



SET, STIRRED & DRINKING YOGHURT - PLF*

*PRODUITS LAITIERS FRAIS / DAIRY

Yoghurt is produced from fermented milk. The fermentation aim is to acidify and gelify the milk.

In the European Union, the name « yoghurt » can only be attributed to products where fermentation was made with specific lactic yeasts : *Lactobacillus bulgaricus* and *Streptococcus thermophilus*.

Throughout the world the name is less restrictive and a wide variety of fermented milk is produced :

- Acid fermented milk : yoghurt, laban (Originally from Lebanon)
- Concentrated fermented milk (or rayeb) : labneh (origin : middle east)
- Acid milk with low alcohol : Kefir (origin: Caucasus), koumiss (mare-milk origin: Central Asia)
- Low-acid fermented milk (buttermilk), possibly thickened.

APPLICATIONS :

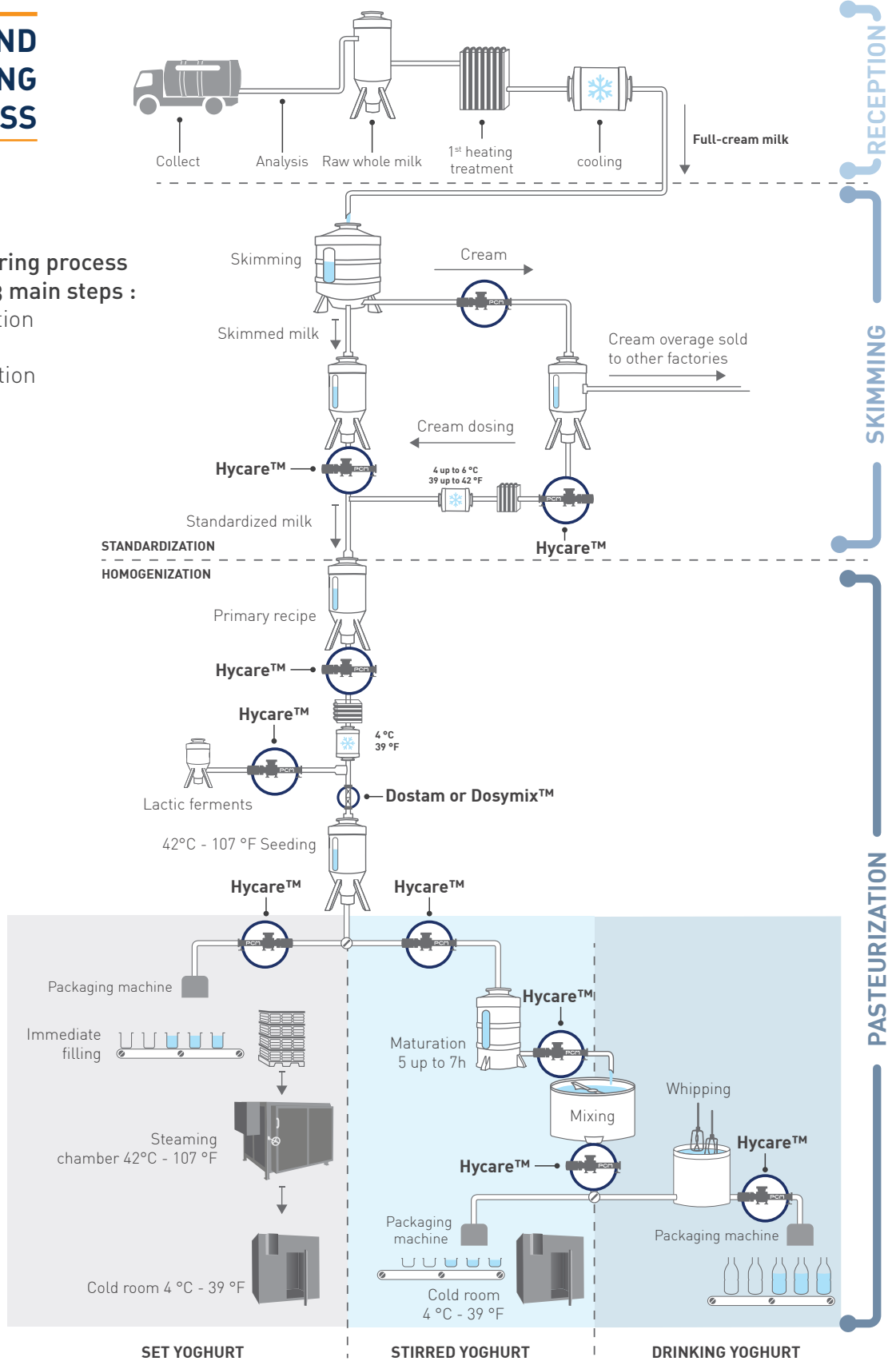
- White mass transfer for set stirred and drinking yoghurt.



