



Filter Practices that Protect Aroma Profile

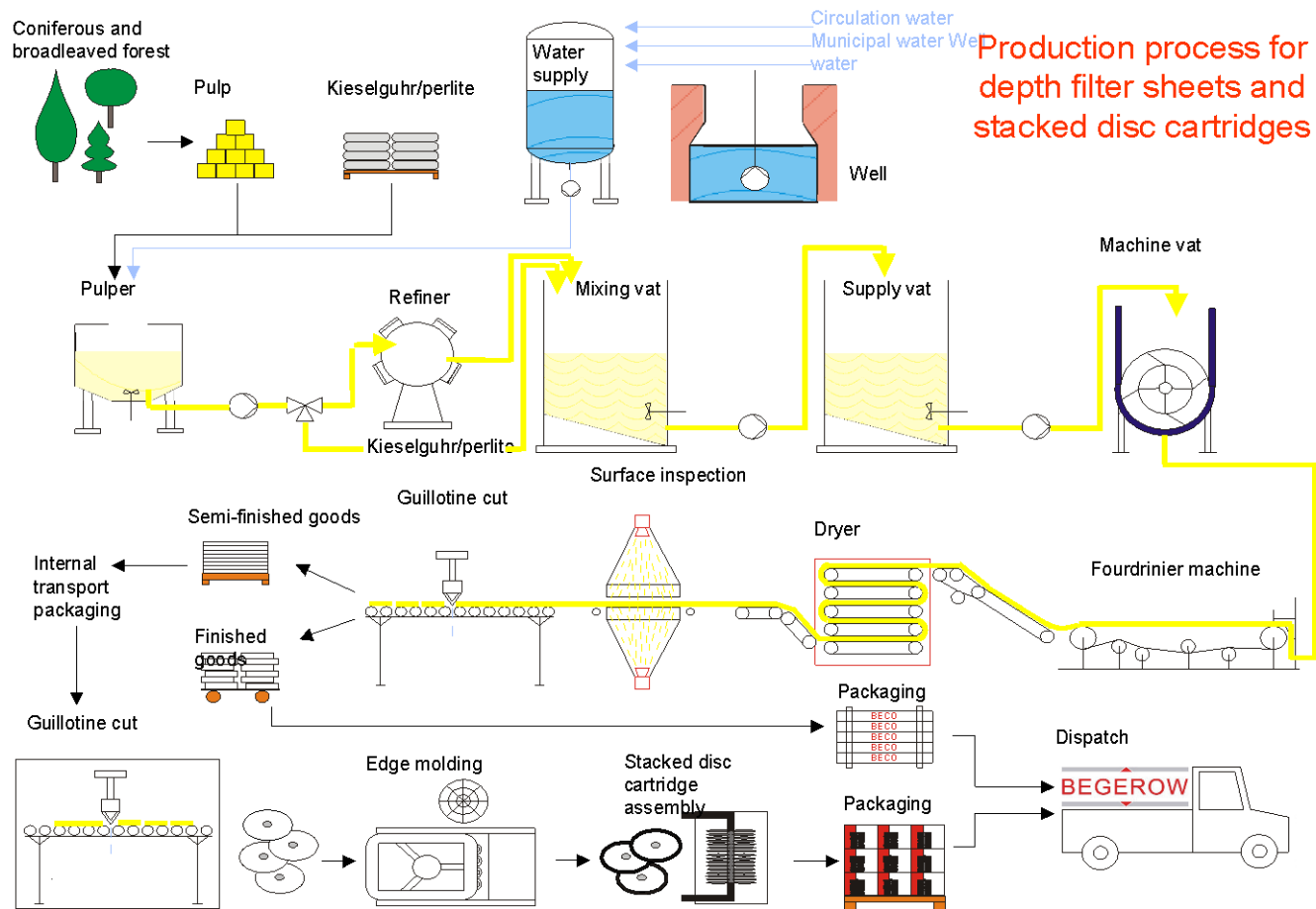
Increasing Colour and Stability of Pinot Noir

