

PROPER CLEANING PROCEDURES

Why there should be no JOY in your processing room.



- Observed using wrong type of cleaning agents
- Liquid Dish detergent not for dairy equipment
- Increase in bacterial in routine sampling
- Importance of starting with clean environment (work tables, equipment etc...)

Soil found on Contact surfaces... (Work Tables, including underside, Work Sinks, Vats/Storage tanks, and equipment

Cleaning and Sanitizing dairy equipment is necessary to prevent:

- ▣ Accumulation of undesirable micro-organisms in the equipment
- ▣ Development of bad smells in the equipment which pass on to the product
- ▣ Possible corrosion of metal parts due to lactic acid
- ▣ Contamination of the product with pathogens.

The cleanliness of equipment can be classified at three levels:

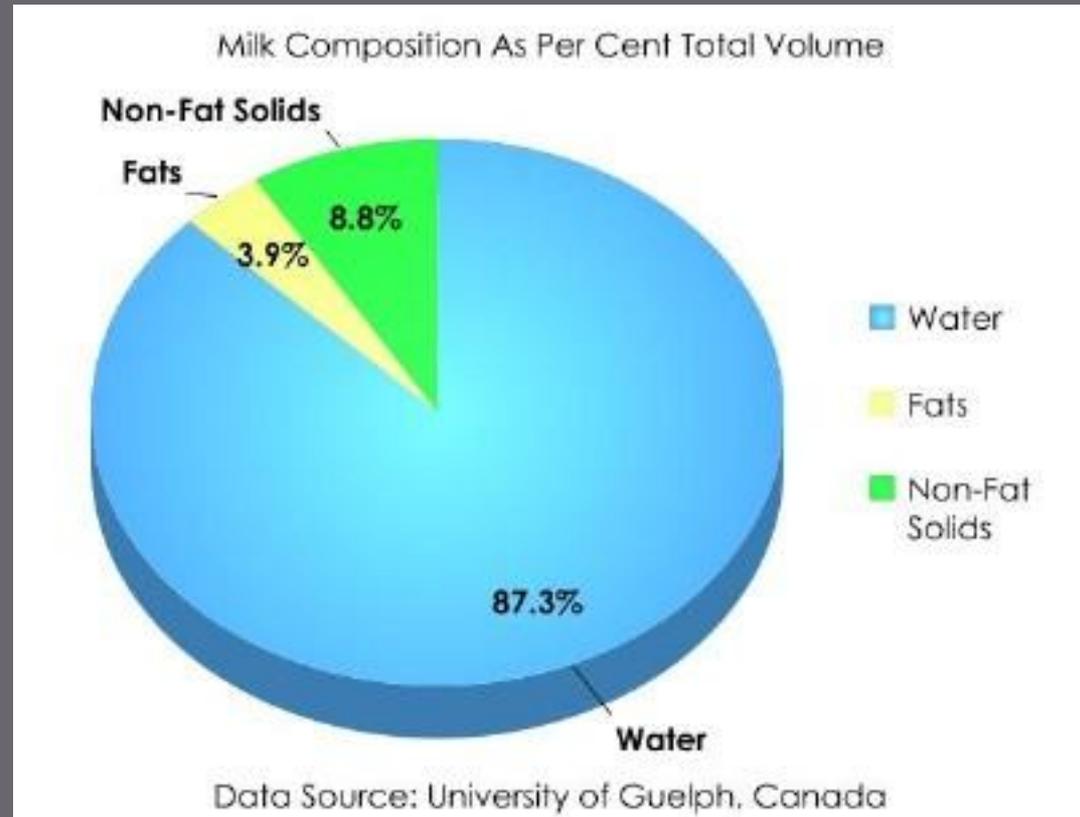
- ▣ Physical cleanliness, where all visible dirt has been removed.
- ▣ Chemical cleanliness, where, in addition to all visible dirt, microscopically small residues have been removed.
- ▣ Sanitization, where, in addition to being chemically clean, the equipment has been treated in such a manner as to remove most of the micro-organisms present on its surface.

Types of Soil

▣ Organic

▣ Mineral

▣ Smutz



Organic :

- a) Fats, Proteins, Sugar Major components of Milk
- b) Difficulties removing from contact surfaces
- c) Clean as soon as possible after Equipment is used.