1 ACTIVITY AND MANUFACTURING PROCESS

The manufacturing process is divided into 3 main steps :

- Milk reception
- Skimming
- Pasteurization

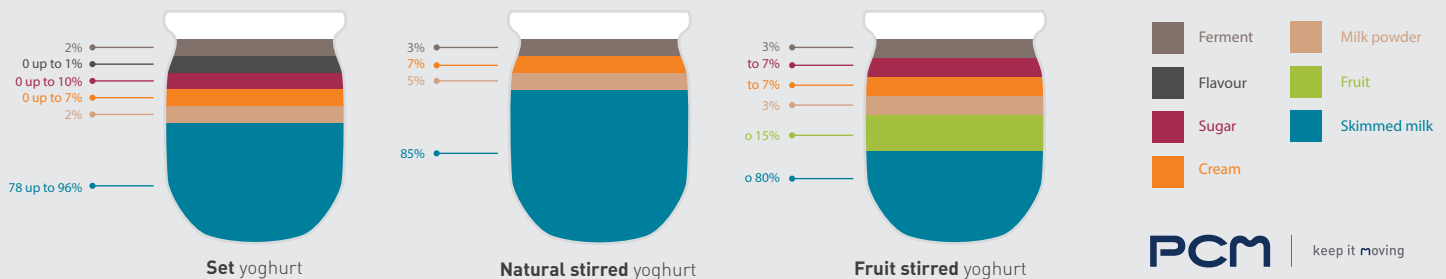
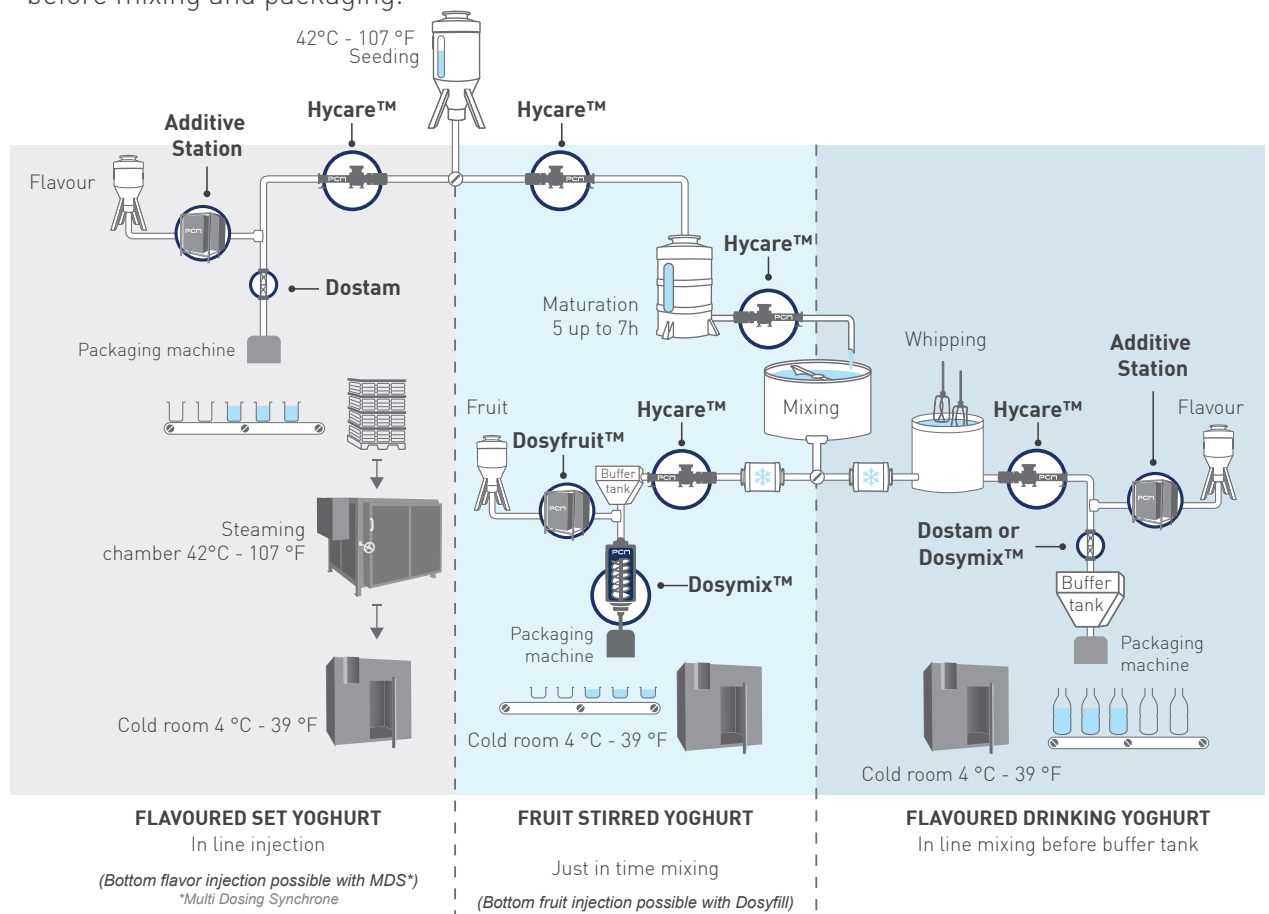




