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Tips on Buying Filters

In filtration science, the terms "absolute" and "nominal" are used to distinguish between the 100% removal of particles and the less than 100% removal of particles. It is common in winemaking to refer to absolute filters and depth filters. Membrane cartridge filters are in the category of absolute filters and remove 100% of the particles above a certain size. See also "Tips on Buying Membrane Cartridge Filters."

Depth filters are up to 99% effective and do an excellent job of clarifying wine. Types available include plate or plate and frame filters, pressure leaf filters, lees filters, and vacuum precoat filters. Serviceable filters, such as those using a 10-inch microfine cartridge, are available for the amateur winemaker and may be used by small commercial wineries producing 2,000, 3,000 or perhaps up to 4,000 gallons of wine.

The plate filter, or plate and frame filter, is the most economical and most versatile first unit for the small winery to consider buying and is used in very large wineries to make smaller batches of wine. "Plate" and "plate and frame" filters are often used interchangeably, and it may be helpful to think of these units in terms of their filtering media. The plates may support filter pads or sheets, or the plates may be placed in frames to permit diatomaceous earth (D.E.) filtering.

A small winery processing a few thousand gallons will find a 6-plate or 9-plate filter adequate, each plate being 40 x 40 cm in size. A larger winery processing between 10,000 and 20,000 gallons may want to consider a 20-plate or 30-plate unit. While more plates can be added, moving to 60 x 60 cm plates is recommended somewhere between 30 and 50 plates. If a new winery believes that its five-year growth will take it to between 10,000 and 20,000 gallons in size, money may be saved by initially buying at least a 20-plate unit.

When buying a 20-plate unit, purchase one with a double inlet and a double outlet manifold because it affords better distribution of the wine into the unit. A pressure gauge is important to help monitor filtration and should be purchased. Stainless steel housings are preferable to painted steel housings; stainless steel plates, however, are expensive, and it is often recommended that plates such as Noryl plates made of a food grade plastic be used instead.

Plate filters can be used as diatomaceous earth filters. To do this, it is necessary to have at least 10 plates with D.E. frames, and a winery planning ahead for future growth could consider an eventual 60 frames.

Two kinds of filters are made specifically for diatomaceous earth filtration: vacuum precoat filters and pressure leaf filters. The rotary drum vacuum filter is mainly used for the filtration of freshly pressed

grape juice, heavy tank bottoms resulting from juice clarification, fermented or unfermented lees, apple juice and apple juice sediments, enzyme treated fruit juice and vinegar lees.

A new disc version of vacuum filter is fairly economical and wineries with a production of 20-30,000 gallons may want to consider purchasing this unit. The drum vacuum filter, more expensive and definitely more bulky, is used by wineries with capacities of 250,000 gallons and over.

Pressure leaf filters are available in two formats, one with the filtering elements placed horizontally, and the other where they are vertically positioned. One advantage of the horizontal unit is that if filtration must be stopped for any reason, there is no chance of having the filtration cake fall down from the screen as is the case with the vertical unit. On the other hand, only one side of the screen can be used on the horizontal unit, as opposed to using both sides of the screen on the vertical unit. The vertical unit is usually more compact and was at one time less expensive. Today the filters with the horizontal screens are comparable in cost and have overtaken the vertical units in popularity. Other major buying considerations include the ease with which the unit may be operated and cleaned. The method of cake removal is also a consideration, with dry cake discharge being preferable to wet simply on the basis of waste disposal. Units are available in stainless steel or stainless steel alloys. Where bronze is used, there is the possible problem of the bronze oxidizing and turning green.

There are a number of factors involved in making a decision as to whether to convert a plate filter into a diatomaceous earth filter or buy a pressure leaf filter. There can be a substantial savings of time in the speed of operation and in cleaning and precoating by using a pressure leaf filter. The drawbacks of a pressure leaf filter for some users could be that it is more difficult to operate, that the minimum production lot size should be 250-300 gallons, and that the hose should not be moved from one small container to another during filtering.

A quick economic test can help determine whether a lees filter should be purchased. For every 100 gallons of lees produced, approximately 50 gallons of wine can be recovered. At \$3.00 a gallon, \$150 could be saved for each 100 gallons of lees. With the selling price of a small lees filter at about \$10,000, it would be necessary to save about \$2,000 a year before considering the purchase of a lees filter. This test would not apply if there were also a different application for the lees filter such as filtering juice to get clear juice before fermentation.

Filters are sometimes designed to do more than one job. A lees filter, for example, can be bought that can be used both as a lees filter and as a filter for finished wine by acquiring two types of plates and a special type of pump. The reverse is not true: a plate filter cannot be used as a lees filter because of the high pressures at which lees must be filtered.

Buying a filter for dual purposes is a controversial subject. There are those who believe that optimum results come from using equipment designed for a specific purpose. Others believe that combination units make sense in terms of economics. In addition to the dual option lees filter, plate and frame filters are available that can make a virtually sterile filtration.

If there is any one piece of advice consistently given by those who make and sell filtration equipment, it is to emphasize the willingness of those who serve the industry to work with winemakers whenever they need help. Almost without exception, the suppliers of filter equipment and media would prefer to work with new customers right from the start and thus minimize the number of problems.