Aspects of Grape and Oenology Technology on Aromatic Whites

Sparkling Blanc de Noir Production

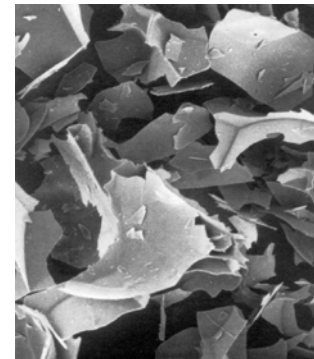
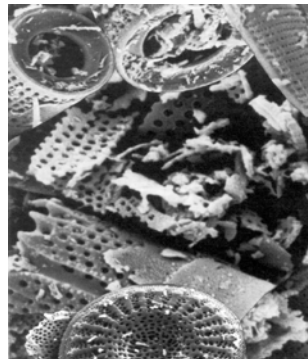
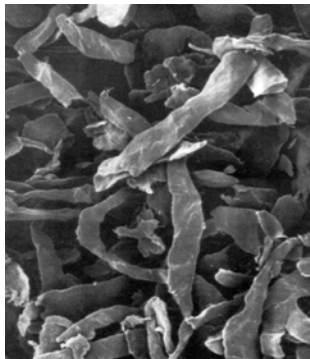
Dr. Ilona Schneider

## Production of depth filter sheets



# Components and their characteristics

- Finely fibrillated cellulose fibers
- Kieselguhr
- Perlite
- Synthetic resins based on polyamine/polyamide
- large internal surface area
- high clarifying sharpness
- voluminous pore structure
- wet strength, adsorption effect



# Particulate charge distribution of a depth filter sheet

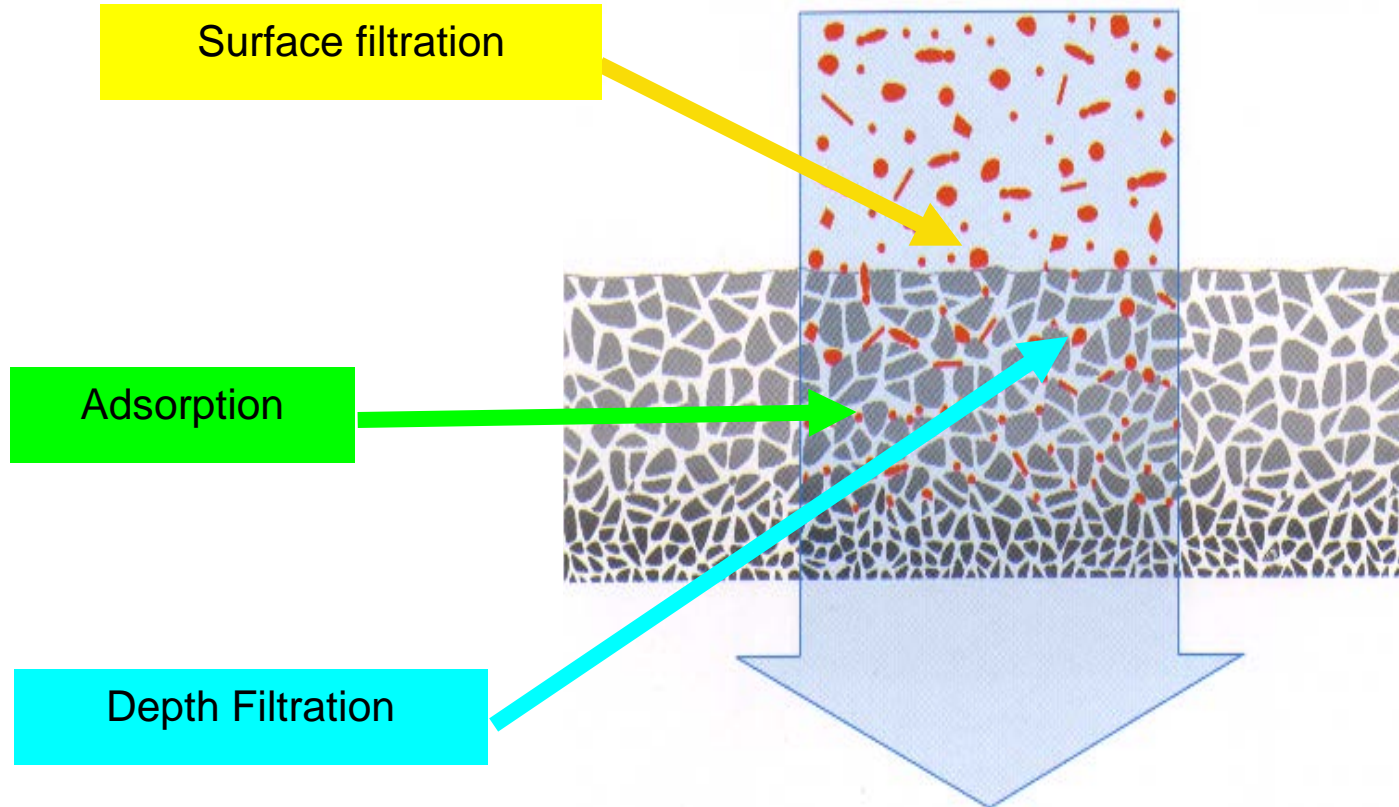
- Cellulose
  - ➔ has an anionic (-) charge or potential, i. e. particles with a positive charge are adsorbed
- Diatomaceous earth
  - ➔ has an anionic (-) charge
- Resin constituents
  - ➔ have a cationic (+) charge
- Depth filter sheet up to and including Steril 40
  - ➔ have a low cationic (+) charge
- Finer depth filter sheets
  - ➔ have a highly cationic (++) charge
- Yeasts and bacteria
  - ➔ can have both positive and negative charge, depending on strain

