



MILK SAMPLING AND PREPARATION OF SAMPLES FOR ANALYSES

General

Milk sampling and qualification of raw, thermally treated milk and its derivatives (cream, whey, buttermilk etc.) is accomplished for every separate homogeneous batch. As homogeneous batch is accepted:

- Milk, delivered by a separate producer (an individual farm, farm etc.), and received from one kind of animals after their complete milking, independently from the number of milk-cans and tanks.
- Milk, received from one or several farms or milk collecting centers, but delivered in a joint vessel.
- In the enterprise – from one and the same kind raw milk poured in one vessel.
- For cream, whey, buttermilk etc. – produced as a result of milk processing and its derivatives from one and the same kind and quality, poured in a separate vessel.

Milk is qualified not earlier than 2 hours after milking. When the milk is frozen it has to be warmed up to 10-15°C and stirred according to the below-described procedure. A sample is taken from every separate vessel proportionally to the quantity of the milk in it. Samples from the different vessels are mixed well and from the received medial sample are taken 200 - 250 cm³ for accomplishing the needed analyses.

Stirring the milk and its derivatives before sampling

Milk stirring

It is a very important condition for receiving exact results. Before taking samples from big vessels the milk (fresh or thermally treated, whole-milk or whipped) has to be well stirred for no less than 5 min., by vertical and circular slow movements. Mixing spoon with long handle is used, allowing the lowest layers of the liquid to be reached. The milk in the milk-cans is stirred 5 to 8 times from the surface to the bottom and reverse with slow circular movements.

Cream stirring

Due to the fact that the cream is significantly thicker liquid than the milk and contains high percentage fat it has to be preliminary very well stirred from the surface to the bottom with reciprocation movements at about 20-25 times. Whey and buttermilk stirring It is analogical to milk stirring.

Sampling

Samples from milk, whey or buttermilk are taken with metal or glass pipe (dry, clean and stainless-steel) with diameter at about 10 mm, which is slowly dipped till the bottom of the vessel and its upper end remains open. In this way it is filled with milk simultaneously with its dipping. When the pipe is taken out of the vessel its upper end has to be tightly closed with a thumb. For a bigger reliability of the analyses results it is recommended the quantity of the taken sample to be no less than 200 ml.

Cream sample is carefully well stirred in order not to form foam. For taking a medial sample from milk-cans and tanks a sample pipe is used. Stuck to its outer surface cream has to be removed by using filter paper, napkin or clean cloth, preventing in this way the proportionality between the samples and the total amount of the cream to be disturbed.

Sample preservation

The vessels where the samples will be put have to be clean, dry, glass, metal or from other suitable material, to be tightly closed with rubber or other stopples. The stopples not to absorb water and fat and not to influence the analyses sample content. In summer the sample fills up to the top the vessel, but in winter – at least $\frac{3}{4}$ from the vessel's volume. Each sample for analyses has to be labeled and described in a way not allowing to be mixed up. The samples are stored in conditions, assuring temperature, corresponding to the requirements for storing such kind of product (advisable – 1°C). If there is a need of longer sample storing they have to be preserved; the most commonly used preservative is potassium dichromate ($K_2Cr_2O_7$) - 1 g for 1 000 ml. The samples have to be stored in a cold and dark place after the preservation. Have in mind that during the analyses the results for SNF% will be increased with 0,1 %. After adding the preservative the sample has to be well stirred. Do not make analyses if the acidity of the milk is more than 25 T for cow and 28 T for sheep milk.

Preparing the samples for analyses

Milk – raw and thermally treated

When examining samples taken immediately before analyses and shortly stored, the milk is poured several times from vessel to vessel in order to distribute the fat content uniformly. To avoid foam formation or separation of milk fat, the samples have to be carefully poured using the walls of the vessels, as they are tilted slightly. For a better mixing the sample it has

to be poured at least 3 times. When needed the same is tempered to the temperature within the measuring range. If there is fat stuck on the walls of the vessel and the stopple (when the samples were stored for a long time), the milk has to be slowly heated up to 35-40°C. At the same time it has to be slowly shaken. The cream, stuck to the walls of the vessel is removed. The sample is poured several times and is cooled down (advisable up to 20°C). If there is separated liquefied fat or white particles with irregular form on the vessel's walls reliable results could not be received.

Whey

Before making analyses the whey sample is filtered through double sheet gauze put over the glass funnel in order to separate the fat grains get into liquid by incidence and if it is needed the sample is tempered and carefully stirred.

Buttermilk

Before making analyses the buttermilk sample is filtered through single sheet gauze put over the glass funnel in order to separate the big protein particles and if it is needed the sample is tempered and carefully stirred.

Cream

The sample is slowly warm up to 35 – 40°C in water bath. The fat is dispersed wholly by carefully shaking and if necessary, by stirring with glass stick. The sample is poured from vessel to vessel several times and is cooled down (advisable to 20°C). If after this procedure the sample is not homogenous, the measurement is not carried out. Sample for analyses is prepared from homogenized cream by diluting it with distilled water in degree, sufficient for the components of the diluted cream to be reached in the measuring range of the analyzer.