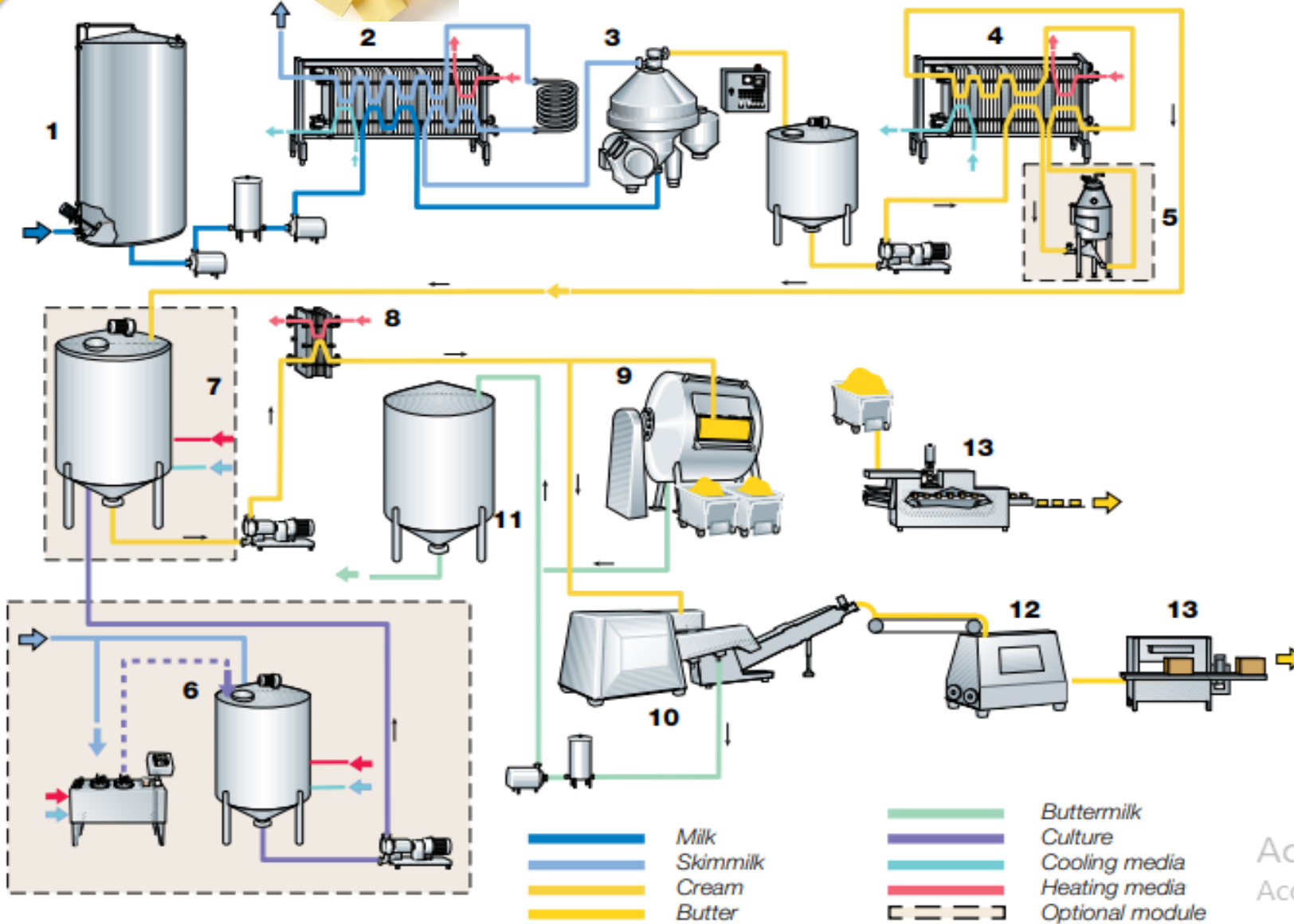


Butter



General process steps in batch and continuous production of cultured butter

- 1 Milk reception
- 2 Preheating and pasteurisation of skim milk
- 3 Fat separation 4 Cream pasteurisation
- 5 Vacuum deaeration, when used
- 6 Culture preparation, when used
- 7 Cream ripening and souring, when used
- 8 Temperature treatment
- 9 Churning/working, batch
- 10 Churning/working, continuous
- 11 Buttermilk collection
- 12 Butter silo with screw
- 13 Packaging machines

conveyor

- 1 . Raw milk reception & storage:** Raw milk arrives and is stored in the reception/holding tank(s). Typical activities here: sampling for quality (fat, SNF, antibiotics), pre-filtration, chilling to storage temperature. This tank feeds the downstream processing line.
- 2 . Plate heat exchangers / pre-heaters (regenerative heating & cooling):** Milk is passed through heat exchangers to recover heat (regenerative section) and to carry out the required heat treatment. These units perform pre-heating and cooling duties; they form part of continuous pasteurization or heating/cooling loops.
- 3 . Clarifier / separator (milk fat separation):** A centrifuge separator splits whole milk into cream and skim milk (light blue lines). Clarification also removes small debris and somatic cells. Cream is sent forward for butter/cream processing; skim milk is routed to other uses (milk powder, drinkable milk, animal feed or storage).
- 4 . Pasteurizer (cream pasteurization):** Cream (or standardized milk) is heat treated to inactivate pathogens and enzymes and to denature whey proteins (improve texture). The diagram shows a pasteurizer module for cream—this is crucial before any culturing step or storage.
- 5 . Homogenizer / optional module:** An optional homogenization or high-shear module may be used for certain cream types (e.g., for drinkable cultured milks) or to achieve desired fat globule size before specific products.
- 6 . Culture preparation / starter station (optional box):** When producing cultured cream or cultured butter, a dedicated culture preparation station (small tanks, dosing pumps) is used. Starter cultures are propagated/metered and then inoculated into the cream for ripening.
- 7 . Ripening / holding tanks:** After inoculation, cream may be held in ripening tanks (at controlled temperature) to allow lactic acid bacteria to produce flavor and acidity. Time/temperature control here influences flavor, body and churning behavior.
- 8 . Standardization / blending / cooling:** Cream from different streams is standardized (fat adjustment) and blended with stabilizers or salt if required. Cooling to the optimal churning temperature follows. This block also includes plate heat exchanger elements for fine temperature control.
- 9 . Working / breaking / butter working machine:** This unit (often called a butter worker or working table) receives butter grains after churning. It kneads and plasticizes the butter, drains residual buttermilk and allows for addition of salt or other ingredients and final texture tuning.
- 10 . Continuous or batch churn (butter separator / churn):** The churning step (continuous churn or batch churn) converts cream to butter grains and buttermilk. In continuous lines, separated butter grains go immediately to the working unit and buttermilk is collected separately.
- 11 . Buttermilk collection / storage tank:** The liquid by-product (buttermilk) is collected, cooled and stored. It can be used for beverage products, further processing, or drying. The green flow shows buttermilk routing.
- 12 . Forming / extruding / moulding:** After working, butter is formed into blocks, drums or extruded shapes. This station may include salting, portioning, and shaping equipment.
- 13 . Packaging and cold storage:** Final packing (wrapping, vacuum packing, tubs) and labeling are done here before the product is moved to cold storage and distribution. This step can include metal detection, weight control and final QC checks.