Indicators that determine the quality of milk include the number of somatic cells and the total number of bacteria in 1 ml. of milk. At present, in order for milk to be transferred to a collector it must contain more than 400,000 somatic cells and more than 100,000 bacteria in 1 ml.

Milk having lower parameters has a different makeup and causes problems during processing. Products created from it are of lower quality.

Causes of lower quality milk include improper hygiene conditions throughout the entire technological milking process, but especially inflammation of the mammary glands - mastitis, the primary symptom of which is an increased level of somatic cells. Somatic cells are dead cells from the epithelium of the mammary vesicles, canals and sinuses, as well as living and dead white blood cells. The number of somatic cells in the milk increases when the organism is fighting an udder infection. The infection need not involve the whole udder. It may apply only to individual chambers.

Micro-organisms that cause udder inflammation include: staphylococcus, streptococcus, coli bacteria and various types of yeast and fungus. The sphincter muscles of the teats constitute a blockade against infections. Most often, inflammation of the udder begins after milking, when the teat sphincter is open and micro-organisms are able to enter the canal. Damage and slight wounds to the delicate skin of the teats may also create a habitat for bacteria.

Additionnal losses:
- Increased time spent by breeders curing the illness
- Risk of factors occurring that will hamper development, risk of infection
- Increased mortality
- Reduction of herd size
- Risk that calves will become ill by drinking infected milk
In cowshed enclosures where cows are milked at stations, the cowshed should be subject to additional preparation prior to milking. Around one hour prior to milking, manure should be removed and fresh bedding should be laid out. In this way, there will be time for the dust to settle before milking begins (dust in the air could infect the milk).

Micro-organisms (most often staphylococcus and streptococcus) can be transferred from sick cows to healthy ones via milking pails, udder cloths and the dairyman’s hands. To counteract this, basic hygiene principles should be observed. When cleaning the udder, the dairyman should use a different rag or disposable napkin for each cow. Each teat should be wiped using a different corner of the rag (to prevent transmission of infection between teats).
Udder and Teat Hygiene

Milking the first three streams of milk from each teat into a special pre-milking cup facilitates detection of symptoms of mastitis in the milk (e.g. blood in the milk). This method allows for detection of even minimal changes in the milk from each of the teats. By pre-milking, we are able to dispose of the least sanitary part of the milk located along the streak canal.

Once in a while (several days after calving, within 50-70 days of lactation and 200 days after confirmation of pregnancy) a cow should be tested using a FCR test (Field Cell Reaction). This test is conducted by milking 1-2 streams of milk from each teat onto a special testing tray, adding the appropriate amount of reactant, agitating (rotating) the tray in order to mix the milk with the reactant, and checking whether the mixture has changed its consistency. A change is evidence of an increased number of somatic cells in the milk and the threat of mastitis.

Milk from each teat should be squirted into a separate tray concavity. An amount of liquid (reactant) equal to the amount of milk should be added to each of the concavities. After delicately mixing the mixture, it will take on a jellied, thick consistency if there is an increased amount of somatic cells in the milk. Some of the trays (01-5202) have a special bottle for testing fluid. In this case, we have only to squeeze the tray handle to release an equal amount of reactant into each of the four concavities.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-5120</td>
<td>Pre-milking cup With black regulatory cover</td>
<td>1 / 100</td>
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<tr>
<td>01-5202</td>
<td>X-spurt, SHOOF testing tray</td>
<td>1 / 2</td>
</tr>
<tr>
<td>01-5200</td>
<td>Milk testing tray white</td>
<td>1 / 10 / 100</td>
</tr>
<tr>
<td>01-5201</td>
<td>Milk testing tray black</td>
<td>1 / 10 / 100</td>
</tr>
<tr>
<td>01-5207</td>
<td>Milk testing fluid 33 250 ml</td>
<td>1 / 25</td>
</tr>
<tr>
<td>01-5271</td>
<td>Milk testing fluid 33 500 ml</td>
<td>1 / 15</td>
</tr>
<tr>
<td>01-5265</td>
<td>KERBA Milk testing fluid 1 l.</td>
<td>1 / 12</td>
</tr>
<tr>
<td>01-5267</td>
<td>Dosage bottle with pump, supplies even doses</td>
<td>1 / 10 / 100</td>
</tr>
</tbody>
</table>
Udder and Teat Hygiene

Paper that tests for changes in milk operates on a principle similar to that of the testing liquid - it facilitates early detection of udder disease. The paper is saturated in a special substance that indicates an increased number of somatic cells. There are four points indicated on the paper for each of the four teats. Each should be dampened with a portion of milk. A change in coloration indicates a diseased condition.

