

FILTER GRADE SELECTION BY MEASURING TURBIDITY

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Choosing a filter grade or porosity to start your filtration, and then picking the subsequent step-down grades can be challenging. One way to choose the proper grade is by taking meticulous notes during every filtration. This will help improve your instinct and anecdotal experience.



STEP-DOWN GRADES

With time and experience you might be drawn to certain grades, for example, a K700 micron to a K200 to an EK. Another popular step-down is a K800 to a K250 to a KS50. If you choose to have more than three passes, a K900 to a K300 to a K100 and then the EK is also a well-known path. Whenever possible, avoid skipping more than three grades per pass. For example, going from a K900 to a K200, or a K700 to a K100, is too big of a jump and throughput on the tighter grade will be less than optimal.

It's important to keep in mind that using your trusted sequence every time might not be the right fit for every product, or even the same product over different vintages or batches.

OTHER TIPS

- A good pre-clarification program that is not limited to multiple rackings, using a smart fining program (which doesn't have to change your product, only clarify it) or just plain old time and gravity, can all help to minimize passes through filter media.
- The more scientific approach in choosing porosity is to measure the turbidity of the product to get an idea what the percentage of suspended solids are, and then use the guide below to choose the proper grade. Starting too tight may strip your product of color, mouthfeel and flavor. In addition, throughput would be less than stellar. Starting too coarse could result in very little change in turbidity, and wasteful passes in filtration when fewer could've gotten the job done.
- Although turbidity is a good indicator of clarity, it doesn't provide much information about the types of colloids you are dealing with. It is also not the silver bullet to guaranteeing that you will plug the filter grade you chose.

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- Colloids make up most of the things we love like color, flavor, mouthfeel and weight. But there are also specific colloids like beta-glucans that are produced by *Botrytis* that can wreak havoc on even the coarsest filter media. They require a quality beta-glucanase enzyme, such as **Lallzyme MMX**, to keep them from ruining your bottling day (it's important to note that the contact time for this specific problem colloid with the MMX is 6 weeks).

Another colloid that can be quite detrimental to filter media is pectin. A good pectinase early in the production process, and/or after fermentation can improve throughput dramatically.

- Turbidity analysis can be measured at a lab or with your own nephelometer, which is available in handheld and bigger benchtop models.

Please contact Scott Laboratories for assistance with choosing the right fining agent or enzyme for your product. We strongly recommend bench trials and taking notes for every filtration.

Note: Some producers, like breweries, who just want a bit of a polish and don't plan to go through a sterile filtration by means of an absolute cartridge filter, do a single pass through a medium grade porosity before going to their packaging. Usually these producers have an effective fining program in place so that they are able to filter less, and at the same time, have minimal stripping of color, flavor and mouthfeel. The other bonus is that they will have an increased consistency in clarity over the course of the filtration.

Grade	Turbidity	Scott	Seitz	Particle Holding size	Biology
Coarse	<100 NTU	SE 9.0	K900	9 - 20 µm	yeast
Coarse	<80 NTU	SF 8.0	K800	8 - 18 µm	yeast
Medium	<60 NTU	SG 7.0	K700	6 - 15 µm	yeast
Medium	12 - 35 NTU	SM 3.0	K300	4 - 9 µm	yeast
Medium	10 - 20 NTU	SR 2.5	K250	3 - 8 µm	yeast
Fine	1 - 10 NTU	SX 2.0	K200	2 - 6 µm	yeast
Fine	1 - 2 NTU	SY 1.0	K100	1.2 - 3.5 µm	yeast
Fine	1 - 1.5 NTU	ST 0.8	KS80	0.7 - 1.5 µm	yeast
Sterilizing	1 NTU	ST 0.5	KS50	0.5 - 0.8 µm	yeast
Sterilizing	<1 NTU	ST 0.45	EK	0.4 - 0.6 µm	yeast
Sterilizing	<1 absolute	ScottCart	Membracart	0.45 µm	yeast/bacteria

Note: *This chart is a guide only. Wine chemistry can affect filtration despite turbidity results. Colloids and other charged species will not contribute to turbidity but can block filters.*