

VarioSan

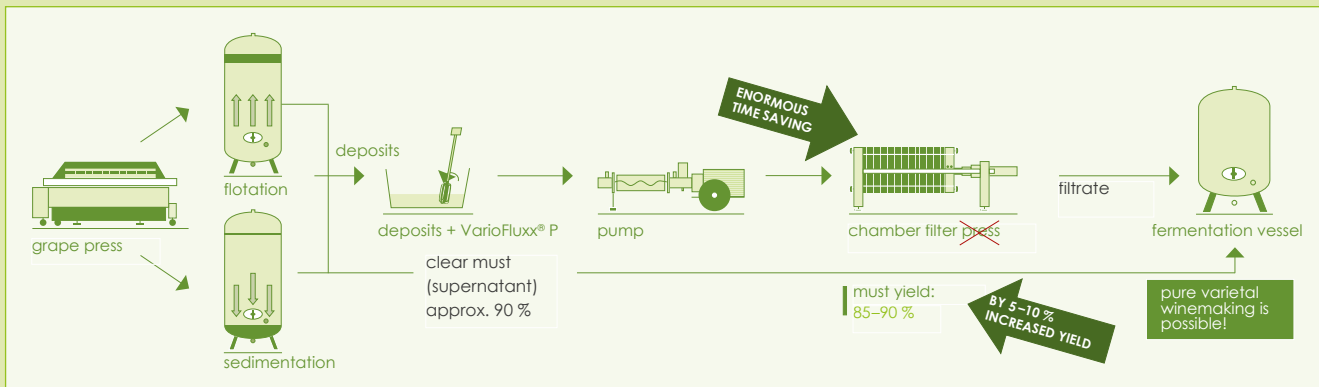


VarioFluxx® P +
eSan-Filtertuch® (filter cloth)=
VarioSan process

VarioSan process

The processing and treatment of must deposits/lees during grape harvest is an important but often extremely time-consuming working step. During one single day, large amounts of deposits are produced whose processing is often difficult. By the VarioSan process, must deposits are processed very quickly and in high quality. Special characteristic values are used to establish and apply the process by the user in form of a working method which can be clearly planned with clearly computable quantities. The process and the

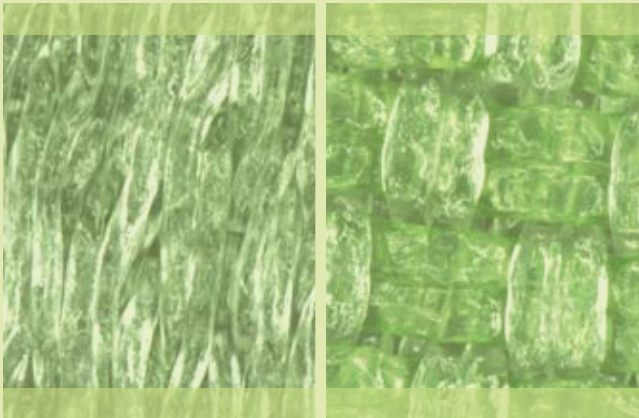
parameters were developed in cooperation between the DLR (Dienstleistungszentrum Ländlicher Raum/State Education & Research Center of Viticulture and Horticulture and Rural Development) Rheinhessen-Nahe-Hunsrück, location Oppenheim and the ERBSLÖH Geisenheim AG. Besides the processing of must deposits/lees, the VarioSan process is also suitable for the filtration of the total must amount (must filtration) and for other special applications mentioned in the following.



Source: Bernhard Degünther, DLR Oppenheim

The components

eSan-Filtertuch® (filter cloth)



Upstream side eSan-Filtertuch® Downstream side eSan-Filtertuch®

- Monofil filter cloth fabric – open texture without tendency to clog
- Smooth cloth surface on the in-flow side – reduced adhesion and quicker filter cake discharge
- Woven cloth structure on the downstream side – enables to work without precoating
- Good cleaning properties of the filter cloth material, enormous saving of time and highly hygienic

VarioFlux® P



- Filter aid mixed product – composed from medium fine perlite and special cellulose fibre with defined fibre length and fibrillation degree
- High drainage effect – increases product yield and reduces working times
- Elastic filter cake – keeps the drainage effect also at high pressures (10 bar)
- Well structured filter cake – assures a high degree of clarification

application

Processing of must deposits from sedimentation or flotation

Stir the specified amount of the filter aid VarioFluxx® P into the must deposit. Mix well, it is important to obtain a homogeneous mixture. The deposits-filter aid mixture is pumped into the chamber filter press without pre-coating. After 5 minutes of circulation the filtrate is clear. In principle the pressure phase starts after 15 minutes. After 2 hours the filter cake is solid and can be removed.

