

Common Cleaners & Sanitizers Used in Brewing

2 key points to remember:

1. Cleaning is *not* sanitizing
2. A dirty surface *cannot* be sanitized

My motto is 'let the chemicals do the work'- whenever possible

Cleaners

Cleaner & notes	Pros	Cons
Dish soap	<ul style="list-style-type: none">· Cheap· Readily available	<ul style="list-style-type: none">· Must be rinsed well as it leaves a film· If used on fermentation & packaging equipment, it can leave a residue that will affect head retention· Requires scrubbing to effectively clean
Percarbonate (unscented) - alkali Oxi-Clean and other generics Dissolved in water, it releases hydrogen peroxide and soda ash (sodium carbonate). Breaks down organic solids. Be sure to use unscented, especially for any plastics works best in hot water 1-2 TBSP in 5 gal does a great job- a little more for heavy cleaning	<ul style="list-style-type: none">· Cheap· Easy to find· Rinses clean· Effective on all surfaces· Often a lengthy soak eliminates need for scrubbing· Ecologically sound· Effective degreaser· An overnight soak will also take most bottle labels off· Can also be used to clean beer lines	<ul style="list-style-type: none">· Scented version can leave odors in plastics
TSP (tri-sodium phosphate) - alkali Use as percarbonate	<ul style="list-style-type: none">· Very effective cleaning agent· Rinses clean· A lengthy soak typically eliminates need for scrubbing· Extremely effective degreaser	<ul style="list-style-type: none">· Environmental issues (phosphate content causes algae blooms and bad water quality)· More expensive than percarbonate· Harder to find due to environmental issues· Can be corrosive on some metals
PBW - alkali Percarbonate based with a chelating agent — attaches to organic matter and drops it from suspension Works best in hot water 1-2 TBSP in 5 gal does a great job- a little more for heavy cleaning (directions on label are for CIP applications- pay no regard)	<ul style="list-style-type: none">· Designed for dairy and brewery apps· Easy to find in most homebrew shops· Rinses clean· Very effective on all surfaces - moreso than straight percarbonate· Often a lengthy soak eliminates need for scrubbing· Ecologically sound· Removes carbon deposits from cookware	<ul style="list-style-type: none">· More expensive than generic oxiclean· Will destroy teflon coated items (lifts teflon from the surface) <p>(Due to the price, I mostly just use this on SS fermenters and kegs, as they have hard-to-reach spots that a good chemical soak does wonders for)</p>

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Cleaners

Cleaner & notes	Pros	Cons
Bar Keepers Friend - acid Oxalic acid based with mild abrasive Excellent for SS, glass, copper, brass	<ul style="list-style-type: none">· Cheap· Readily available in most stores in the cleaning aisle· Works excellent on SS, brass, copper and glass· Removes rust & oxidation· Removes mineral buildup (e.g. beerstone, hard water deposits)· Repassivates stainless	<ul style="list-style-type: none">· Need to rinse well· May need to wipe down after use (can leave residue)
BLC (beer line cleaner) - alkali Potassium hydroxide with a blend of surfactants and chelating agents to help the caustic loosen and suspend soils	<ul style="list-style-type: none">· Excellent for cleaning beer lines, connectors and faucets· Eliminates beerstone buildup· Eliminates bacteria and mold buildup	<ul style="list-style-type: none">· Highly caustic when undiluted (you don't want it on your skin)· Must be flushed thoroughly from lines

Cleaning Tips & Tricks

I prefer to let the chemicals do the work and haven't used a brush in ages. (YMMV)

Carboys: Give a good rinse to get the trub and some of the krausen ring out. Fill with hot water and 2 tbsp of oxi-clean (more if it's really caked on), let sit overnight. Should be clear by the AM, so dump and rinse. If it's really stubborn you still may need to break out the carboy brush.

For Sankey and other SS fermenters: I rinse and blast with my pressure washer first (see the 'gadgets' page of the BAM site) and use PBW instead of oxi-clean with an overnight soak.

Kegs: Rinse well and add 3 gal or so of hot water and 1-2 tbsp PBW. Put on the lid and shake. Hit with a little CO2 to slightly pressurize. Taking care to protect yourself from the blast, depress the 'out' poppit with a screwdriver to rinse the dip tube and spring and fill w/ cleanser (I cover it with my hand). Invert and do the same with the gas side. Leave sit for about 2-3 hours. Then remove the lid and set on top of the keg (I also loosen the large o-ring), put a bucket over it, and then turn the whole shebang upside down so the bucket rests on the floor. This will clean the top half of the keg as well as the lid and posts. Leave sit for another 2-3 hours or overnite, then dump and rinse, using the same method of pressurizing to rinse the dip tubes and poppits with clean water. No scrubbing involved!

I have read that a mixture of 70% percarbonate cleaner and 30% TSP is just as effective as PBW.