Mineral:

- a) Inorganic Salts: Calcium, Magnesium, Iron
- b) Improper cleaning agents can add (can prevent removal) of Mineral Deposits.
- c) Water Hardness

Smutz:

- a) Dust, Mixture of Dust and condensation, Grime
- b) Remnants of product.

Removal of Soil

- ▣ Mechanical: Elbow Grease and Proper Brushes
- ▣ 1) Break down and separation of all parts
- ▣ 2) Proper brushes being used
- ▣ (No metal Scouring Pads)
- ▣ Chemical : “Detergency” ability of the Cleaning chemical being used, to convert an insoluble soil into a soluble one so that it can be removed from a surface.

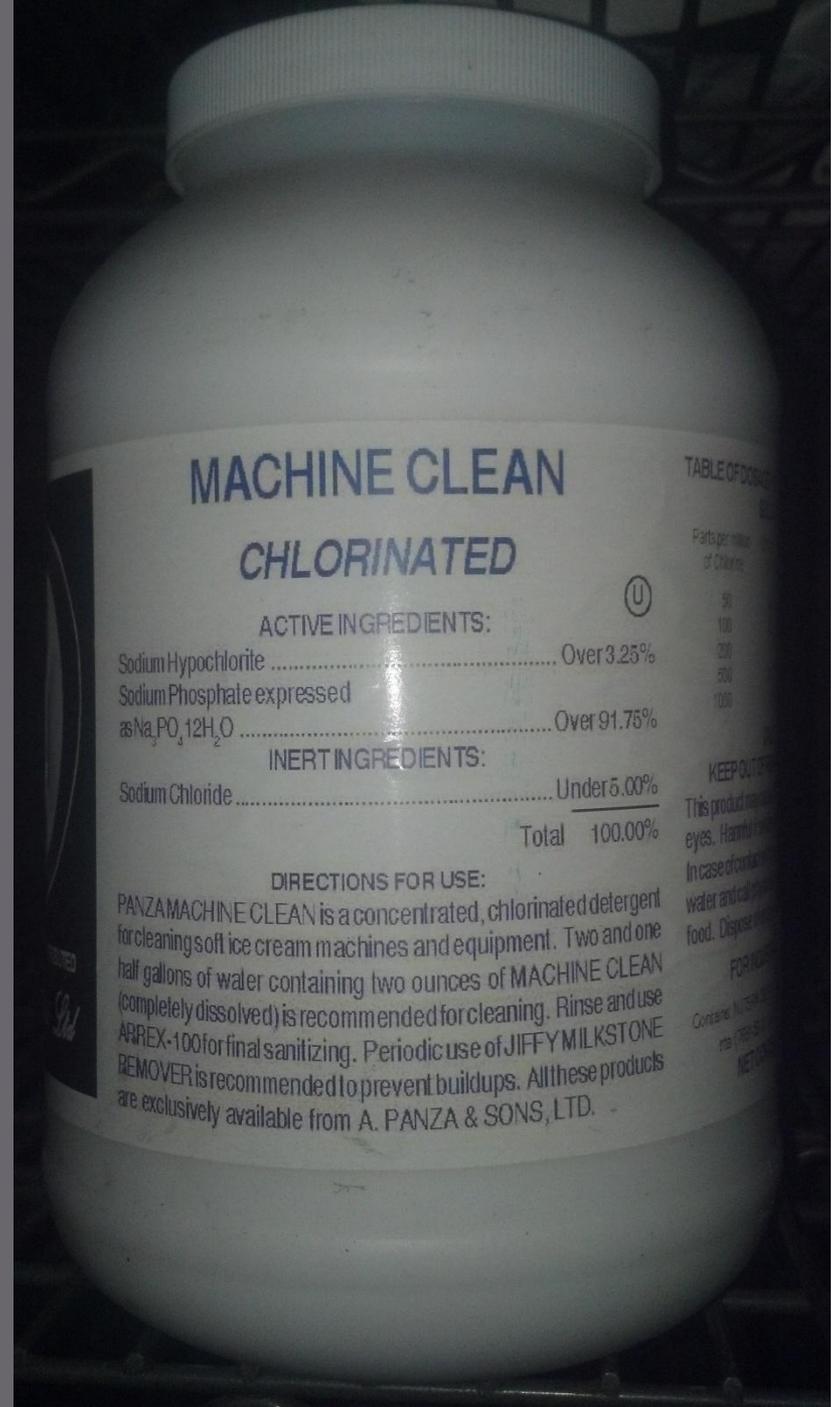
Types of Cleaners

Alkaline

- ▣ Chemical reaction required for removal of Organic soil. It is not designed to remove mineral film , actually it could add to them.
- ▣ Principle ingredients
 - Alkalies: Helps to break down fats
 - Tri-sodium Phosphates: Helps with water hardness
- ▣ Wetting agents:
 - 1) Wetting form and penetration of cleaning solution
 - 2) Good emulsifiers of fats (rinsing properties of cleaning solution).

