

Cleaning & Sanitizing

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AKA....

Why Cutter's Beers always have some funk!



Agenda

- Terms and Prerequisites
 - pH
- Proper cleaning techniques
 - Types of Cleaners
 - Types of Sanitizers
- Other useful knowledge
 - Test



Common “Cleaning” Terms

- Clean – Free from dirt and oils
- Sterilization – Any process that completely removes, kills, or deactivates all forms of microbial life, including bacteria, viruses, fungi, and spores
- Disinfection – The process of using chemical or physical methods to destroy or reduce harmful pathogenic microorganisms including viruses and fungi on non-living surfaces and objects. (Not including spores)
- Sanitization - The process of using heat or chemicals to reducing the number of germs and microorganisms on surfaces or objects to levels that are safe according to public health standards



pH

- Acidic– pH 0 to 6.9 (Lemon Juice)
- Neutral pH 7.0 (Distilled Water)
- Basic or Alkaline – pH 7.1 to 14 (Baking Soda)
- Caustic – A strong basic chemical that has a pH above 11. Harsh to living tissue or metals.
- Corrosive – A strong acidic chemical that has a pH lower than 3. Also harsh to living tissue or metals.



The Cleaning Process

1. Rinse – Remove excess, easily removed soils; this makes the cleaning solution more effective.
2. Clean – With a cleaning solution Dissolve/Disperse/ Suspend soils; heat and/or elbow grease may be required
3. Rinse – Remove the cleaning solution and soils.
4. Repeat if needed



Types of Cleaners

Cleaner	Examples	pH	Effects	Benefits / Problems
Caustic Sodas	Lye, Sodium Hydroxide, Sodium Phosphate	14	Dissolves organic matter	Does not rinse well; Corrosive to skin; Dissolves Aluminum
Alkalis	PBW (Pro Brewers Wash) Craft Meister products	12	Dissolves organic matter	Less aggressive than caustic soda; Works best when hot; Good dispersant
Other Alkalis	BLC (formerly Beer Line Cleaner) (Beverage System Cleaner)	14	Dissolves organic matter; Dissolves scale	Less aggressive than caustic soda; Designed for dispensing systems
Oxygen	OxiClean Free (no perfumes or dyes)	10.5	Dissolves organic matter	No odor; Can leave residue
Acids	Five Star Acid Cleaner #5 Vinegar, B.S. Remover	1-2	Dissolves scale	Corrosive in high concentrations
Dish Soap	Dawn Palmolive	8-9	Designed to breakdown grease	Use surfactants to lift oil and grease.

PBW vs. OxiClean Free

- No PBW is not just OxiClean
- They do share a primary ingredient of Sodium Percarbonate as an oxygen-based cleaner
- PBW is a blended formula containing roughly 70% Sodium Percarbonate and 30% Sodium Metasilicate
 - Sodium Metasilicate acts as a buffer and hard-water conditioner. Prevents mineral haze.
- OxiClean contains Sodium Carbonate Peroxide which provides bleaching power when activated with water, and other Surfactants for grease fighting.

Types of Sanitizers

Sanitizer	Example	pH	Concentration / Contact Time	Benefits / Problems
Chlorine Bleach	Clorox	11-13	100-200 ppm / 10-30 mins. (1-2 oz Bleach / 5 gal H2O)	CHEAP!!, but Must Rinse! Can etch Stainless Steel; Can impart taste or damage clothing
Iodophor	BTF Iod-Star	5-2	12 to 25 ppm / 10 to 2 mins. (1-2 Tbsp / 5 gal H2O) \$10/16 oz.: 80-160 gals.	No-Rinse; Will not impart taste or odor; Relatively inexpensive; Can stain plastic, rubber, etc.; Can stain clothing; Must stay Cool! (below 120°F)
Anionic Acid	Star-San	3-2	780 ppm / 1-2 mins. (1 oz / 5 gal H2O) \$18/16 oz.: 80 gals. Must be at pH 3, or below	No-Rinse; Will not impart taste or odor; FOAM! – “Don’t fear it!” Relatively expensive; Can damage tubing; DO NOT Mix with Chlorine!
Alcohol	Isopropyl Alcohol	6.5-7.5	70% / 30 secs	Cheap? Available! “IPA” not for human consumption! Most effective at 70-80% Flammable

Other Sanitizing Methods

- Boiling (20 - 30 mins.)
 - Bottle Caps (not the oxygen-scavenging type)
 - Oxygen Stones
 - Rubber Gaskets
 - Small Equipment
- Oven Heat (350° F for 60 mins. = STERILE)
 - Bottles? - Must allow slow cooling.
 - Metal Equipment
- Dishwasher (Sanitizing Cycle, incl. Heat Dry)
 - Bottles – Must be Clean

Do you need to Sanitize EVERYTHING?

- Mash Tun?
- Boil Kettle?
- Fermenter?
- Tubing?
- Bottles and Kegs?
- Brewery?



Review and Other Knowledge

- The Process
 - 1) Rinse 2) Clean 3) Rinse 4) Sanitize
- Never add water to chemicals
- Cleaner and sanitizers must contact 100%
- A spray bottle is your best friend
- Do not overuse chemicals
- Use appropriate Time and Temperature



Final Point

Cleaners ARE NOT Sanitizers and Sanitizers ARE NOT Cleaners



Who was paying attention?

What is the difference between Sterilization and Sanitization?



Who was paying attention?

Sterilization is the process of removing 99.999% of microbial life, including spores. This is usually completed via heat within an autoclave.

Versus Sanitization is the process of REDUCING the number of microorganisms to a safe level agreed upon by the Public Health Standards typically completed via chemical solution.



Don't forget to spay or neuter your dogs and
cat! That's STERILIZATION!

Cheers!



Important Upcoming Dates

- September Happy Hour – The Common Beer Company – 9/18
- October Members Meeting - 10/11
- October Happy Hour – Glendale House Brewery – 10/16
- Learn 2 Homebrew – Third Eye Brewing – 11/7
- November Members Meeting – 11/8
- November Happy Hour – 50 West Deerfield – 11/20
- December Christmas Party – 12/13