Preclarification method	Must	Deposits/lees
Flotation	85–95 %	5–15 %
Sedimentation	80–93 %	7–20 %
Rounded off	90 %	10 %

Applied amounts of VarioFluxx® P

Minimum	Standard	Increased additions
1.3 kg/100 L deposits	1.6 kg/100 L deposits	2.0 kg/100 L deposits
Highly liquid deposits	Average value	Bentonite in deposits or with increased pectin content

Must deposits from sedimentation or flotation may differ very much in solid matter content dependent on the processing method (discharge technique, pressing technique, addition of fining agents) and the grape variety. Characteristic values listed in the table are average values and must be adapted to the respective vintage.

Processing capacity – a parameter easy to plan

Per chamber, at a filter cake thickness of 25 mm

Filter plate size	Contents (volume)	Flotation deposits (Processing of deposits)	Sedimentation deposits (Processing of deposits)	Total must amount (Must preclarification)
400 mm	3.0L	20L	35L	100L
470 mm	4.5L	30L	55L	150L
630 mm	8.0L	55L	95L	270L
800 mm	12.5L	80L	150L	420L

The parameters allow safe work scheduling with regard to the amount of deposits/lees to process. The contents (volume) of the filter chambers may vary significantly dependent on filter plate producer. To be able to work exactly in the individual case, the chamber volume of the chamber filter press must be determined and the characteristic values of the processing capacity must be calculated in proportion.

Calculation example

Harvested grapes:	10,000 L must
Sedimentation:	10 % deposits = 1,000 L deposits
Stir VarioFluxx® P into deposits:	1.6 kg/100 L deposits = 16 kg VarioFluxx® P
Chamber filter plates – size 470 mm:	4.5 L volume per filter chamber
Absorbency of sedimentation settlings per filter chamber size 470 mm:	55 L (including 1.6 kg/100 L VarioFluxx® P)
Required number of filter plates to process 1,000 L deposits:	18 filter plates
Grape must yield:	85 % = 850 L grape must
Fermentation vessel:	9,000 L supernatant from sedimentation + 850 L filtrate from chamber filter = 9,850 L total amount for fermentation

Must filtration

Producers who do not want to conduct flotation or sedimentation, have the possibility to filtrate the total must amount by means of the VarioSan process. Sharply clarified musts result with very low NTU-values, which is particularly favourable for a clean flavour fermentation. The must filtration is also a suitable preclarification measure which can be used for reverse osmosis plants.



High-quality musts often undergo sharp preclarification to obtain clean taste/clean flavour fermentation. With the VarioSan process turbidity values below 10 NTU can be realized.

The following prerequisites must be fulfilled for smooth, unproblematic must filtration:

1. sufficient pectin degradation by enzymation: Trenolin® Super DF 3-8 mL/100 L; contact time 2-8 hours; temperature > 15 °C. At low temperatures, enzyme additions must be significantly increased, or the cold-clarification enzyme Trenolin® Frio DF must be applied
2. sufficient dosage of VarioFluxx® P
3. uniform distribution of VarioFluxx® P in the must (stir thoroughly)

Applied amounts of VarioFluxx® P

Product	Recommended addition
Supernatant	200-400 g/100 L
Total must amount (stirred up)	600-800 g/100 L
Problematic vine varieties (Silvaner) and non-enzyme-treated must	800-1,000 g/100 L

Filter aid dosages depend on the vine variety and the solid matter content and must be varied and adapted accordingly. It is advisable to record values gathered from own experience in individually drawn up tables.