1 ACTIVITY AND MANUFACTURING PROCESS

- **Reception** : refrigerated raw milk from dairy cooperatives.
- **Skimming** : separation of milk fat through centrifugal force and the density difference between skimmed milk and cream.
- **Standardization**: the standardization consists in adjusting the milk fat content by adding cream to get the desired content of fat.
- **Homogenization** : the fat in the milk is broken up into smaller more consistently dispersed particles. Homogenization has the benefits of giving a uniform product which will not separate.
- **Pasteurization** : eliminates unwanted micro-organisms to humans. It is done through contact with hot plates. The milk is heated to 72°C (162°F) for 15 seconds.
- **Seeding**: Adding yeasts in the standardized milk to 42/45 °C (107/113°F).
- **Fermentation** :
 - For set yoghurt, incubation is directly made in the package. After filling the yoghurt packages and after palletizing, the pallets are placed in an incubation chamber, 42°C (107°F) for 4 hours.
 - For stirred and drinking yoghurts, the incubation is made in a tank for between 5 to 7 hours before mixing and packaging.

FLAVORED OR FRUIT Recipe





2 TECHNICAL DATA & PROCESSING RESTRICTIONS

› WHITE MASS :

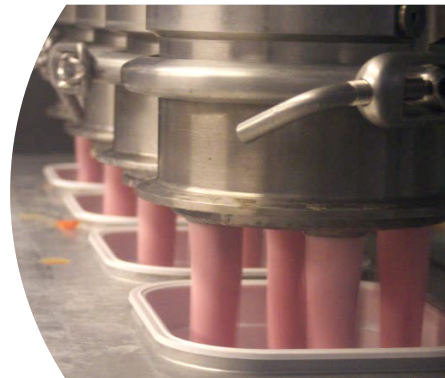
- **Viscosity :**
 - Cream : > 500 cPs
 - Stirred yoghurt : 1500 cPs
 - Drinking yoghurt : 500 cPs
 - Labneh: 4 000 up to 5 000 cPs
 - Kefir: 50 up to 150 cPs
- **Particles size :**
 - Natural yoghurt : 0 mm
 - Fruit stirred yoghurt : 6 up to 15 mm
- **Discharge pressure :** between 5 to 18 bars
- **Suction pressure :** flooded (below tank)
- **Temperature :** 4°C - 39°F (European regulation)

› LACTIC FERMENTS :

Lactic yeasts are of microbial strains and should be used in perfect hygienic environment.

› PROCESSING RESTRICTIONS :

- **Shearing risk** of the structure of cream or white mass
- **Lean manufacturing process :** use of machinery 7/7 and 24/24H. This is due to the continuous arrival of truckloads of raw milk from dairy cooperatives.
- **Duration and storage temperature :** the white mass must be maintained at a temperature between 4 and 6°C (39/43°F) from production to sale to the consumer to avoid a restart of fermentation.
- **Food security**, bacteriologically sensitive product.



Filling : Fruit stirred yoghurt



Fruit station : Dosys™ pump

3 EQUIPMENT RECOMMENDATIONS

› FOR TRANSFER APPLICATIONS OF CREAM, FERMENTS AND STIRRED YOGHURT :

- **A gentle mechanical process such as Moineau™ technology** (non-pulsating constant flow) that respects product fragility. When shearing occurs on white mass, manufacturers are forced to enrich the recipe with proteins (additional costs).
- **Reduce backslip to less than 10% to reduce shearing :**
 - Backslip is constant (L / h), the pump speed can be increased to increase the total flow and reduce (in%) the slip flow rate being careful not to exceed 250 rpm.
 - Equipment complying with food hygiene standards.



