



Filter Selection Guide

Protecting the Quality of Beer – Filters that Remove Spoilage Organisms

The beer brewing process with its ancient techniques and today's modern technology continually faces the challenge of eliminating bacteria and yeasts that cause quality issues. Whether you are a commercial or micro-brewery, normal flow filtration will aid in protecting the uniqueness of each beer with filters that stabilize and clarify the product after fermentation and before filling.

Critical Process Filtration's high-quality filters remove organisms that enter the brewing process through equipment, ingredients and the environment in order to protect beer flavor, quality and shelf life.

Our technical services team will help you choose the precise filter for your application and brew requirements. Other services include testing and analysis, and validation of our filter performance with your liquids.

We make filters and deliver competitively priced solutions that assure you of the most efficient filtration results.

Beer Trap

Tank Vent

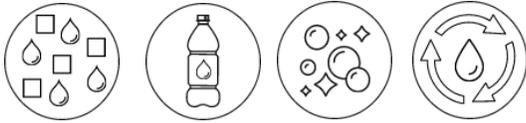
Process Gas

Clarification

Stabilization

Water





Filtration of Amelioration & Process Water

As with every consumable beverage, water is a critical ingredient of the final product and vital element used in equipment cleaning. Filtration will remove particulate, bacteria, chlorine and other contaminants that affect the pH of ingredient water and flavor of the beer. CPF filters can also be used prior to steam generation, as well as to sterilize the water used in keg washing and canning/bottling.

For more information on CPF products for water filtration, refer to the [Application Summary: Water Filtration in Food & Beverage Processing](#).

Beer Trap Filters

After beer has been fermented, various combinations of filtration techniques are incorporated to remove the lees left in the bottom of the fermentation tank. One such technique, diatomaceous earth (DE), a powder additive, leaves residue behind that could create off flavors, colors and aromas. Retention of the residue is the role of the beer trap filter before reaching the bright beer tank.

Critical Process Filtration depth media filters made from polypropylene or fiberglass media vary in the degree of holding capacity and particle load being filtered. They are made from pleated flat sheets of media which provide a large surface area for contaminant retention.

[FPD filters](#) for particle removal (Polypropylene)

[FGD filters](#) for high contaminant holding (Fiberglass)

The size and number of particles in the beer determines what filter pore sizes to use and how many filters will be needed. The trap filter may be used to remove a large number of particles with sizes over 5 microns. This is often the size of DE particles and organic content that remains after DE filtration. Though individual particles smaller than about 20 microns are not visible to most people, a large number creates turbidity and haze. Using a 5-micron rated filter for trap filtration reduces the

number of particles and creates visibly clearer beer – bright beer.

Clarification Filters

The clarification filter can serve solely as a particle filter or can remove both small particles and microorganisms such as yeast and bacteria. The goal will determine the type of filter.

Either way, the clarification filter should be chosen with the aim of extending the life of the final stabilization filter – the more expensive filter. Doing so reduces your costs by reducing the number of final filters and minimizing changeouts that open your system to further contamination.

Most facilities use filters that remove particles and large organisms, like yeast, to begin the biological stabilization process. If the master brewer chooses to use this filter only to remove particles and reduce haze, then a 3- or 5-micron pore size rating is sufficient. If the clarification filter should also begin the biological stabilization of the beer, then a 1 micron or 2 micron rated filter will remove yeasts and some larger bacteria that may have entered the process. Clarification is more than just reducing haze or making the beer visually clear. The particles removed range from small particles that may remain after bulk and even trap filtration, to yeast and other microorganisms.

Critical Process Filtration depth media filters and membrane filters are chosen based on the requirements of your clarification filters.

Removal of particles and organisms:

[VPS Filters](#) reduce bacteria, remove yeast and its integrated prefilter retains high levels of particulate (PES)

Removal of particles only:

[FPD filters](#) for particle removal (Polypropylene)

[FGD filters](#) for high contaminant holding (Fiberglass)

[FHLP filters](#) for high particle loads and high throughput (Polypropylene)

[FCWPS filters](#) high capacity membrane (PES)

Clarification can be a single or multi-stage filtration process depending on the beer's level of particulate or microorganisms. Using multiple filtration steps often makes removing large quantities of particles more efficient and may avoid premature clogging of filters before batches are completed. Another alternative is utilizing a filter with an integrated prefilter.

Stabilization Filters

The most critical filter in this process is the final Stabilization filter. These filters remove the bacteria and yeasts that cause spoilage and reduce shelf life after bottling/canning.

The most commonly used filter for beer stabilization is a Polyethersulfone (PES) membrane with either a 0.45 or 0.65-micron pore size. Brewers may choose the smaller pore size to assure capture of all bacteria, including the vegetative forms of some species that may survive in the beer. However, there is a risk that some flavor or color elements of the brew will also be captured. CPF recommends testing filters to assure that target organisms are retained while also preserving beer flavor and color.

[FPS Filters](#) reduce bacteria and remove yeast (PES)

[VPS Filters](#) reduce bacteria, remove yeast and its integrated prefilter retains high levels of particulate (PES)

Process Gas Filtration

Process Gas filters are also critical to the quality of the beer. These hydrophobic membrane filters sterilize the gases used for multiple purposes in the brewing process. They also capture particles that might be carried by the gas from entering tanks as they are emptied, and from being deposited in bottles/cans as they are filled.

Tank Vent Filtration

Protecting the contents of fermentation and bright beer tanks is done by preventing any atmospheric contamination that can enter the tank by installing a hydrophobic filter.

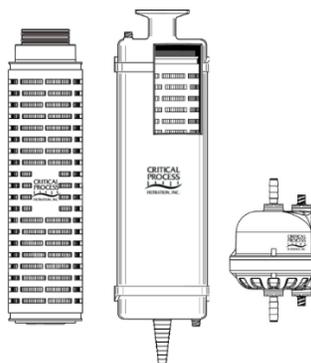
Tank Vent & Gas Filters (hydrophobic):

[PTR Filters](#) – for sterilizing gas and non-aqueous liquids (PTFE)

[BTM Filters](#) – for bacteria reduction of gas and non-aqueous liquids (PTFE)

Filter Devices

Critical Process Filtration's beer brewing filters are available in a variety of devices - Cartridge, Capsule and Mini-capsules. Refer to data sheet for details.



For more information or to connect with an Application Engineer, contact us today at (603) 880-4420 or [send us your request.](#)



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