# Depth filter sheet mechanisms

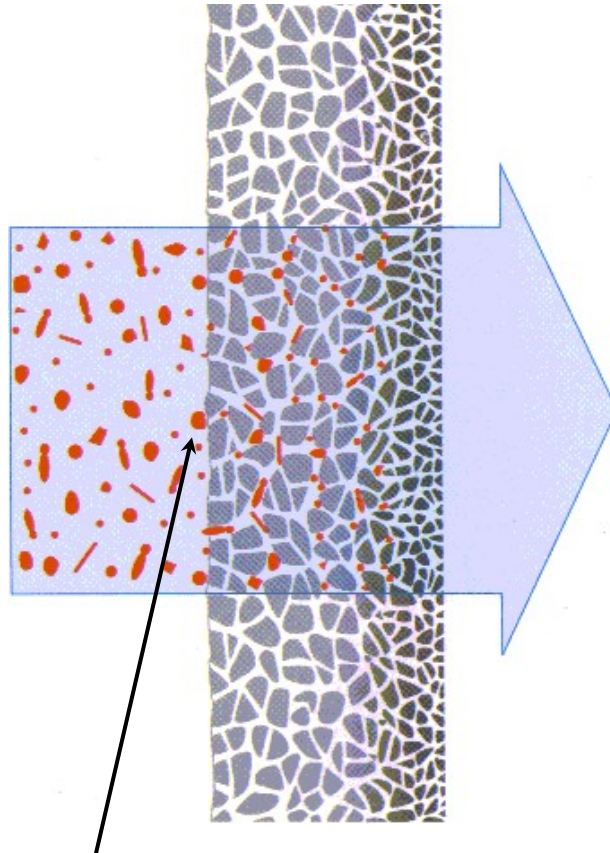
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- Surface filtration
- Separation of particles at the surface due to their size
  
- Depth filtration
- Separation of particles and microorganisms within the internal pore structure
  
- Adsorption
- Separation of particles and microorganisms due to different charges of the depth filter sheet components and the particles and microorganisms to be separated

