KLEANSEP™ ceramic membranes

Case study: Filtration of wine and lees

Crossflow ceramic microfiltration membranes

Alsys manufactures ceramic membranes, also called inorganic membranes, which are used for wine clarification and lees filtration. Kleansep™ microfiltration membranes have a pore size of ~ 0.2 µm which contributes to **the quality** of the clarified wine or filtered lees. The filtration **flow** rate is very high (can exceed 100 l/m²/h) with a very **long lifetime** (> 5-10 years).

- **Wine clarification**: Prior to bottling, it is necessary to remove turbidity and bacteria from the wine. Crossflow microfiltration typically results in finished product with turbidity of < 1 - 2 NTU and contributes to microbiological stability.
- **Grape must lees filtration**: After the separation of the lees from the grape must, juice remains trapped in the lees. The filtration of the lees can recover a considerable amount of high-quality juice.

ORELIS ceramic membranes for wine production

KLEANSEP™ Membrane

Feed channel diameter (mm)	Membrane area (m^2)	Length (mm)	External diameter (mm)	Number of channels	Code		Winemaking applications
6	0,16	1178	25	7	BX		Grape must lees filtration
3,5	0,25	1178	25	19	BW		Grape must lees filtration + Wine Clarification
2	0,45	1178	25	61	BS		Wine Clarification
Innovation: ***stronger membrane (wider channel) and more compact (flow rate / membrane)***							
2,2	0,5	1178	25	55	BC		Wine Clarification

What makes KLEANSEP™ membrane unique ?

- → A pore size (~ 0.2 µm) that contributes to improved **organoleptic and visual properties of the wines** (or quality of the filtered lees), with high filtration rates and minimal pore plugging
- → **Higher filtration rates (lmh)** achieved through use of superior ceramic materials and manufacturing methods
  - → +25% vs. competing ceramic membranes
  - → +200% vs. competing polymeric membranes
- → **A very long lifetime (> 5-10 years)** was proven in many reference plants, including wineries, distilleries, industrial fermentation operations, and the starch industry
  - → +200% Vs. polymeric membranes

BENEFITS / PERFORMANCE

« A membrane with a pore size that contributes to the quality of the wine »

« A membrane with a very high flow rate to save filtration time and reduce operating costs »

« A membrane with a very long lifetime to reduce the economic and environmental impact of filter replacement »

Contacts :
Europe: +33 (0)4 66 85 95 36
North America: +1 857 504 2250
Asia: +86 (0)21 6350 3377

orelis@alsys-group.com
www.alsys-group.com

This document (not contractual) and its content is the property of Orelis Environnement SAS. All rights reserved. - EN0010 - KLEANSEP MEMBRANES - Case study Filtration of wines and lees - V21/10/21

Membrane performance

The ceramic membranes are assembled in a stainless-steel housing (module) which is installed in a complete filtration system.

The MFT filters can be used in applications such as red or white or rosé wine clarification, grape must lees filtration. The systems are designed for each winery's needs: continuous operation, seasonal operation, automated filtration and cleaning…

Membrane area (m²) and flow rate (hl/h) per K99 module according to the type of membranes and applications

Number of membranes / module	Module Code	BX 7 channels	BW 19 channels	BS 61 channels	BC 55 channels
					INNOVATION
99	**K99**	15,84 m²	24,75 m²	**44,55 m²**	49,5 m²
Grape must lees filtration 30 l/m²/h		480 l/h			
Dual-purpose :					
Grape must lees filtration 30 l/m²/h			750 l/h		
Wine clarification 60 l/m²/h			1500 l/h		
100 l/m²/h			2500 l/h		
Wine clarification :					
Thermovinification red wine **30 l/m²/h**				**1350 l/h**	1500 l/h
Red wine **60 l/m²/h**				**2700 l/h**	3000 l/h
White / Rosé wine **100 l/m²/h**				**4500 l/h**	5000 l/h

Alsys know-how in membranes and filtration

- **Design and production of ceramic membranes:** Kleansep membranes are produced at Alsys' factory in Alès, Gard, France. Alsys' annual membrane surface capacity production > 100 000 m². The Alsys team of engineers, technicians and workers focus and specialize in development and manufacture of porous ceramics. The operations are ISO 9001 certified.
- **Feasibility and filtration studies:** Alsys offers a team of experts including a fleet of pilot systems and a laboratory for in-house testing. Alsys products are used at key technical centers in the wine industry.
- **References in the wine industry and starch industry:**
  - Leading international suppliers of crossflow membrane filtration systems
  - Membrane installations for water recycling and valorization of high added value co-products from the wine industry (anthocyanin concentration, polyphenol ...) by UltraFiltration UF, NanoFiltration NF, Reverse Osmosis RO, ...
  - Concentration of aromas by pervaporation
- **Design and equipment development:** a range of modules and crossflow filtration systems

Contacts :
Europe: +33 (0)4 66 85 95 36
North America: +1 857 504 2250
Asia: +86 (0)21 6350 3377

ORELIS environnement
ALSYS Group

orelis@alsys-group.com
www.alsys-group.com

ALSYS

This document (not contractual) and its content is the property of Orelis Environnement SAS. All rights reserved. - EN0010 - KLEANSEP MEMBRANES - Case study Filtration of wines and lees - V21/10/21