Steam and Smoke Oven**
   - Allows cold and hot smoking of meat at the same time.

3. **High temperature steaming**
   - This method requires purpose-built equipment.
   - The meat is heated by spraying steam from steam inlets through steel coils to the food within the steamer.

4. **Vacuum-cooking by steam**
   - This method of cooking food involves vacuuming the steam in a steam cooker with the food and then applying steam for a short duration of time.

5. **Microwave Cooking**
   - Combination steaming and microwave cooking is a method of cooking food in a steam oven at a lower temperature and pressure than conventional steam cooking.

**Steaming**

- When steam is applied to food, the moisture in the food evaporates and condenses on the surface of the food, creating a moist and flavorful crust.
- This method is practical for many meats, vegetables, and fish.

**Steaming**

- Beef tongue
- Lamb tongue
- Lamb tripe and sweetbreads.
- Lamb cuts (and offal) suitable for simmering (boiling):
  - Beef fresh silverside
  - Beef tripe
  - Beef tongue
  - Beef rump
  - Lamb rump
  - Lamb tongue
  - Lamb brains, heart, liver
  - Mutton tongues, brains, heart, liver
  - Veal tongue, kidneys, brains, heart
  - Tripe and sweetbreads.
  - Lamb cuts (and offal) suitable for poaching:
  - Beef tenderloin, fillet, leg cuts, brain, sweetbreads.
  - Lamb fillet, leg cuts, brains and sweetbreads.

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Glossary of Meat, Butchery, Cookery and Menu Terms

This glossary lists the common and less common terms related to butchery and meat cookery, including those which may feature in menus and cookbooks of various nationalities.
A French cut, a large joint from sirloin of beef.

**Aitch bone:**

**Aiguillette:** Another name for milk-fed lamb.

**Agneau de lait:** French for lamb.

**Aging:** The tenderising process in which naturally occurring enzymes break down the muscle fibres.

**Aerobic bacteria:** Microbes which require oxygen from the air to live.

**Abattoir:** The processing place where animals are slaughtered for human consumption. In England, Balne, most commonly used for plants processing for the local market only.

**Accelerated Conditioning:** Process using electricity to speed up the rigor mortis and enhance tenderness.

**Aortic bifurcation:** Surface colour on raw meat. Process of meat changing colour from a dark purple, such as when vacuum-packaged meat is opened, to a bright cherry-red on exposure to air.

**Bright:** Colour or soften to remove skin, eg tomatoes. To steam or simmer vegetables to retain their colour.

**To simmer bones or meat to whiten; to boil, Blanch:** To ammome bones or meat to white; to boil, steam or simmer vegetables to retain their colour or soften to remove skin, eg tomatoes. To make food limp, or to cook without colour, eg chip potatoes.

**Blanquette:** White wine cooked in stock from which the sauce is made, eg a blanquette of veal.

**Blanc de blanc:** A traditional oven-baked mixed meat stew [Alsace], Beef, mutton and pork first marinated in wine, cooked with potatoes and onions. To make food limp, or to cook without colour, eg chip potatoes.

**Blanc de poule:** To simmer bones or meat to whiten; to boil, steam or simmer vegetables to retain their colour or soften to remove skin, eg tomatoes. To make food limp, or to cook without colour, eg chip potatoes.

**Bouillon:** A reduced, unclarified beef bone stock, or broth, especially in post-au-feu.

**Balsamic vinegar:** Italian mixed meat dish of boiled beef tongue, brisket, chicken, salt pork, black pudding and other sausages.

**Barnsley chop:** South African meatloaf dish of boiled beef, potato, chicken, salt pork, black pudding and other sausages.

**Barbecue:** To cook with dry radiant heat over hot coals or gas flame.

**Barley porridge:** English-style. Applied to many typically English dishes.

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Buttock steak: A selection of small thin escalopes of lamb or beef that have been boned, rolled and skewered. It is not a sous vide pan.

BSE: Bovine Spongiform Encephalopathy. A disease caused by prions. New Zealand is free of the disease.

Brunoise: Literally "growing coat". Implies braising. Carbohydrate of beet flour is a Belgian-style coarse purée of beet with onions, herbs and beer.

Broth: A flavourful, aromatic liquid made by simmering water or stock with meat, vegetables, spices and herbs. Sometimes pre-soaked in red wine.

