

What Grade of Filter Media Should I Start With?

Having trouble figuring out which grade of filter media to start filtration with when filtering wine? This article covers the grade selection of lenticular modules and filter sheets based on initial wine turbidity and discusses other important considerations.

Choosing the right filter grade media to start your initial filtration can sometimes be a head scratcher. Start out too coarse and you're not really getting the benefit of an effective reduction in suspended solids and you must subsequently step-down filtration through more grades than necessary. Start too tight and you may strip your product and get a less than stellar flow rate and throughput.

TURBIDITY VS. FILTERABILITY

Turbidity quantifies how easy it is for light to pass through a wine sample and is a measure of how “cloudy” it is. Many components can contribute to the turbidity of a liquid such as yeast, bacteria and amorphous or crystalline material that is a result of fermentation or additives such as bentonite or other fining agents.

It is understandable how turbidity and filterability are often talked about together when it comes to selecting filter grades though unfortunately, they have little to do with each other. Many colloids are too small to contribute to filterability readings (NTU values) but do impact filtration and can clog media. These problem colloids include polysaccharides, proteins, mannoproteins, pectin, hemicellulose, etc... They tend to bind to other charged particles and molecules over time, which in turn forms web-like clusters that can prematurely clog the surface of a filter media – even in an apparently bottle-ready, brightly filtered beverage. Filtration often gets blamed unfairly for stripping the product in such cases.

PRE-FILTRATION STEPS FOR SUCCESS

Beyond a filterability test, it is tough to tell how significantly these colloidal webs will impact filtration; therefore, it is important to consider some preparation before beginning. These colloidal webs will often break up over time with help from gravity, but it can be accelerated and ensured with the addition of a filterability enzyme or fining agent during finishing. Although, they can be used throughout the winemaking process with a positive impact on filterability.

The more clarified and filterable your product is before filtration, the more efficient your filtration practice will be with fewer passes. Ultimately, the goal is to remove the solids and colloids that are masking the true color, flavor, and mouthfeel of your product, without stripping any of those desirable components.

TURBIDITY AND FILTER MEDIA GRADE

Even though turbidity does not bear strong correlation to filterability, it can help give a decent approximation of appropriate filter media grade when wine has been treated properly for potential colloidal instabilities.

The following turbidity chart is a useful way to gauge what would be a ballpark grade to start with and what the largest step-down grade is to filter through next. Turbidity is measured in NTU (nephelometric turbidity units), and a [nephelometer or turbidity meter](#) is needed to measure it.

Keep in mind there are too many variables that can influence what the turbidity reduction would be after going through a particular grade. The easiest way to know is to measure turbidity after each pass to gauge whether that filtration was effective (no bypass etc.) and what subsequent step-down grade to filter through next.

SEITZ GRADE	TURBIDITY	GRADE	AVERAGE PARTICLE HOLDING SIZE	RANGE OF PORE SIZE IN MATRIX	BIOLOGY	STEP DOWN TO LIMIT
PERMADURS	< 200 NTU	COARSE	15 µm	10-30 µm	Lees	K700
K900	< 100 NTU	COARSE	9-10 µm	8-20 µm	Yeast	K300
K800	< 80 NTU	COARSE	7-8 µm	7-17 µm	Yeast	K250/ZD 25
K700	< 60 NTU	MEDIUM	5-7 µm	6-15 µm	Yeast	K200
K300	12-35 NTU	MEDIUM	3-4 µm	4-12 µm	Yeast	KS80/ZD 08
K250 or ZD25	10-20 NTU	BRIGHT POLISH	2.5 µm	3-9 µm	Yeast	KS50
K200	1-15 NTU	BRIGHT POLISH	2 µm	3-6 µm	Yeast	EK/ZDEK
K150	1-10 NTU	FINE	1.5 µm	2.5-4 µm	Yeast	EK/ZDEK

K100 or ZD10	1-7 NTU	FINE	1 µm	1.2-3.5 µm	Yeast	EK1
KS80 or ZD08	1-5 NTU	MICROORGANISM REDUCING	0.8 µm	0.7-1.5 µm	Yeast	EK1
KS50	1-4 NTU	MICROORGANISM REDUCING	0.5 µm	0.5-0.8 µm	Yeast/bacteria	EKS/Membrane PES 0.45 µm
EK or ZDEK	1-3 NTU	MICROORGANISM REDUCING	0.45 µm	0.4-0.6 µm	Yeast/bacteria	EKS/Membrane PES 0.45 µm
EK1	< 1 NTU	MICROORGANISM REDUCING	0.35 µm	0.3-0.4 µm	Yeast/bacteria	Membrane PES 0.45 µm Water Membrane 0.2 µm
EKS	< 1 NTU	MICROORGANISM REDUCING	0.25 µm	0.2-0.3 µm	Yeast/bacteria	Membrane PES 0.45 µm Water Membrane 0.2 µm

**Please note that this chart is based on cellulose-based depth filter media like filter sheets and lenticular modules. Cartridge pre filters do not belong in the same category as their dirt holding capacity for the same surface area is significantly lower. We only recommend prefilter cartridges for batches of under 100 gallons when used as the main depth filter.*