

SANITATION

Official NORTHERN BREWER Instructional Document

Most flaws in home made beer or wine can be traced back to improper sanitation. There are a wide range of bacteria and wild yeast that can cause off-flavors in fermentations. It is a big disappointment to discover that your work, time, and money have been wasted producing a bad batch just because you did not spend the few extra minutes and cents that it takes to sanitize properly. Proper sanitation will reduce the micro-organism exposure of your beer or wine to a point where it will not be spoiled.

SANITATION VS. CLEANING

A surface cannot be sanitized until it is clean. If something does not look or smell clean, it probably is not clean. Cleaning chemicals are very powerful, often alkaline, chemicals which effectively remove organic deposits. These cleaners need to be thoroughly rinsed after use (unless noted otherwise). Examples of these chemicals include B-Brite and Powdered Brewery Wash (PBW).

CONTACT TIME

All sanitizing solutions (One Step, Star San, etc.) need to be fully immersed with a surface for a certain amount of time to effectively reduce the number of microorganisms on that surface. Times vary so read the instructions on the sanitizer's packaging before use.

RINSING

All unboiled water is a potential source of contamination in fermentations. Rinsing can cause infection so it is important to use cleaning chemicals designated "No Rinse" or "Final Rinse" - examples include Star San and One Step. These are very effective against bacteria, but harmless to beer, wine and people when used as directed.

WHAT NEEDS TO BE SANITIZED?

Everything that comes into contact with wort, beer, must or wine should be sanitized. This includes fermenters, tubing, spoons, rubber stoppers, fermentation locks and bottles.

THERE IS ONE EXCEPTION TO THIS RULE:

it is not necessary to sanitize prior to boiling beer wort. Part of the purpose of boiling is to ensure the sanitation of the wort. Kettles, spoons, etc. will not need a separate sanitation step.

USING STAR SAN

All of Northern Brewer's starter kits come with Star San sanitizer. We choose to include Star San with our starter kits because it is inexpensive, environmentally friendly, non-toxic, and the most effective sanitizer on the market. It does not require rinsing.

- Find a clean container large enough to hold all the items you are going to be sanitizing. Larger items, like fermenters and carboys, can have the sanitizing solution prepared inside them.
- Mix a solution of Star San by adding one oz (2 tablespoons, or 1/8 cup) in 5 gallons of warm water, or 1/2 oz (1 tablespoon) in 2.5 gallons of water if a smaller amount is desired. Stir to mix.
- Ensure that all surfaces get at least one minute of contact time. Remove the items from the sanitizing solution as you need them. If any items or your hands touch an unsanitary surface, they should be re-sanitized.
- Star-San solution will lose its ability to sanitize as it ages. Make a fresh solution if it has been more than a couple days since your solution was made.

SIPHONING

Siphoning is an important skill for any home-brewer or winemaker to master. Siphoning allows you to transfer beer or wine from one container to another without disturbing the sediment, and with minimal oxidation. Northern brewer starter kits contain the Auto-Siphon, which is the easiest and most sanitary way to start a siphon.

To siphon, place the container you are siphoning from at a higher level than the receiving container. Connect the 5 foot length of 5/16" I.D. tubing to the Auto-Siphon. One stroke of the racking cane will normally be sufficient to pull beer or wine all the way to the highest point in the siphon assembly. Once the column of liquid gets past this highest point, gravity will do the rest of the work. All the beer or wine in the top container will drain into the receiving container.

The black plastic tip at the bottom of the Auto-Siphon prevents the siphon from sucking sediment off of the bottom of the carboy. With this tip in place, you can lower the Auto-Siphon almost to the very bottom of the fermenter; just don't submerge the tip in sediment.

To minimize waste, tip the top container slightly by wedging a small object about the size of a hockey puck underneath one end. With the top container tipped slightly, you can siphon out of the low corner, and get nearly every ounce out of the fermenter without transferring sediment.

Beer or wine that has recently fermented can form bubbles while siphoning. These bubbles of CO₂ can gather into one large bubble, and this can cause the siphon to fail. If you see bubbles forming where the tubing meets the rigid plastic tube, pinch the flexible tubing where you see the bubbles, and they will be forced down stream.

As with everything else that touches your beer or wine, make sure the siphoning equipment is sanitized.

USING A HYDROMETER

The hydrometer is an instrument designed to measure the density of liquids. Because the density of wort or must is closely related to its sugar content, and because its sugar content is closely related to its eventual alcoholic content, the hydrometer can be used to determine the potential strength of a beer or wine.

SPECIFIC GRAVITY

Specific gravity is defined as density relative to the density of water. To test, insert the hydrometer into a test jar full of water (The tube the hydrometer comes in can be used as a test jar). The stem of the hydrometer will protrude above the surface of the water right at the mark that shows a Specific Gravity of 1.000.

The original gravity is the amount of fermentable sugar present. This reading is taken before the yeast is pitched and fermentation begins. Original gravities vary widely. Generally, the higher the original gravity, the stronger the final product.

ORIGINAL GRAVITIES FOR BEER:

Stronger Beers 1.123 <-----> 1.030 Weaker Beers

ORIGINAL GRAVITIES FOR WINE:

1.100 <-----> 1.080

During fermentation the gravity steadily drops as sugar is converted into alcohol and carbon dioxide. After one week of fermentation, you should take a hydrometer reading daily until you get two consecutive, identical readings. With primary fermentation completed your beer or wine has reached its final gravity and you are ready to bottle or move it into your secondary fermenter. Final gravity is the measurement at the end of fermentation, when the yeast has consumed all of the sugar it can. Again the final gravities vary depending on the style of beer or wine you are making.

FINAL GRAVITIES FOR BEER:

Sweeter Beers 1.020 <-----> 1.005 Drier Beers

FINAL GRAVITIES FOR DRY WINE:

1.000 <-----> 0.990

FINAL GRAVITIES FOR SWEETER OR OFF-DRY WINE:

1.010+

A hydrometer can also be used to estimate the alcohol content. To do this, take a reading before the fermentation begins, and another after it ends. For this reading, you should use the "potential alcohol" scale. Subtract the original reading from the final reading.

The easiest way to get a sample for testing is to use a thief. Immerse the sanitized thief into the beer or wine, and put your thumb over the hole at the very top of the thief. Withdraw the thief, and position it over your sample jar. Lift your thumb, and the thief will empty itself into the jar. Repeat until you have collected an adequate sample.

ACCURATE MEASUREMENTS

- Hydrometers are only accurate at a specific temperature, usually 60° F. Unless the sample is very hot or very cold, you will only need to adjust the reading by 1 or 2 points.
- When taking a reading, make sure the hydrometer is not touching the side of the sample jar. The contact with the jar can cause the hydrometer to get "stuck", causing an inaccurate reading.
- Gas bubbles can cling to a hydrometer can distort the reading. Spin the hydrometer to dislodge the bubbles, and take a reading before they form on the hydrometer again. Or, you can de-carbonate the beer by pouring it back and forth between two glasses.