



Unit IV – Topic IV
LTLT method of Pasteurization

Low-temperature long-time (LTLT)/Batch pasteurization

Milk is heated, held and cooled in the inner vessel. The space between vessel and the outer casing forms a jacket, through which the heating or cooling medium is circulated. To heat the milk, hot water or low-pressure steam is circulated through the jacket and milk is continuously agitated for rapid and uniform heating. The heating process could be manually or automatically controlled. The milk is heated to a minimum of 62.7°C and held at this temperature for minimum 30 min. It is then cooled as rapidly as possible to 4°C. A cooling medium is circulated in the jacket for chilling the milk, but more often the heated milk is discharged to a surface cooler where a film of milk flows down the corrugated metal plates or series of interlocked tubes. A cooling medium such as brine or chilled water is circulated on the other side of the plates or through the tubes (Fig.28.1).

The LTLT pasteurizer may be of three types

Water – jacketed vat

This is double-walled around the sides and bottom of the vat in which hot water or steam under partial vacuum circulates for heating, and cold water for cooling. The outer wall (lining) is usually insulated to reduce heat loss. The heat-exchange takes place through the wall of the inner lining. The difference between temperature of the hot water and the milk is kept to a minimum. The milk is agitated by slowly revolving paddles/propellers. When heating, the vat cover is left open for escape of off-flavors; and when holding, the cover is closed. During the holding period, an air space/foam heater (steam or electrically heated) prevents surface cooling of milk.

Advantage: Flexibility in usage - multipurpose vat.

Water-spray type

A film of water is sprayed from a perforated pipe over the surface of the tank holding the product which is continuously agitated. A rapidly moving continuous film of water provides rapid heat transfer.

Coil-vat type

The heating/cooling medium is pumped through a coil placed in either a horizontal or vertical position, while the coil is turned through the product. The turning coil agitates the product (but additional agitation may be necessary).

Disadvantage: Coils are difficult to clean.