Broil: Meaning to cook by grilling. A common American and Australian term for stuffings, garnishes and soups, herbs.

Brochette: A skewer. En brochette: food grilled or fried on a skewered, finished in a hot sauté pan.

Brine: A salt solution or meat preserving solution of water, salt, nitrate and flavouring agents, eg for corned silverside, brisket and tongue.

Bresaola: A style of Italian air-dried beef cured with salt and herbs. Sometimes pre-white in red wine. Served in thin slices.

Braised: A soft solution or meat preserving solution of water, salt, nitrate and flavouring agents, eg for corned silverside, brisket and tongue.

Brat kettle/pan: Commercial cooking pan, electrically heated, with lid, works on the same principle as a large electric frypan. May be pivoted and have a pouring lip.

Bovine: Of cattle or oxen.


Casting: Skin of sausage, may be natural (washed and preliminarily treated), collagen film, or synthetic.

Carcass: Traditional Italian dish of thin slices of raw beef tenderloin, with olive oil dressing, mushrooms and shallots.

Carbonnade(s): A Belgian-style dish of beef with onions, herbs and beer. Carbonnade flamande is a Belgian-style dish of beef with onions, herbs and beer. Carbonnade flamande is a Belgian-style dish of beef with onions, herbs and beer.

Carpe(s): Meats, eg pork, goose, sausage, mutton, duck, meats, eg pork, goose, sausage, mutton, duck, meats, eg pork, goose, sausage, mutton, duck.

Carrotene: Pigment found in grass, plants, fruits and vegetables associated with vitamin A. Carotene gives a finer textile than a natural casing.


Cauliflower: Tapetale or round steak.

Cauliflower steak: Tapetale or round steak.

Cauliflower: Tapetale or round steak.

Calorie: A unit of energy released when food is burned for fuel within the body. A measure of the quantity of energy food can provide. A kilocalorie is the amount of heat needed to raise the temperature of 1 kg of water by 1 °C. There are 4.2 kilojoules in 1 kilocalorie. A kilojoule is the energy a food can provide. A kilocalorie is the energy a food can provide. A kilocalorie is the energy a food can provide.

Cauliflower: Tapetale or round steak.
Consummés: Classic cold clear soup. Quality stock is clarified using a mixture of ground meat, egg whites, vegetables and other ingredients to trap impurities.

Confit-beef: French roasting beef, part of the beef brisket or shoulder. Also called confit de porc.

Cook-chîf: A technique for preparing meats ready to heat and serve. A highly hygienic system where food is prepared, cooked and chilled rapidly. Portions are frozen and transported at below 3˚C (37˚F) for use within three to five days.

Cook-freeze: A system of strict hygienic meal production in which food is prepared, cooked or raw and frozen. It requires only baking or heating prior to service.

Cordon bleu: Traditional pie made with minced cooked beef and topped with creamed potatoes.

Contre-filet: French roasting beef cut, part of the beef rib or loin. Also called contre-filet de veau.

Cooking small cuts of meat or fish in a foil pouch. Or may be in bark or greased paper parcel. Or may be in bark or clay.

Cook-freeze: A system of strict hygienic meal production in which food is prepared, cooked or raw and frozen. It requires only baking or heating prior to service.

Cloon-desc: Boccallo or thin slice of meat folded to enclose sliced mixed cheese and ham, then breadcrumbs and fried.

Cooked beef: Beef, usually shelled or brail, pickled with bone containing a white which gives it a red colour when cooked.

Cordon bleu: Traditional pie made with minced cooked beef and topped with creamed potatoes.

Correcting: Adjusting the meat or sauce seasoning, consistency and colour.

Côte: French for rib. Côtelettes are beef ribs on the bone, a roasting joint.

Côtelettes: Cutlet (French). Côtelettes premier are the four cutlets of meat removed. Cut 2.5 to 5cm thick, treated as roast beef.

Côtelettes: A small, thin slice of meat. Émincer: to mince or shred it.

Croute: Small cubes of bread, shallow fried for use as a garnish with soups, or cut large to use as croutons in salads. Also called fried garnet.

Crown roast: A large leg or hunch of veal, venison or wild boar. The eye of beef rib with bone, fat and coarser reaction in the body. Examples: actinidin or pepsin, found in fruits.

Crown roast: Two frenched racks of lamb joined in a circle, tied.

