

[1] Milk that is untreated (generally called raw milk) and unpackaged will deteriorate in smell and taste more quickly than treated milk. It is considered to have less aesthetic properties. Microbiological degradation and textural changes also occur more quickly e.g. it goes lumpy and there is vitamin loss.

[2] Pasteurisation of milk is a short heat treatment that lowers the microbiological content so we don't get food poisoning. Packaging prevents the milk from getting further contaminated and stops light (which destroys beneficial vitamins etc) from entering. The chilling that happens in the milk factory, while being transported and while in the supermarket slows microbiological growth. However over time it will deteriorate but it has a longer shelf life than raw milk because of this preservation and packaging.

[3] Sweetened condensed milk is when the water is taken out. This involves heating, which destroys some microorganisms and inhibits oxidation. It is also pasteurised. Sugar is added, which extends its shelf life as the sugar increases the osmotic pressure, which acts as a preservative and prevents microorganism (bacteria, mould) growth. It does not need any preservatives to be added.

It is generally canned, which will make it last for months. It should be stored below 50% humidity can the can doesn't corrode. Turning the cans upside down will stop the fat and other contents separating out and to prevent it forming a surface cream line if stored for a long time. The sugar can also cause yeasts to ferment and spoil the product if it is kept for a long time. Fermentation can cause the can to blow, and the product should not be used.

It is also packed in tubes. These can be stored unopened at room temperature. Once opened, the tube should be resealed with the cap and stored in the fridge for up to 30 days.

[4] Evaporated milk is milk that is concentrated to a half or less its original volume under higher pressure and temperature. It is sterilised and generally canned (sometimes sterilised after canning) or packaged for long shelf life (up to a year) without refrigeration. It can be used as a milk substitute by adding the water back into it. It is homogenised to prevent it separating when stored. IT can be stored for about a year under ambient temperatures before it is opened. It should be consumed within 2-3 days after opening.

[5] Milk is powdered by further evaporating the milk. The process includes pasteurisation. It is also heated which destroys bacteria and inhibits enzyme growth. This product is good because it does not require refrigeration. Whole powdered milk has less of a shelf life (6-9 months) than non fat milk powder as the fats start to go rancid. It can be stored for up to 2 years. Ensuring it is stored to keep out light, heat (below 25 degrees) , moisture (below 65 % humidity) and oxygen will extend the shelf life.

Milk powder is sometimes stored in quad bags. This is formed from rolled aluminium and plastic film. It is a good moisture, oxygen and light barrier. It has good low temperature resistance and strong sealing strength



[6] Legal and marketing requirements for labelling in a national environment:

All food for retail sale must have a list of ingredients. It must describe the true nature of the ingredient and the percentage. This milk contains 100% fresh pasteurised homogenised milk. It must be prominent and legible.

It should also contain the name of the product ie milk. Milk tends to be identified more by the colour of the label. This label is light blue because it is low fat. The word lite is in relatively big font size, to appeal to a sector of the market.

The label should also show contact details for the supplier. This milk comes from Gizzy Milk Ltd, 161 Riverside Rd, Gisborne, New Zealand.

The bar code on the milk should enable the lot to be identified. This should state the batch and the date it was processed.

Because it has a shelf life of less than two years, it must have a date marking. This milk has a best before date (in black, stamped on to the bottle). Up to this date, it should still be safe to consume, but it may have lost some quality.

It should have directions for use and storage. This milk should be stored below 4 degrees. The nutrition information panel should enable you to compare the qualities of 7 key nutrients per 100ml or per serving. This label shows 100ml servings and lists the amount of energy, protein, fat, carbohydrates, sugars, sodium and calcium. It also states that 100mls of this milk contains 14% of the recommended daily intake (RDI). It should also show the net weight or volume. This milk is 1 Litre.



[7] Cheese is a concentrated form of milk. The cheese making process removes water from the milk and lactose is converted to lactic acid and salt is added. These processes increase the shelf life.

[8] A legal requirement for cheese making in NZ is that the milk is pasteurised. This kills pathogenic (harmful, capable of causing diseases such as tuberculosis or leptospirosis) bacteria. The milk is heated to 72 °C and then rapidly cooled. Some manufacturers will use data capturing technology to digitally monitor and record temperature of the milk at any given time.

[9] The curd that makes the cheese is formed by adding a good bacteria culture. This acidifies the milk, and this helps prevent foreign bacterial contamination.

After moulding, the cheese is immersed in a brine solution. The salt helps to prevent contamination from foreign bacteria.

Some cheeses have ambient moulds from the air added to give a distinct flavour. It is sprayed onto brie and injected into blue cheese.

[10] Cheese is refrigerated until the desired age is reached. This may be several months or several years.

[11] In general, hard cheeses that do not have a high water content are susceptible to attack by moulds, while moister cheeses can be affected by bacteria. Also the fats of some cheeses are prone to oxidation by oxygen in the air, which can make the cheese become rancid.



[12] When cheese is to be sold in supermarkets, it is usually cut into appropriate size blocks and either shrink wrapped in an atmosphere of carbon dioxide, which dissolves into the body of the cheese, or vacuum sealed in a special "top-and-bottom" "webbed" package. Of these two packaging techniques, vacuum seal will give the longest shelf life because it removes all the air. The subsequent anaerobic environment prevents mould growth on the cheese surface. Many cheeses, such as Brie and Camembert, are ready for sale at maturation and are packaged in special aerating wrapping and in porous boxes.

Some cheeses are wrapped in paper. This allows the cheese to keep ripening.

Others are packaged using a state of the art flow wrapper. This is a loose modified atmosphere packaging. During packing, the cheese is flushed with carbon dioxide and sometimes nitrogen. This removes the oxygen and protects the cheese from spoiling, but slow ripening can still occur. Mascarpone and Cream Cheese have been processed and packaged using special heat treatments, therefore extending their shelf life.



Gouda cheese is coated with a food grade substance (this is called waxing). This protects the cheese from contamination, while still allowing moisture to evaporate. It is also vacuum packed and stored at 4 °C. This slows down the ripening process, which means it maintains its flavour and it also prevents contamination.

Cheese is also sold as grated in resealable zipped plastic pillow bags. This pillow effect gives a space around the cheese to breathe and develop more flavour and also makes the cheese easier to separate and makes the appearance better once it is opened.