

6.2: Milk

Homogenized milk is fresh milk in which the fat particles are so finely divided and emulsified mechanically that the milk fat cannot separate on standing. The milk fat is forced into tiny droplets. As soon as the droplets form, milk proteins and emulsifiers form a protective film around each one, preventing the fat from reuniting. The tiny droplets stay suspended indefinitely, and milk fat no longer separates and rises

to the top as a cream layer. In other words, homogenized dairy products are stable emulsions of fat droplets suspended in milk. It is also said that homogenized milk is more readily digestible.

Pasteurization of milk was developed in 1859 by the French chemist Louis Pasteur. One method of pasteurization is to heat milk to above 71°C (160°F), maintain it at this temperature for a set time, then cool it immediately to 10°C (50°F) or lower. This kills all harmful bacteria that carry the potential threat of bovine tuberculosis and fever from cows to humans.

The two main types of pasteurization used today are high-temperature, short-time (HTST, also known as “flash”) and higher-heat, shorter time (HHST). Ultra-high-temperature (UHT) processing is also used.

High-temperature, short-time (HTST) pasteurization is done by heating milk to 72°C (161°F) for 15 seconds. Milk simply labelled “pasteurized” is usually treated with the HTST method.

Higher-heat, shorter time (HHST) milk and milk products are pasteurized by applying heat continuously, generally above 100°C (212°F) for such time to extend the shelf life of the product under refrigerated conditions. This type of heat process can be used to produce dairy products with extended shelf life (ESL).

Ultra-high-temperature (UHT) processing holds the milk at a temperature of 140°C (284°F) for four seconds. During UHT processing, milk is sterilized rather than pasteurized. This process allows milk or juice to be stored several months without refrigeration. The process is achieved by spraying the milk or juice through a nozzle into a chamber that is filled with high-temperature steam under pressure. After the temperature reaches 140°C (284°F) the fluid is cooled instantly in a vacuum chamber and packed in a pre-sterilized, airtight container. Milk labelled UHT has been treated in this way.

For more information on pasteurization, visit the International Dairy Foods Association. Attribution

  

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