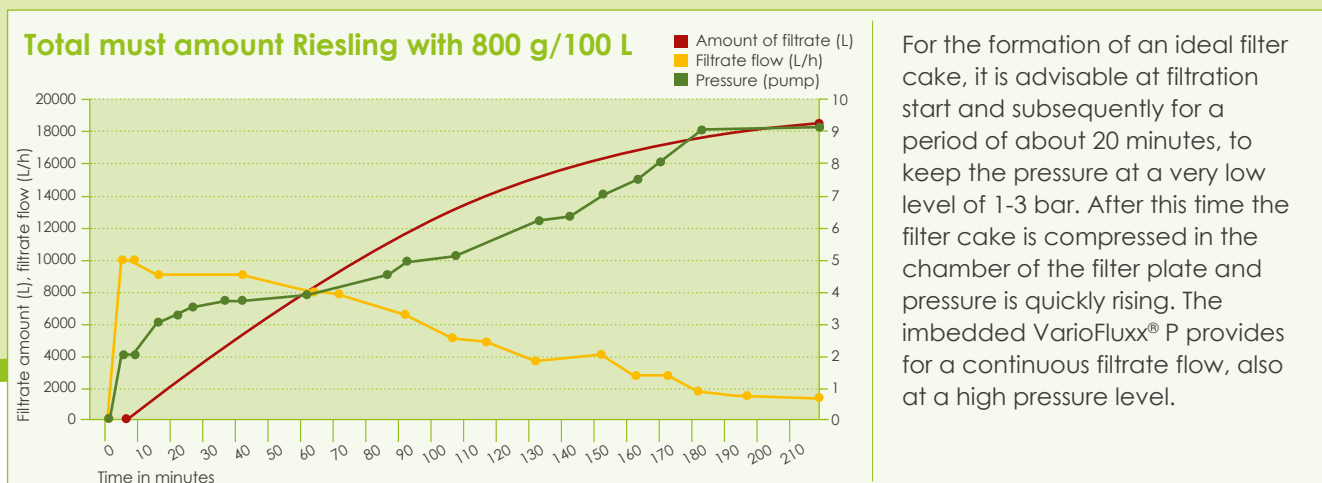
Processing capacity

Size	Content	Filter surface/ filter plate	200g/100L	400g/100L	600g/100L	800g/100L	1,000g/100L
400	3.0L	0.25m ²	300L	150L	100L	75L	60L
470	4.5L	0.35m ²	450L	225L	150L	110L	90L
630	8.0L	0.65m ²	800L	400L	270L	200L	160L
800	12.5L	1.0m ²	1,250L	625L	420L	310L	250L

As already mentioned under the processing of deposits/lees, also with must filtration the chamber volume of the individually used chamber filter press must be determined. Principally, the processing capacity is reduced with the increase of added filter aids.

The filter surface of the chamber filter press serves as characteristic value for the optimal dimensioning of an external feeding pump. To prevent an unmixing of filter aid, the in-flow rate (pump efficiency) should amount to 300 L/m² and hour.

Application example - Curve course of pressure-must filtration



application

Further fields of application

The following applications are not directly connected with the VarioSan process. The use of the eSan-Filtertuch® (filter cloth) however facilitates their performance. The eSan-Filtertuch® is ideally suitable for the formation of a filter cake and has excellent cleaning properties. Working times and expenses are reduced, hygiene is improved.

Application	Recommended addition of VarioFluxx® P	Technical application: information & recommendations
Processing of deacidification deposits/lees	0 kg in the must stage 0.5 kg/m ² filter surface for filter cake precoating in the wine stage	Good retention of the deacidification deposits by the eSan-Filtertuch® and good drainage of the filter cake also without application of VarioFluxx® P. To obtain the desired clarification degree in the wine stage, precoating is advisable.
Preclarification of ice wine	1 kg/100 L ice wine must	It is recommended to conduct the activated carbon treatment after the must preclarification and afterwards to carry out a second filtration.
Early clarification after cessation of the alcoholic fermentation	2 kg/100 L young wine	VarioFluxx® P can be directly stirred into the unfiltered portion (consider CO ₂ -degassing). The precoating of a filter cake is not necessarily required.
Processing of yeast deposits/lees after the first racking	0–3 kg/100 L yeast deposits The processing capacity of yeast is approx. 50 % of the flotation sediments	When pressing the yeast, filter throughput becomes more effective by the application of VarioFluxx® P, and thus, as a rule, it is possible to run two filtrations per day.
Processing of fining deposits (predominantly bentonite sediments)	3-5 kg/100 L fining deposits	Dosages strongly depend on the solids content. Activated carbon sediments have a good drainage effect and do not require an additional use of filter aids.
Coarse filtration of very cloudy young wine > 400 NTU	1 kg/m ² filter surface for filter cake precoating; 1.5 kg/1,000 L young wine for continuous dosage	For sharper filtration the product types VarioFluxx® M and VarioFluxx® F are available. A dosing apparatus is required for continuous filter aid dosage.

equipment

Technical equipment

Pumps to improve capacity and performance and their handling

In addition to the fixed pumps of the chamber filter presses, particularly for must filtration, external pumps can be used to improve capacity. The VarioSan process is insensitive against pulsation and pressure surge and thus pulsing positive-displacement pumps can be employed. The following pump types are suitable: excenter worm pumps, piston-type pumps, rotary pumps. Already several pump producers offer optimized pump variants for the VarioSan process.