Crown roast: Large leg or hunch of veal, venison or wild boar. The eye of beef rib with bone, fat and coarser reaction in the body. Examples: actinidin or pepsin, found in fruits.

Cucinare: To swirl a liquid or stock with sediment left in the roasting pan. Often beef, but may be other meats based, well flavoured with herbs, in a covered pan. Often beef, but may be other meats based, well flavoured with herbs, in a covered pan. Often beef, but may be other meats based, well flavoured with herbs, in a covered pan.

Culatello: Air-dried striploin of beef from Switzerland and other central European countries. Cut and served water thin on an hors d’œuvres.
Fancy meats: Offal, edible carcass organs, eg kidneys, heart and liver.

Foglio: Literally a sheet, a term used in southern states of America to boil flank skin roasts (or other meat) cut into little strips, spiced, cooked and served wrapped in four tortilla pancakes, with imp- crozzed onion, capsicum, chilli etc.

Follate: Dish of a breast of mutton stuffed with vegetables and bacon or braised breast of veal stuffed with Cumberland sauce.

Forcemeat: Savoury forcemeat or stuffing.

Freeze: Intensive method of raising animals which are kept within an area and fed, during part or all of their growing period, on a grain-based diet, kept within an area and fed, during part or all of their growing period, on a grain-based diet.

Ficelle-style beef: Ficelle means string. Beef poached on a string in a thick white sauce.

Filet: French term for loin of lamb.

Filet potato, fried: Crisp potato, fried.

Filet mignon: Thinly sliced veal cut, a small thick steak from the leg.

Filet mignon en croute: A striploin steak spread with anchovy butter, then rolled, tied and cooked in stock. The forcemeat may include ingredients to form a pattern when sliced, eg pistachios, tongue or truffle.

Filet mignon en croute: A cold, jellied dish made traditionally of boned pork, but may be of meat, stuffed with ingredients to form a pattern when sliced, eg Hastings, Texas or Auckland, New Zealand.

Filet mignon en croute: A fumet is not an extract or concentrate. Liquid used to give body and flavour to stocks and sauces. Often refers to good fish stock.

Filet mignon en croute: A cold, jellied dish made traditionally of boned pork, but may be of meat, stuffed with ingredients to form a pattern when sliced, eg pistachios, tongue or truffle.

Fillet potato, fried: A cold, jellied dish made traditionally of boned pork, but may be of meat, stuffed with ingredients to form a pattern when sliced, eg pistachios, tongue or truffle.

Fricadelle: A round, flat cake or meatball made of finely chopped meat and breadcrumbs or mashed potatoes, fried.

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Fricassée: A strong stock for making meat sauces.

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Frisella: Smoked or of a smoky flavour.

Fritadeira: Smoked or of a smoky flavour.

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Fruzzacatina: A round, flat cake or meatball made of finely chopped meat and breadcrumbs or mashed potatoes, fried.

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Kosher:

Kosher (Hebrew: חַּכָּר, ḥakhār, lit. "fit, appropriate") is a religious dietary law observed by Jews. Foods are considered kosher if they have been prepared according to specific guidelines. Kosher guidelines include using only certain types of animals, excluding dairy and meat from the same meal, and strict rules for handling and processing the food.

Korma:

Korma is an Indian curry dish made with yogurt, cream, and a variety of spices. It is typically made with chicken or lamb and is known for its rich, creamy texture. The dish gets its name from the Persian word "korma," which means "cooked together." The main ingredients include yogurt, cream, onions, garlic, ginger, cumin, coriander, black pepper, and cardamom. Korma is often served with rice or naan bread.

Kofta:

Kofta is a type of meatball or meat patty found in many Middle Eastern and Mediterranean cuisines. It can be made with a variety of meats, such as lamb, beef, or chicken, and is often served with rice or yogurt. Kofta is a popular street food in many countries, such as Egypt, Turkey, and the Middle East.

Kobe beef:

Kobe beef is a type of beef that is raised in the Kobe region of Japan. It is known for its high marbling, tenderness, and flavor. Kobe beef is only produced in Japan, and it is considered one of the highest-quality beefs in the world. The meat is often used in fine dining and is a symbol of high status and luxury.

Kibbeh:

Kibbeh is a Middle Eastern raw meat dish made from minced meat, onions, bulgur wheat, peanuts, eggplant, spring onion, and green peppers. It is often served with lemon juice and garlic. Kibbeh is a classic dish in Arab cuisine and is found in countries such as Lebanon, Syria, and Jordan.