CHLORINATED ALKALINE CLEANERS :

- ▣ The Chlorine acts to enhance the removal of proteins deposits from the milk contact surfaces.



Acid Cleaners

- ▣ Acid Cleaners: composed of mild organic and inorganic acids.
- ▣ Main function is to prevent or remove mineral deposits.
- ▣ Reacts with water to insoluble salts making them soluble
- ▣ Acids basically have no effect on Organic Soil

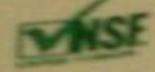
Milkstones

- ▣ Heavy white or yellow buildup on equipment is also called milkstone.
- ▣ Milkstone deposits are often caused by the minerals in milk or water.
- ▣ Excessively hard water is a common factor in milkstone deposits.
- ▣ Failing to rinse equipment with an acid rinse after milking is also a factor in the development of milkstone deposits.



STERA SHEEN. GREEN LABEL

Sanitizer & Cleaner
(Milkstone Remover)



ACTIVE INGREDIENTS
Sodium Chlorine & Sodium Hydroxide 2.4%
SODIUM CHLORINE 87.2%
OTHER INGREDIENTS
Sodium Chlorine 1.24%
TOTAL 100.0%

KEEP OUT OF REACH OF CHILDREN
WARNING
Read Additional Precautionary Statements
on side panel.

MANUFACTURED BY PURDY PRODUCTS CO.
P.O. BOX 454, WAUCONDA, IL 60984

EPA Reg. No. 176-D-1 EPA Reg. No. 176-A-1
NET WEIGHT 4 LBS.

Factors Affecting Function of Cleaners

- ▣ Concentrations of Cleaners
- ▣ Temperature of Cleaning Solution
- ▣ Contact time
- ▣ Application of Cleaner

Concentrations of Cleaners

- ▣ (Effective only under manufactures guidelines)
- ▣ Low concentration incomplete removal of soil
- ▣ Too high could add mineral deposits

Temperature of Cleaning Solution:

- ▣ Too low, chemical reaction is insufficient (below 110)
- ▣ Too high break down of ingredients

Contact time:

- ▣ Time must be sufficient to provide a clean surface
- ▣ Time varies depending on type of soil and temperature of solution

Application of the Cleaner

- ▣ Proper Procedure
- ▣ Prober balance between Organic and Mineral
- ▣ Post Cleaning (type and amount of cleaner used.)

Cleaning Procedures :

- ▣ **Pre-Rinse**

 - Immediately after use to prevent drying of Milk solids

 - Warm water.. Hot water could destabilize proteins causing a film

- ▣ **Wash**

 - Appropriate Cleaning solution DAIRY CLEANER
(Chlorinated Detergent)

- ▣ **Maintain proper temperature**

- ▣ **Rinse** with water to remove suspended soils and traces of cleaning compounds

 - Sanitize**

- ▣ **Store to Dry**

TROUBLE-SHOOTING FILMS AND DEPOSITS ON EQUIPMENT

<u>Film/Deposit</u>	<u>Description or Identification</u>	<u>*Cause</u>	<u>Removal</u>	<u>Prevention</u>
Protein	Blue rainbow hue Varnish-like "Apple Sauce"	1) Using non-chlorinated cleaner. 2) Inadequate pre-rinse. 3) Improper (sporadic or periodic) cleaning. 4) Improper initial clean-up.	Initial clean-up equal parts of chlorine, chlorinated alkaline detergent, and hot water.	1) Chlorinated alkaline detergent. 2) Proper cleaning with proper use dilution after each usage. 3) Adequate pre-rinse.
Milkstone or (Waterstone)	White to yellow.	1) Mineral from milk. 2) Mineral from water.	A. Initial cleaning. B. Acid wash.	Regular and proper cleaning procedures coupled with acidified rinse.
Fat/Grease	Hanging water droplets. Greasy (white) appearance. Oil	1) Same as protein. 2) Low temperature or improper detergent. 3) Regular use of acids in washing. 4) Pulsator oil on equipment surface.	Initial clean-up.	Regular and proper cleaning procedures coupled with acidified rinse.
Mineral (Calcium, Magnesium)	White (Waterstone) Chalky to gray.	1) Improper rinsing. 2) Drop-out of minerals from water supply 3) No acidified rinse. 4) Non-compatible alkaline detergent. 5) Failure to use acid detergents.	Acid wash.	1) Acid rinse. 2) Product use has good water conditioning properties. 3) Water softener or treatment.