The pump must fulfill the following requirements:

- Pump casing as wear-resistant as possible (abrasion by perlites)
- Adjustable
- Pressure formation up to 10 bar – also less, if the fixed pump can be further used to build up the final pressure
- Use in the cellar also after the relatively short grape harvest
- When dimensioning the pumps, a differentiation between the processing of deposits/lees and must filtration with regard to the in-flow rate is necessary

Application	Recommended flow rate (upstream side)	Effect
Processing of de-positions/lees	< 100 L/m ² filter surface and hour	Slow cake formation to result in a filter cake with optimal drainage effect.
Must filtration	300 L/m ² filter surface and hour	Uniform cake formation and prevention of unmixing of the filter aid.

Filter chassis

Filter chassis, pressure power of the hydraulic system and filter plate quality

Of special importance for the optimal operation and tightness of the filter are the filter chassis, the contact pressure of the hydraulic system and the quality of the filter plates. When purchasing a new chamber filter press, the following points should be considered:

1. Sufficiently broad sealing rim of the filter plates (3 cm) with smooth surface.
2. Due to their strength, stability and nature of surface, polypropylene filter plates are to be preferred to filter plates fabricated from Noryl®.

3. Sufficient contact pressure of the hydraulic system. The closing pressure must be seen in relation with the diameter of the pressure cylinder (piston rod).
4. Elevated construction of the filter chassis, if possible without crossbar, for easy and quick removal of the filter cake.

Cleaning

Cleaning of the eSan-Filtertücher®

The eSan-Filtertücher® (filter cloths) are made from FDA-approved polypropylene. The special texture of the cloth fabric prevents that substances adhere and is easily and thoroughly, free from residues, cleaned by a water jet.

Daily cleaning with water

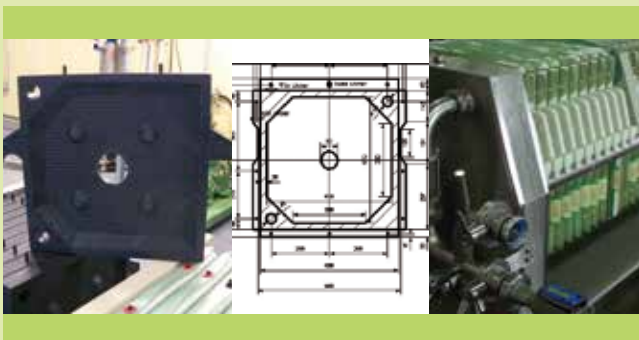
Filter cloths are very effectively cleaned by a strong water jet. When using a high pressure cleaner a rotating nozzle must not be applied. The maximally permissible pressure is: 100 bar (10,000 kPa) at a distance of at least 30 cm. The cleaning in the neck region (seams) must be conducted with special care.

Chemical cleaning at harvest end

After grape harvest it is recommend to clean the eSan-Filtertücher® with WIGOL filter cloth cleanser or comparable cleansing agent in concentrations prepared according to the instructions of the manufacturer. Cleaning can be conducted by pumping over for about 30 minutes to 1 hour or the filter cloths are left overnight to soak in a cleansing solution. When pumping over, the sealing of edgings must be cleaned separately. The cleaning effect is improved by WIGOL Reinigungsverstärker/cleaning promoter H (hydrogen peroxide) in a 2 % solution. Particularly red wine pigments are efficiently removed. For details, see technical product leaflet eSan-Filtertuch®.

Orders

Placing and processing of orders



Due to the multitude of different filter plate sizes, exact measuring of the respective filter plate and a CAD drawing are required. The necessary time to conduct the order is 4-6 weeks. eSan-Filtertücher® (filter cloths) are exactly adjusted to the filter plates of the chamber filter. Customers may place a filter plate as sample at our disposal or at the disposal of the specialized trade, which is returned together with the finished eSan-Filtertüchern®

Our application engineers provide you with solution-oriented assistance and information.

Benefit from our service and call us!