The next step in preparing for milking is to clean the udder. Studies show that in 80% of dairy farms where the number of somatic cells is too high, the cause of the problem was improper cleaning and drying of the teats prior to milking. Prior to milking, the udder, and the teats in particular, are often dirty (manure, various excretions, straw, dust, etc.) and are seriously threatened with infection by harmful micro-organisms. Individual cleaning of the udders prevents further complication and eliminates a majority of pathogens.

The best thing to use when cleaning teats is a disposable napkin dampened with a disinfecting agent. Reusable rags can also be used, provided they have been wet with a special liquid which removes impurities from the teats and udder without harming the skin. The presence of glycerine and lanoline treats the skin, making it elastic. Bacteriostatic properties help eliminate the threat of transmission of mastitis via rags and the dairyman’s hands.

The massage should last around 1 minute. It is essential, because it leads to an increase in oxytocin, which increases the internal pressure in the udder, thereby increasing the milk-giving reflex. The effect of oxytocin is short-lived, only 4-7 minutes. By this time, the cow should have already been milked.

Studies show that cows whose udders were massaged prior to milking produce 10-15% more milk.
Udder and Teat Hygiene

- **Pre-milking**: Detection of warning signs (blood in milk, bits of dried milk), sending the cow for treatment, throwing out the most impure portion of the milk.
- **Cleaning of the udder**: Preventing environmental factors from polluting the milk, e.g. bits of bedding, manure. A dirty udder is a habitat for micro-organisms.
- **Massaging of the udder**: Stimulation of the milk-giving reflex.
- **Milking**: Obtaining milk.
- **post-milking teat disinfecting**: Closure of the streak canal using creams or liquids, thereby preventing bacteria from penetrating the interior of the teat.

**Order of operation**

- **High-quality milk**
- **Effect**
- 20 x 20 cm
- 34 x 37 cm
- can be used over 300 times

**01-5195** Bucket of udder cloths
- 1000 sheets
- • can be washed and boiled

**01-5197** Udder cloths, 50 sheets
- • developed especially for small and medium-sized farms
- • always available
- • in convenient packaging
- • moisturize and care for skin
- • ideal for treating hands

**Silky Milky single-use udder napkins**
- 01-5183
- • ideal for treating hands

**Detection of warning signs (blood in milk, bits of dried milk), sending the cow for treatment, throwing out the most impure portion of the milk.**

**Preventing environmental factors from polluting the milk, e.g. bits of bedding, manure. A dirty udder is a habitat for micro-organisms.**

**Stimulation of the milk-giving reflex.**

**Obtaining milk.**

**Closure of the streak canal using creams or liquids, thereby preventing bacteria from penetrating the interior of the teat.**

**NEW**

**UDDER AND HYGIENE**

**High-quality milk**

**Effect**

**Pre-milking**

- Detection of warning signs (blood in milk, bits of dried milk), sending the cow for treatment, throwing out the most impure portion of the milk.

**Cleaning of the udder**

- Preventing environmental factors from polluting the milk, e.g. bits of bedding, manure. A dirty udder is a habitat for micro-organisms.

**Massaging of the udder**

- Stimulation of the milk-giving reflex.

**Milking**

- Obtaining milk.

**post-milking teat disinfecting**

- Closure of the streak canal using creams or liquids, thereby preventing bacteria from penetrating the interior of the teat.

