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WINES & VINES

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Buying Membrane Cartridge Filters

Membrane filters permit a sterile filtration to be carried out just prior to bottling. Apart from choosing the pore size of the filter to meet winemaking needs, most buying decisions are based on factors related to the maintaining of sterile conditions, the rate of flow, and the total amount of wine that can be put through the cartridge before it is replaced.

The two elements of the membrane filtration system are the filter cartridge and the housing in which it is contained, with most manufacturers making both. Housings may be made of several different materials. Stainless steel is most frequently recommended, with both #316 or #304 being available. Plastic is the least expensive, but cannot withstand heat sanitization requirements. “O” rings are considered to be a preferable way of sealing the cartridge in the housing. Sanitation is important, and all fluid contact points should be highly polished. The easier-to-clean gasket and clamp connections are preferable to threaded connections. The housing materials must also be compatible with the method of sterilization chosen.

Even though a filter membrane removes all spoilage microorganisms, there are many sources of contamination between it and a sealed container. Equal attention must be paid to sanitizing the filler, containers, closures and closure equipment. Personal hygiene is also important.

Just as the filtration system must be sterilized before it is used, it must be possible to test the system periodically to make certain it is working correctly and that there are no leaks. This process is called integrity testing. It is recommended that integrity testing be performed prior to each bottling to ensure that the filter (and system) are functioning with the correct retention rating.

Cartridges come in lengths of 10, 20, 30 and 40 inches. Each manufacturer uses a different membrane polymer. Some of the polymers are inert, some have a positive or negative charge; some are more fragile than others, some are reinforced. One of the biggest differences is that some polymers have more holes per square centimeter than others. All manufacturers sell filters in different pore sizes that are in common use. Filters rated at 0.65 microns will stop yeast. For bacteria, a 0.45 micron pore size is required.

Each cartridge length has its optimal rate of flow and is available in a different price range. Buying properly sized equipment is important, for it is estimated that half of the industry is guilty of the practice of speeding up the rate of flow by increasing the pressure through the filter. Increasing the rate of flow decreases the life of the filter, and a winery that increases the pressure may have to buy three to five times as many filters per year than those using the correct flow. A winery that envisions future expansion can save the cost of replacing one housing by initially buying a housing to accommodate a 20” or 30” cartridge and then using a 10” cartridge until the need arises for a longer cartridge.

Medium sized wineries can increase flow rates by placing a number of cartridges in a multiple element housing. When buying multiple cartridge housings, buyers should make sure that cartridges which are not secured into the manifold with a bayonet lock are supported by three retaining rods rather than one to avoid having the cartridges twist under high flow conditions.