# Mechanisms of Sheet Filtration



# Properties of Depth Filtersheets

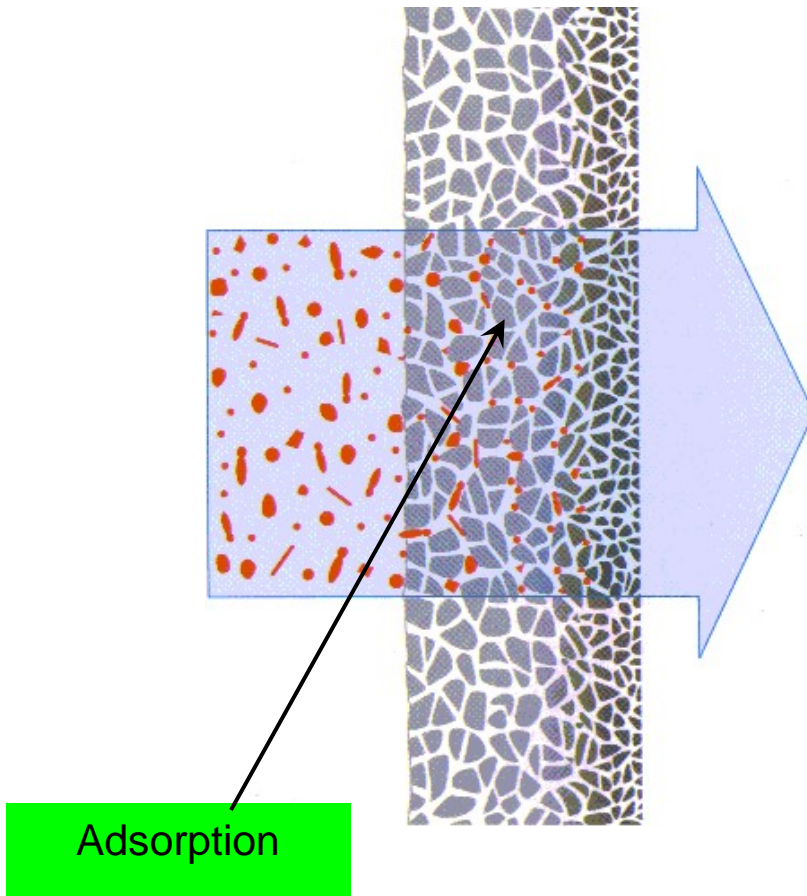


Surface filtration

- Mechanical sieving effect
- Retention of particles larger than pores on the inlet side of the sheet
- Deformable, slimy particles, i.e. gelatine, alcoholic extracts of drugs and herbs (macerates) block the surface very fast  
=> quick decrease of throughput



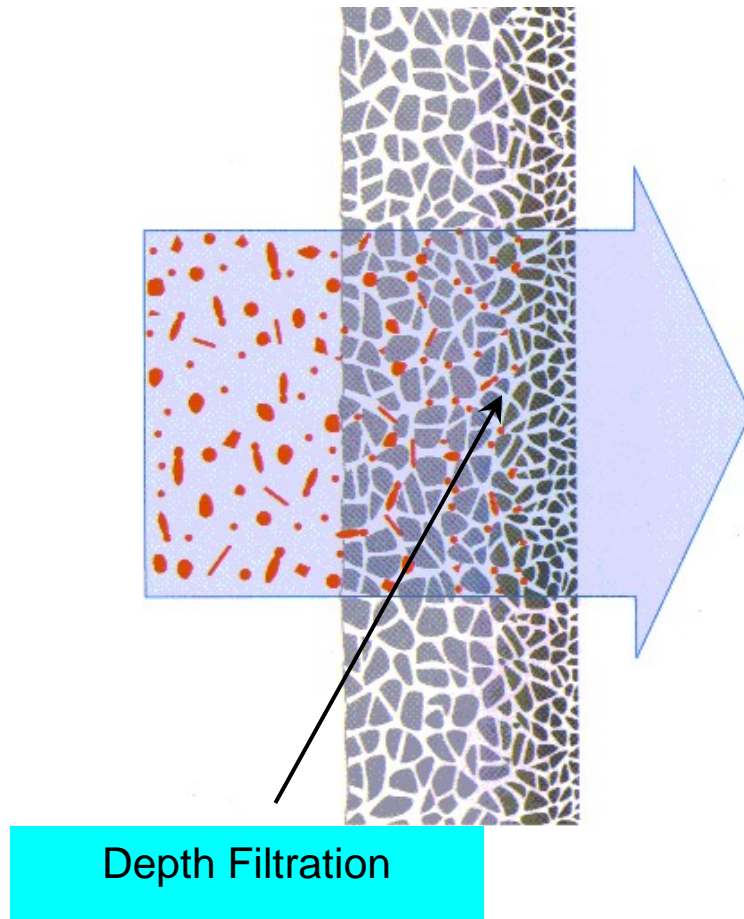
# Properties of Depth Filtersheets



- Retention of smaller particles and colloids
- Particles basicly smaller than the pores of the sheets
- Retention is based on elektrokinetic effects (Zetapotential)
- Adsorbtive processes (no mechanical retention)