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Sanitizers

Sanitizer & notes

Bleach (household)

Only truly effective if 'acidified'
Directions - for 5 gal, add 1 oz bleach to carboy, add 5 gal water, add 1 oz vinegar, stir - technically no rinse, but it is recommended to prevent off-flavors. Do this in the order specified, do NOT add vinegar directly to bleach. This will release some chlorine gas, so it is best done in an area with adequate ventilation or outdoors

Pros

- Cheap
- Readily available
- Good as an on-hand option when you find out mid-brew you are out of sanitizer
- Also an effective cleaner at ~1 cup per 5 gallons H₂O

Cons

- Must be rinsed
- Can add off-flavors if not completely rinsed
- Plastics can retain chlorine odors
- Hazardous chlorine gas fumes (especially if acidified)
- Corrosive and damaging to stainless steel, copper, and aluminum
- Will pit stainless

Iodophor

Iodine based

For more information, there is a good writeup in the 'Articles' section on the BAM website

- Highly effective
- Readily available at homebrew shops
- Short contact time (1-2 min)
- No-rinse at recommended concentration
- Does not need a full contact to sanitize (eg. 1 gal mix swirled in carboy for 1-2 min), but requires that the equip gets repeated contact for the 1-2 minutes

- Does not have the surfactant to 'cling' to the surface as Star San does
- Needs to be mixed fresh
- Does not store
- Degrades after 24 hours
- Not safe for septic systems
- Stains

Star-San

Chemical composition is a typical soap (like that found in tooth paste called DDBSA - dodecylbenzyl sulfonic acid) & food grade phosphoric acid

Don't fear the foam!

I mix 1 gal for a whole brew day and store the leftover for re-use another day

- Highly effective
- Readily available at homebrew shops
- Short contact time (30-60 sec)
- No-rinse at recommended concentration (the light phosphoric residue is actually a yeast nutrient when diluted in wort)
- Flavorless
- Has a surfactant so less sanitizer is needed (saves water)- a couple good shakes to coat the sides
- Good storage when mixed and can be reused until pH rises above 3.5 (turns cloudy) or gets contaminated
- If it gets cloudy - just 'sweeten' the mix with a little bit more Star-San
- If mixed w/ distilled H₂O, can be stored and reused for many months (almost indefinitely)
- Due to being acid based- it helps repassify SS, especially after a caustic (alkali) cleaning
- Designed to foam to reach hard-to-get crevices
- Safe for septic systems

- Can damage copper and aluminum if left to soak any longer than 3-4 hours
- A little more expensive than iodophor
- Makes stoppers used in glass carboys slippery and requires drying to make them stay put

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Sanitizers

Sanitizer & notes

Pros

Cons

Sani-Clean

An acid sanitizer, much like Star San, but low-foaming. (same manufacturer)

- No rinse
- Low foam for applications foam would be a hindrance (eg. CIP applications)
- Acid base will help re-passivate stainless
- Also a highly effective flavor and odor remover

- Requires 2-3 minute contact time vs 30-60 seconds
- Need to use twice as much as Star-San (2oz per 5 gal)
- Less surfactant than Star San, so a longer/repeated application is necessary

One-Step

One-Step is not marketed as a sanitizer, the manufacturer has not applied with the FDA for that designation, but subtly lays claim that it is, therefore I have put it here for comparison.

This is basically just a percarbonate cleaner (like generic oxi-clean), and it does produce hydrogen peroxide which will sanitize. It requires a 5-15 minute contact time and though stated as no-rinse, it can leave a soda ash residue. Some folks have used it with success, but isn't really advised for proper sanitizing.

None compared to other sanitizers

- Does not meet the FDA sanitizer requirements (a 99.9999% kill within 30 sec contact time)
- Long contact time
- Recommend rinsing
- Slow-dissolving
- More expensive per use
- Poor storage when mixed

Isopropyl Alcohol (70%)

- Readily available
- Effective
- Cheap
- Useful in a spray bottle for sanitizing small parts or work surfaces

- Toxic when wet
- Must be dried if coming into contact with wort/beer/yeast/etc

Ethyl Alcohol (ethanol)- 70% (Everclear)

Many people also use a cheap, high-proof vodka, such as 50% (100 proof)

- Extremely effective
- No-rinse
- Useful in a spray bottle for sanitizing small parts or work surfaces

- More costly than other options

Sanitizing Tips & Tricks

Keep a spray bottle of Star San solution on hand for easy sanitizing of things such as funnels, lids and other pieces of equipment. This will also work with ethanol. Only reason I didn't recco iodophor is the poor storage, but it's good if fresh.

Rinsing tip (courtesy of Jim Files): when using sanitizers that require rinsing, use a can of 'sanitized water', meaning a can or bottle of cheap domestic beer. Pour this into your fermenter, swirl around and dump. Repeat if necessary.

Compiled by Dave Blank, Bay Area Mashers, 2010.

Note: In no way is this to be a complete list of everything available. This is an overview of the most common ones available to the average homebrewer. While heavily researched, there may still be some errors or omissions. Feel free to contact me with any updates.