**01-5195** Bucket of udder cloths
- 1000 sheets
- • can be washed and boiled

**01-5197** Udder cloths, 50 sheets
- • developed especially for small and medium-sized farms
- • always available
- • in convenient packaging
- • moisturize and care for skin
- • ideal for treating hands

**01-5183** Silky Milky single-use udder napkins
- 50 sheets, packaged, multiple-use

**Order of operation**

- **High-quality milk**
- **Effect**
- 20 x 20 cm
- 34 x 37 cm
- can be used over 300 times

**01-5195** Bucket of udder cloths
- 1000 sheets
- • can be washed and boiled

**01-5197** Udder cloths, 50 sheets
- • developed especially for small and medium-sized farms
- • always available
- • in convenient packaging
- • moisturize and care for skin
- • ideal for treating hands

**01-5183** Silky Milky single-use udder napkins
- 50 sheets, packaged

**NEW**

- **Udder and Teat Hygiene**
- • developed especially for small and medium-sized farms
- • always available
- • in convenient packaging
- • moisturize and care for skin
- • ideal for treating hands

**01-5195** Bucket of udder cloths
- 1000 sheets, wet cloths

**01-5196** Supplementary packaging
- 1000 sheets, bucket refill, wet cloths

**01-5197** Udder cloths
- 50 sheets, packaged, multiple-use

**01-5183** Silky Milky single-use udder napkins
- 50 sheets, packaged

**Order**
Udder and Teat Hygiene

Dipping solutions used to disinfect teats contain antibacterial ingredients such as: iodine, chlorhexidine gluconate, salicylic, peracetic and lactic acid.

The skin of the teats is subject to the negative impact of the environment (manure, moisture, low temperature, high levels of solar radiation), mechanical actions performed during milking or accidental scrapes.

To protect the natural lipid level on the skin of the teats, the dipping solution should contain one or several protective and preventative ingredients. Post-milking disinfectant solutions should cover the skin of the teats evenly. They are often garishly coloured, which facilitates careful control when in use. By alternating use of various disinfectants, the antibiotic effectiveness of the procedures is increased.

### Order

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-5000</td>
<td>Dipping solution 23 universal, 10 kg</td>
<td>1 / 44</td>
</tr>
<tr>
<td>01-5001</td>
<td>Dipping solution 23 universal, 5 kg</td>
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<tr>
<td>01-5002</td>
<td>Dipping solution 24 iodine, 10 kg</td>
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<td>01-5003</td>
<td>Dipping solution 24 iodine, 5 kg</td>
<td>1 / 86</td>
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<tr>
<td>01-5004</td>
<td>Dipping solution 25 winter, 10 kg</td>
<td>1 / 44</td>
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<td>01-5005</td>
<td>Dipping solution 25 winter, 5 kg</td>
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<td>01-5006</td>
<td>Dipping solution 26 with permanent filter, 10 kg</td>
<td>1 / 44</td>
</tr>
<tr>
<td>01-5007</td>
<td>Dipping solution 26 with permanent filter, 5 kg</td>
<td>1 / 86</td>
</tr>
</tbody>
</table>
During milking, the streak canal opens. However, the sphincter muscles of the streak canal do not close immediately after milking. This most often occurs around 30 minutes to 2 hours afterwards. During this period, bacteria have easy access to the canal. In order to prevent mastitis, immediately after milking we should apply agents that close the end of the canal, thereby preventing bacteria from entering.

Post-milking disinfectants primarily act to close the streak canal, thus preventing inflammation and creating a protective layer on the teats.

For dry teats we periodically use a special cream that makes the skin smooth and elastic.

Post-milking disinfectants come in ointment and liquid form. When disinfecting teats after milking, disinfecting cups and spray bottles are helpful.

When using cups, the entire surface of the teat is thoroughly covered with disinfectant. However, typical dipping cups require more rigour in maintaining cleanliness. There are cups that have one-way valves, which prevents liquid that has already been used from making its way back into the cup - this facilitates good hygiene practices. Sprayers cannot lead to the spread of bacteria through the herd because they don’t come into direct contact with the udder. But they aren’t as thorough - it is easy to fail to cover the entire teat with disinfectant. For this reason, dipping treatments often come in intense colours; this makes it easy to spot when a teat hasn’t been thoroughly disinfected. Spray bottles allow for more efficient use of disinfectants. Cups and spray bottles differ in terms of volume - cups can hold 300 ml. of disinfectant, while spray bottles can hold 500 ml.
Udder and Teat Hygiene

The EUTRA line is a recommended and approved means of treating teats. EUTRA udder cream naturally treats skin. It is most frequently used right after milking as a means of closing the streak canal and preventing bacterial penetration.