<u>Film/Deposit</u>	<u>Description or Identification</u>	<u>*Cause</u>	<u>Removal</u>	<u>Prevention</u>
Iron	Red to brown/black.	<ol style="list-style-type: none"> 1) Water supply. 2) Aggressive supply -- iron from system components. 3) Improper procedures. 	Acid wash.	<ol style="list-style-type: none"> 1) Regular acid rinse. 2) Water treatment. 3) Proper selection of sanitizers.
Silica	White to gray glazed appearance.	<ol style="list-style-type: none"> 1) Use of mechanical cleaner for manual cleaning. 2) Poor rinsing. 3) Water supply. 4) Failure to manually clean outside surface of equipment cleaned mechanically inside. 	Special acid wash.	<ol style="list-style-type: none"> 1) Complete post rinse. 2) Regular acid rinse. 3) Water treatment. 4) Manually clean outside surface of equipment cleaned mechanically inside.
A. Inking (blackening)	A. Black in rubber parts.	<ol style="list-style-type: none"> 1) Reaction between chlorine or chlorinated compound and rubber. 	Acid wash.	<ol style="list-style-type: none"> 1) Acid rinse. 2) Proper dry storage.
B. Black	B. Black residue deposit.	<ol style="list-style-type: none"> 1) Rubber migration 2) Contact of dissimilar materials. 		<ol style="list-style-type: none"> 1) Acid rinse. 2) Proper dry storage. 3) Proper installation.
Wetting Agent	Blue	<ol style="list-style-type: none"> 1) Poor/inadequate rinsing. 	Initial clean-up.	<ol style="list-style-type: none"> 1) Proper compound. 2) Proper rinsing.
Factory Soil	Grease, factory dirt--black deposit, rusting.	<ol style="list-style-type: none"> 1) Improper or no initial clean-up. 	Initial clean-up.	Thorough cleaning before equipment is used -- initially.

<u>Film/Deposit</u>	<u>Description or Identification</u>	<u>*Cause</u>	<u>Removal</u>	<u>Prevention</u>
Corrosion	Rust/pitting.	1) Iron, metal particles, improper chemical usage. 2) Freezing or sanitizing.		
Etching	Pitted and white discoloration "imbedded" in stainless steel surface.	1) Improper use of chemicals. 2) Use of improper chemicals.	Repolish-re-passivation.	Proper procedures and passivating acid rinse.
<u>Plastics**</u>				
Opaque	Lack of transparency; white, not clean	1) Improper draining. 2) Moisture absorption.	Exposure to heat or light (sunlight)	Blower or dryer. Good drainage, ventilation.
Yellow	Yellow color.	1) Old age, improper use of iodophor 2) Hand soil stain.	None.	Proper product application. Replace.
Brown/Black	Brown discoloration.	1) Rubber migration. 2) Carbon from motors on dryers.	Acid wash--if not removed, replace.	1) Acid wash. 2) Proper filtration. 3) Segregation of plastics and rubber. 4) Replace.
Red	Red color -- stain.	1) <u>Serratia</u> 2) <u>Marcescens</u>	None.	1) Proper procedures on <u>regular</u> basis.

<u>Film/Deposit</u>	<u>Description or Identification</u>	<u>*Cause</u>	<u>Removal</u>	<u>Prevention</u>
Pink/Purple	Pink/purple color.	1) <u>Streptococcus</u> 2) <u>Rubrireticuli</u>	Strong alkaline wash.	Proper procedures on <u>regular</u> basis.

*Films and deposits are usually caused by improper cleaning, rinsing, hard water or incompatible products. In mechanical cleaning, problems may be also due to malfunction of the system or lack of proper solution control.

**After continuous use, periodic replacement of plastic materials is eventually necessary.



Thank You