

Properly Cleaning Portable Milking Units

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Proper and efficient cleaning routine of milking equipment contributes to high milk quality and prolong the life of milking equipment!

Following the completion of every milking, all milking equipment and utensil surfaces that come into contact with milk, dirt or manure must be thoroughly cleaned and sanitized before the next milking.

GOALS

- ***Cleaning:** Remove residual milk solids
- ***Sanitizing:** Kill residual microorganisms and prevent microbial

***RESIDUAL MILK SOLIDS:** called “**Soils**”, contain both organic and inorganic materials. Soils provide nutrients and areas for bacteria to grow and reduce the effectiveness of the cleaning and sanitizing compounds.

***ORGANIC SOILS:** milk fat, protein and sugars.

***MINERAL SOILS:** inorganic salts of various minerals (usually calcium, magnesium or iron) present in milk or water.

***MILKSTONE:** deposit formed by the combination of precipitated minerals on surfaces of milking or milk storage equipment combined with organic soils.

***PHYSICAL CLEANLINESS:** removal of all visible dirt from the surface.

***CHEMICAL CLEANLINESS:** removal not only of all visible dirt but also of microscopic residues that are not visible to the naked eye but can be detected by taste or smell.

***BACTERIOLOGICAL CLEANLINESS:** attained by disinfection.

***STERILE CLEANLINESS:** destruction of all microorganisms.



Properly Cleaning Portable Milking Units: Step by Step

The following will be required for proper cleaning of milking equipment, independently of the type of milking system:

- *Supply of potable water (water free from fecal contamination)
- *Efficient water heater
- *Thermometer
- *Chemicals
- *Protective clothing

The milking system is cleaned by the physical action of cleaning solutions assisted by temperature and chemicals. No matter what system is used, the machine will not be cleaned unless wash up solutions come into contact with all soiled parts of the equipment.

***Before cleaning the inside of the milking equipment, hose down any external surfaces in the milking area!**

STEP 1: RINSE

***Disassemble all parts that must be hand-washed!**

Rinse all surfaces immediately after milking with lukewarm (100-110°F) water to remove milk solids. When done properly, this rinse removes more than 70% of the soil load.

With a thermometer, monitor the temperature of the rinse cycle!

- Rinse water temperature below 93°F will allow milk fat to deposit on milking equipment surfaces!
- Rinse water temperature above 120°F will denature any remaining protein and create protein films. These films are colorless at first but develop a yellow color as they build up. Protein films provide contact areas on surfaces where bacteria can grow.



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STEP 2: WASH

For the wash cycle, you will need a chemical cleaning solution to remove any soils that have built up in the machine during milking.

Most dairy operations use a chlorinated alkaline detergent solution in either liquid or powdered form.

Add your detergent to the wash water according to manufacturer specifications.

*Soak all parts of the milking machine in the detergent/water solution at a temperature of 120- 135 °F for at least 5 minutes.

*Once the entire claw is inside the detergent/water solution, turn on the pump to get the solution into the claw, tubes and the milking bucket. This will wash the entire milking unit.

*Drain all chlorinated alkaline detergent wash solution before beginning the next step.

***It is important that the temperature of the solution does not fall below 120°F because any milk solids either in solution or in suspension may be re-deposited on contact surfaces.**

*The alkaline detergent breaks up any remaining milk fat into tiny droplets, suspending the fat in the detergent wash water.

*The chlorine increases the solubility of any remaining protein and helps to remove it with the detergent wash during the wash cycle.



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STEP 3: POST-RINSE

*Rinse the milking equipment thoroughly (inside and outside) with clean lukewarm (100-110°F) water before adding the acid rinse.

***Visually inspect the milking equipment for proper cleaning.**

STEP 4: ACID RINSE

* Rinse the whole milking equipment with cold acidified water for 2-3 minutes and drain. The acid rinse prevents any milk minerals from accumulating on the surfaces of the milking equipment.

*This step helps avoid the development of milkstone and decreases the chances of bacterial growth within the milking system. The acid rinse also neutralizes the chlorine and alkaline residues from the wash cycle and helps prolong the life of any rubber parts of the equipment.

STEP 5: SANITATION

*Most dairies operations soak the milking equipment in a chlorine-based sanitizer in lukewarm water (100-110°F) solution.

***Sanitize all hand-washed parts and let drain*.**

*Cleaning reduces bacterial numbers on surfaces but DOES NOT eliminate all types of bacteria. The sanitizing of surfaces within 30 minutes of the next milking destroys nearly all lingering organisms when a throughout cleaning precedes the sanitizing step and the sanitizing solution used is of proper strength.

*** The entire surface of the milking equipment MUST be sanitized just prior to milking!**

***Teat cup liners and other rubber parts that come into contact with milk must also be thoroughly cleaned after each milking and sanitized before the next milking!**

*Liners and other rubber parts must be replaced according to the manufacturer recommendations or when they become soft, cracked, rough or have holes.

***Pores and cracks in rubber parts prevent soil and microorganisms from the effects of cleaning and sanitizing!**