Moineau™ Technology



3 EQUIPMENT RECOMMENDATIONS

› FOR ADDITIVES INJECTION (flavour, colours) :

The motto « do not lose a drop » will be fully respected by the precision of Dosys™ dosing system (accuracy +/- 0.5%).

› FOR MIXING IN DAIRIES INDUSTRIES :

It is strongly recommended an **In Line Process** rather than a solution in batch allowing :

- finalization (or specialization) at the very end of production process (aroma or fruits changes)
- production of small batches.

PCM Mixers technologies allow :

- Continuous injection of base and additive (proportional dosing) with PCM Moineau™ technology pumps.
- Continuous injection of base and additive in pulsed mode. (In Line injection) with Dosys™ technology pump.
- Injection of base and additive in pulsed mode. (Just in Time) with Dosys™ technology pump synchronized to a conditioning nozzle (Dosyfill).



Additive station duo

› FOR FILLING POTS OR BOTTLES :

The Dosys™ filling technology (Dosyfill) offers maximum versatility and high volumetric metering accuracy of +/- 0.5% of heterogeneous or complex products.

4 PRODUCT RECOMMENDATION

› HYCARE™ SERIE : the reference in Dairies industries

Thanks to Moineau™ technology, the HyCare™ pump preserves the dairies products texture and integrity. Moreover, its design offers the guarantee of hygiene and unbeatable food safety.

- **Cleaning In Place** designed : CIP connection
- **Duraflex flexible titanium shaft** made in a one-piece design to guarantee the absence of retention area.
- **Design optimized** : the body shape and the tangential inlet increase the cleaning efficiency
- **Hygienic mechanical seal**





4 PRODUCT RECOMMENDATION

› DOSYMIX™ & DOSTAM MIXERS

The dynamic mixer **Dosymix™** is preferred for mixing heterogeneous or homogeneous, viscous, shear-sensitive, ingredients and white mass (with or without pieces).
The static mixer **Dostam** will be chosen for mixtures of homogeneous liquid without pieces (lactic ferments, flavors...).



2 DM4000 : In Line configuration

› DOSYFRUIT™ : fully automatic multi-ingredient station

This system allows fruit piece dosing (up to 48 mm). It guarantees accuracy of dosing (+/- 0.5%) from 1 to 6 different fruit containers or bags in box. The dosing is directly synchronized by the packaging and packing machine or according to the main ingredient flow. In addition, this station is completely cleanable and sterilizable in place (sterile air, steam sterilization feet containers, injection point).

› DOSYFILL : filling system

This system allows gradual starts and stops snapshots to ensure the settings ready to drop (Metering accuracy +/- 0.5%).
For optimum performance, Dosys™ nozzles are directly synchronized by the filling machine and packaging (Dosyfill).



Dosyfruit™ : 2 flavours

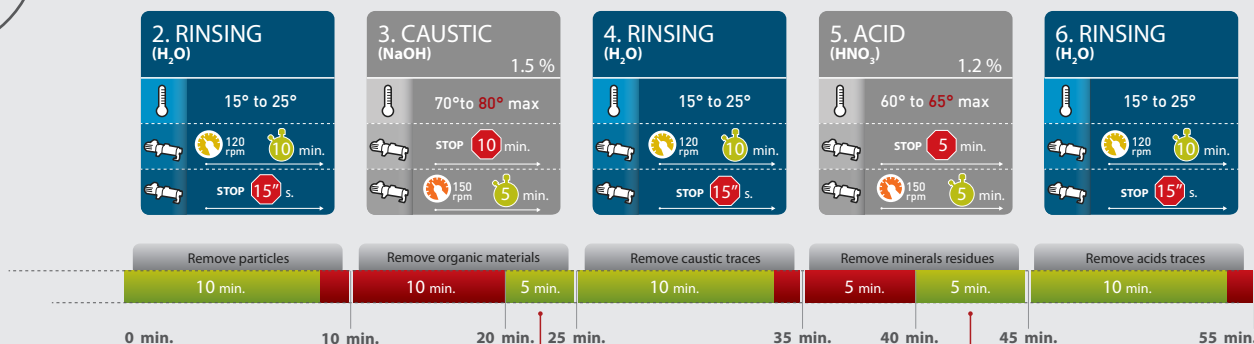
2 main advantages :

- Metering accuracy +/- 0.5%.
- Preserve the ingredients even if they are made of semi-solids of large size (up to 48 mm).



› CIP* GUIDE FOR PCM MOINEAU™ PUMPS

*Cleaning In Place



! Please consult the CIP guide

For more information, please find your nearest contact :
www.pcm.eu