EUTRA gel and lotion reinforces and regenerates udder skin. EUTRA gel is especially recommended for cows with inflamed udders. It affects nerve endings, leading to a “cooling” sensation in the udder, bringing relief to cows with inflamed udders. EUTRA lotion contains a UV filter, and for this reason it is recommended for cows during their first few weeks in the pasture and throughout the post-birthing period.

In addition to the EUTRA line, we also recommend products designed for the same purpose and belonging to the Can Agri Blue Line.
Milk and Milking Installation Hygiene

It’s important that milking be conducted under appropriate conditions: in a clean milk parlour (detached cowsheds) or in dry stations with clean bedding (non-detached cowsheds). Reduction in milk quality can result from improper milking equipment hygiene, e.g. improper cleaning, infrequent changing of teat rubber. Remember that damage can be done to teats due to improper usage of milking apparatus, e.g. improper pressure in the collector, leading to dry milking.

Milk extracted from sick cows must not be combined with the milk of healthy cows - this leads to a reduction of the quality of the milk in the collector. The impact on the average number of somatic cells in the reservoir tank will increase as the size of the herd decreases. If the milk of a sick cow contains, e.g. 3 million somatic cells per ml and it isn’t isolated from the milk of healthy cows, where the average number of somatic cells is around 200,000/ml., in a herd of 100 cows the average number of somatic cells will increase to 28,000, while in a herd of 20 cows, to as high as 140,000.

If one quarter of the udder is infected with mastitis, we can use a separator. This is a device that allows us to bypass one of the teats while milking.

**Micro-organisms responsible for mastitis**

1. Micro-organisms that develop in the udder:
   - Staphylococcus aureus
   - Streptococcus agalactiae
   - Streptococcus dysgalactiae
   Lead to long-term infection, mainly subcutaneous; sometimes they are a sign of clinical mastitis.

2. Micro-organisms that develop in the environment
   - Streptococcus uberis
   - Escherichia coli
   Lead to severe short-term infection, signs of clinical mastitis.

3. Remaining micro-organisms that can cause mastitis:
   - Staphylococci coagulase-negative & coagulase-positive (inne S. aureus); Streptococcus bovi;
   - Enterococci (E. faecium & E. faecalis); Mycoplasms (Mycoplasma bovis); Enterobacteria & coliforms;
   - Listeria monocytogenes; yeasts and funguses; viruses
Udder Hygiene

All wounds and ruptures to the skin of the teat allow for easy penetration of bacteria and are a cause of inflammation in the udder. For this reason, it is important to take care of teat skin. During milking, a teat may increase in length by up to 50%. Accordingly, both ointment and dipping liquids should contain ingredients that moisturize the skin, making it more elastic and resistant to harm.

Cold winds can harm teats, and chapped and porous skin does not offer a protective barrier against bacteria. The greatest risk to cows arises when the temperature drops below 5°C, and cold winds increase the effect of the cold and low humidity. For this reason, during periods in which low temperatures predominate, we recommend using preparations with low water content and high amounts of moisturising and skin-care ingredients - these protect the skin against chapping and cracking caused by cold wind.

Action should also be taken to prevent mechanical injury of the udder. Many cows have large, low-hanging udders that are easily trampled. Wounds that occur in such cases can easily lead to mastitis infection. In order to prevent this, the udder can be “supported” using a special net. The net can be selected to fit the udder (3 sizes: medium, large and extra large). Use of a net in no way complicates milking. To connect to a milking device, all we need is to undo one of the straps of the elastic net. For improved udder safety, a net with an additional belt running along the spine and the rib cage can be used.
Udder Hygiene

In order to clear teat canals that have narrowed, closed (squeezed together) or have been subject to veterinary procedures, drains or catheters are used. Drains contain moisturizing substances in the form of natural tallow (drain 01-5126) or Vaseline (drains 01-5125, 01-5124, 01-5127). These serve only to expand the teat canal; they contain no pharmacological substances, and can be used without delay. The cow’s body temperature causes them to dissolve within the body of the cow.