

Beer Trap & Clarifying Filters – Safeguard Beer Quality

Beer Trap & Clarifying Filters

After beer has been fermented and aged, it is bulk filtered to begin clarification and stabilization. Taking out unwanted particles and microorganisms reduces the amount of material that could create off flavors, colors and aromas.

Figure 1 below shows the filtration steps between aging and bottling. The housings marked 1 and 3 are those performing the critical trap and clarification functions.

Beer trap filtration is necessary to remove particles released during the bulk filtration step. Bulk filtration is usually done using a diatomaceous earth (DE) filter. DE filters are known to release particles that can affect beer quality. The beer trap filter (housing 1) removes these particles to protect the beer quality as it enters the final clarification and stabilization process and is bottled. This step is almost always performed using depth filters rated at 3 to 5 microns.

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 that might adversely affect flavor, color and aroma.

Housing 3 in the figure is the location for clarifying filtration. The figure shows a single filtration step, though some bottlers may choose to use a 2-stage filtration process if their beer has high levels of particles 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. Depth media is preferred in most facilities for clarification filtration. Filters with a pore size rating of 1 to 3 microns may be used in this step, depending on the nature and quantity of particles and microorganisms to be removed.

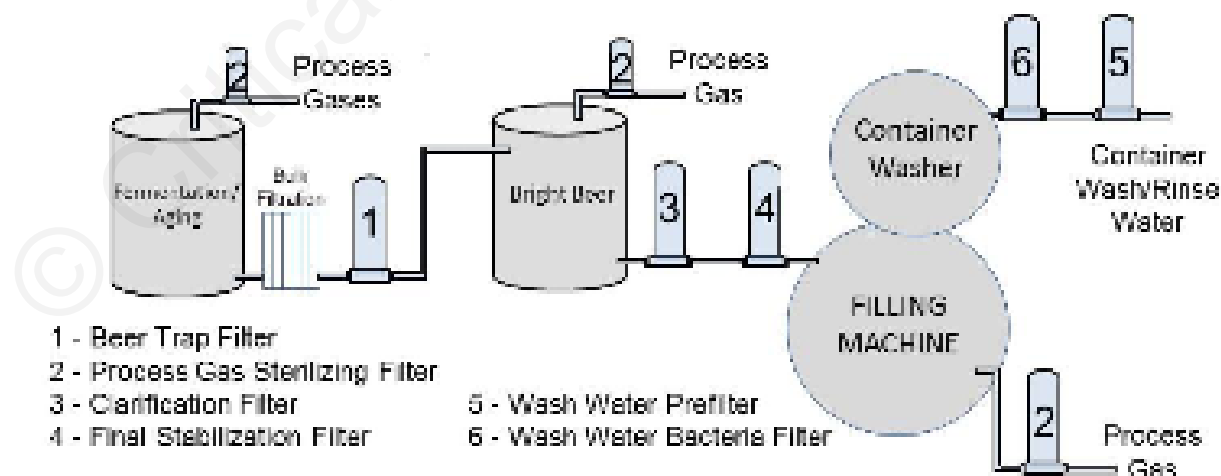


Figure 1: Filters for Beer Clarification and Stabilization

Choosing Filters for Trap Filtration and Clarification

Depth filters are made with media that is melt-blown or spun into continuous polymer fibers. Those fibers are then formed into either a thick tube or a flat sheet. The most common materials for depth media are polypropylene and fiberglass.

Standard depth filters are made by forming the fibers into tubes with thick walls using the melt-blown process. These types of filters capture particles through the depth of the media. Examples of standard depth filters are shown in Figure 2. The trap filter (housing 1 in Figure 1) may hold a standard depth filter. Polypropylene is the most common material for standard depth filters, though other more materials may be used for specialty applications.

Melt-blown media is more efficient than other types of depth filters, like yarn-wound filters. As the name suggests, yarn-wound filters are made by winding yarn around a core. The yarn can shift and create channels for liquid to flow through without being filtered. Melt-blown filters are continuously bonded fibers in self-supporting tubes that do not require a core. They are generally more efficient and easier to dispose of once used.

Figure 3 shows filters made using flat sheet media made using polypropylene or fiberglass. The flat sheet media is pleated to create more surface area. With the increased surface area, the filters are capable of capturing and holding a larger quantity of particles. This increased capacity makes using pleated flat sheet depth filters for clarifying filtration (housing 3 in Figure 1) a preference for many facilities. Facilities also use the pleated media filters for trap filtration because they can hold more particles and will last longer in production.

Choosing Filter Pore Sizes

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 many 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.

The clarification filter can serve as a particle filter or can act to remove both small particles and microorganisms. 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.

Filter Options

The table below shows the filter media options for trap and clarifying filtration from Critical Process Filtration. All are also available in capsules for laboratory scale filtration and product research.



Figure 2: Critical Process Filtration Standard Depth Filters



Figure 3: Critical Process Filtration's Pleated Depth Filters are Available in a Wide Variety of Configurations to Fit Existing Housings

Critical Process Filtration has several filter options, as shown in the table below. These filters are available as cartridge filters and disposable capsule filters as well as in flat disc form for laboratory scale testing.

Filter Options for Beer Trap Filtration and Clarification

Process Area	Filter Application	Filtration Function	Media **
Trap and Clarification Filtration	Sediment & Particle Reduction	Reduce particulate and microorganism load to clarify and begin to stabilize wine before packaging	MB, NS, PD, GD

**Media Codes

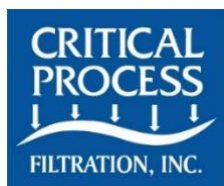
GD = Pleated Fiberglass Depth Media

MB = Melt Blown Polypropylene Depth Media

NS = Nano-pun Polypropylene Depth Media

PD = Pleated Polypropylene Depth Media

Visit our [website](#) or [contact us](#) for more application information and to access data sheets on all of our products.



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