Keema pilau:

Keema pilau is an Indian-style minced lamb stew with fresh herbs, onion, garlic, oregano, and cinnamon. It is often served with rice and is a popular dish in Indian cuisine. The dish gets its name from the word "keema," which means "minced meat.

Kari-Kari:

Kari-Kari is a New Zealand dish made with lamb, potatoes, carrots, and feta cheese. It is a traditional dish in New Zealand and is often served on special occasions such as Christmas or Easter. The dish gets its name from the Maori word "kari," which means "red meat."

Kari:

Kari is a traditional dish in New Zealand made with lamb or beef and is often served on special occasions. The dish gets its name from the Maori word "kari," which means "red meat."

Kambing soup:

Kambing soup is an Indonesian dish made with goat meat, rice, and vegetables. It is a popular dish in Indonesia and is often served as a main course. The dish gets its name from the word "kambing," which means "goat."
Paupiette: Pâté maison: Pastrami: Papillotte, (en): Papillae: Paillarde: Paddy wack: Poached or braised, eg beef or veal olive. Thin slices of meat or fish, stuffed, rolled and Yersinia entercolitica. Some examples are: Campylobacter, microbes which are harmful to human health. the chef’s own recipe. house, thus pâté of the house, or according to or fine and smooth in texture, as a spreading steamed. May be coarse, like a meatloaf, Rich mixture of ground meats, liver, game etc. with eye of silverside. Most often eaten cold, and tomato paste. Other ingredients include red wine, parmesan cheese, nutmeg macaroni and cream sauce. Other ingredients include red wine, parmesan cheese, nutmeg and tomato paste.


Protein: A vital part of every cell in the body. One of the basic nutrients needed by the body to maintain life, supply energy, build and repair tissues, enzymes and hormones and perform other essential functions. Protein can be obtained from animal and vegetable sources. A vital part of every cell in the body. One of the basic nutrients needed by the body to maintain life, supply energy, build and repair tissues, enzymes and hormones and perform other essential functions. Protein can be obtained from animal and vegetable sources. A vital part of every cell in the body. One of the basic nutrients needed by the body to maintain life, supply energy, build and repair tissues, enzymes and hormones and perform other essential functions. Protein can be obtained from animal and vegetable sources. A vital part of every cell in the body. One of the basic nutrients needed by the body to maintain life, supply energy, build and repair tissues, enzymes and hormones and perform other essential functions. Protein can be obtained from animal and vegetable sources. A vital part of every cell in the body. One of the basic nutrients needed by the body to maintain life, supply energy, build and repair tissues, enzymes and hormones and perform other essential functions. Protein can be obtained from animal and vegetable sources.
Saignant:  
Sauté:  
Sauerbraten:  
Satay:  
Saltpetre:  
Salisbury steak:  
Salamander:  
Seal or sear:  
Shashlik:  
Shaved:  
Shake to brown or colour.
Ultimate pH: The pH achieved when the rigor process in muscles has been completed.

Vacuum-aging: Aging meat in vacuum packaging. Also referred to as wet aging.

Valentine of Lamb: A butterflied cut from a well trimmed boneless lamb loin.

Value-added: The processing or adding of something, eg a filling, seasoning, starch or carbohydrate to a product so the selling price is higher than the product’s raw material.

Veal: Veal (French).

Veins: Meat. In French, this term refers to all meats.

Viscera: Body cavity contents including intestines, lungs, etc.

Veal tonnato: Italian style poached veal dish with a tuna mayonnaise, anchovies and new potatoes.

Wagyu: Japanese native cattle breed having a high degree of marbling (fat interspersed with lean). The breed which produces Kobe beef. New Zealand Wagyu cattle have been bred from the Japanese Wagyu, but the meat is not nearly as highly marbled as Kobe beef. New Zealand Wagyu coffee are grass-fed and the certified Wagyu beef, “Mattlebeef”, is graded 5 or over on the Japanese marbling scale (See Kobe beef).

Wiener Schnitzel: (Austrian) Thin slice of veal, dipped in beaten egg, coated in breadcrumbs and fried in butter. Traditionally garnished with lemon and stoned olives, wrapped with anchovy fillet.

Zrazy: (Polish/Austrian) Traditional braised dish of beef rump (stalk), red wine, onions and lardons. Served with thyme and parsley stuffing.