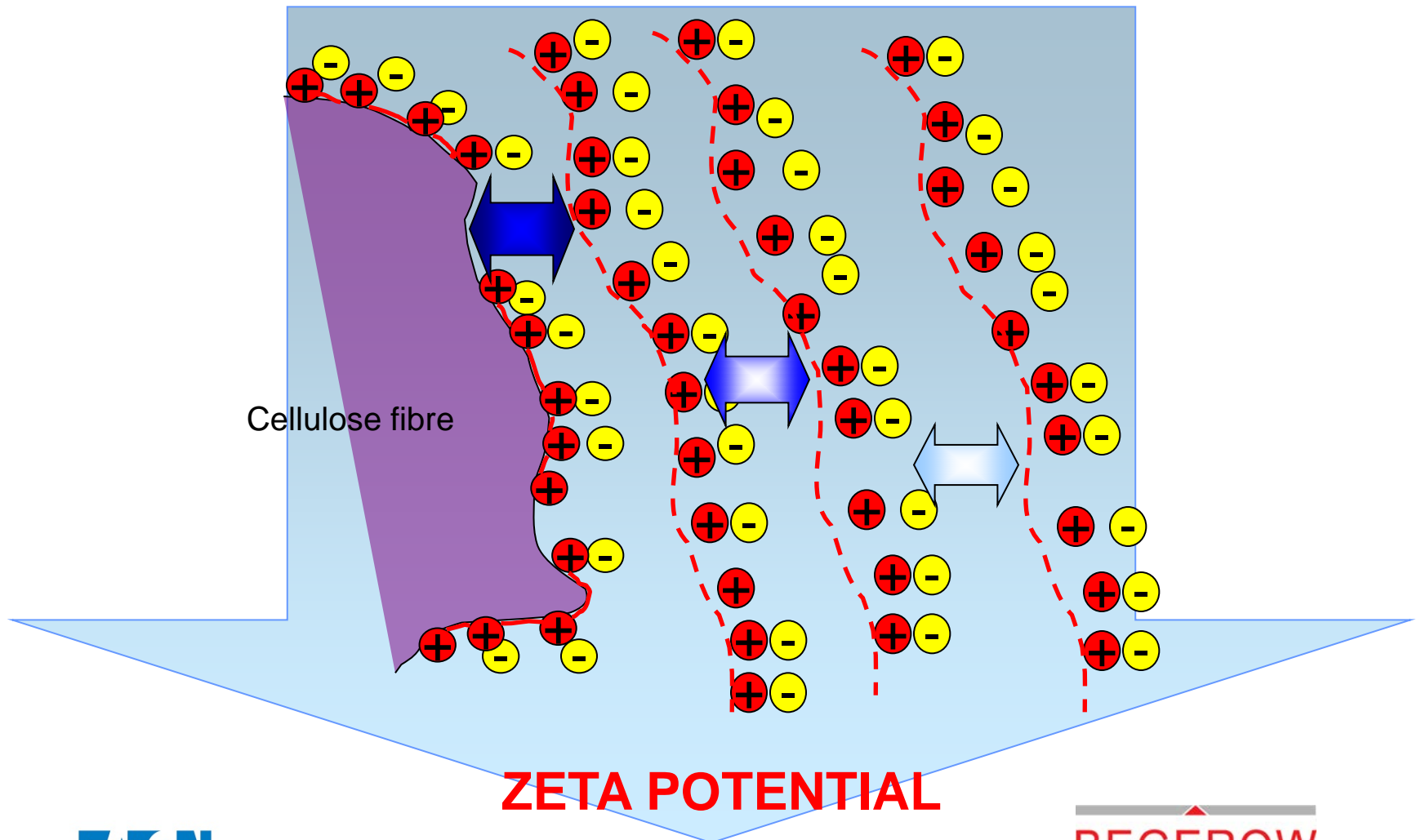
# Properties of Depth Filtersheets



- Three dimensional inner structure based on high porous Filter Materials cellulose; D.E.; perlite
- Retention of particles in the internal matrix of the sheet (depth filtration)
- Pore volume of about 75-80%  
1 m<sup>2</sup> filter area and 4 mm thickness result in 3 Liter haze volume
- Especially retained particles: activated carbon, cristalline hazes, yeast

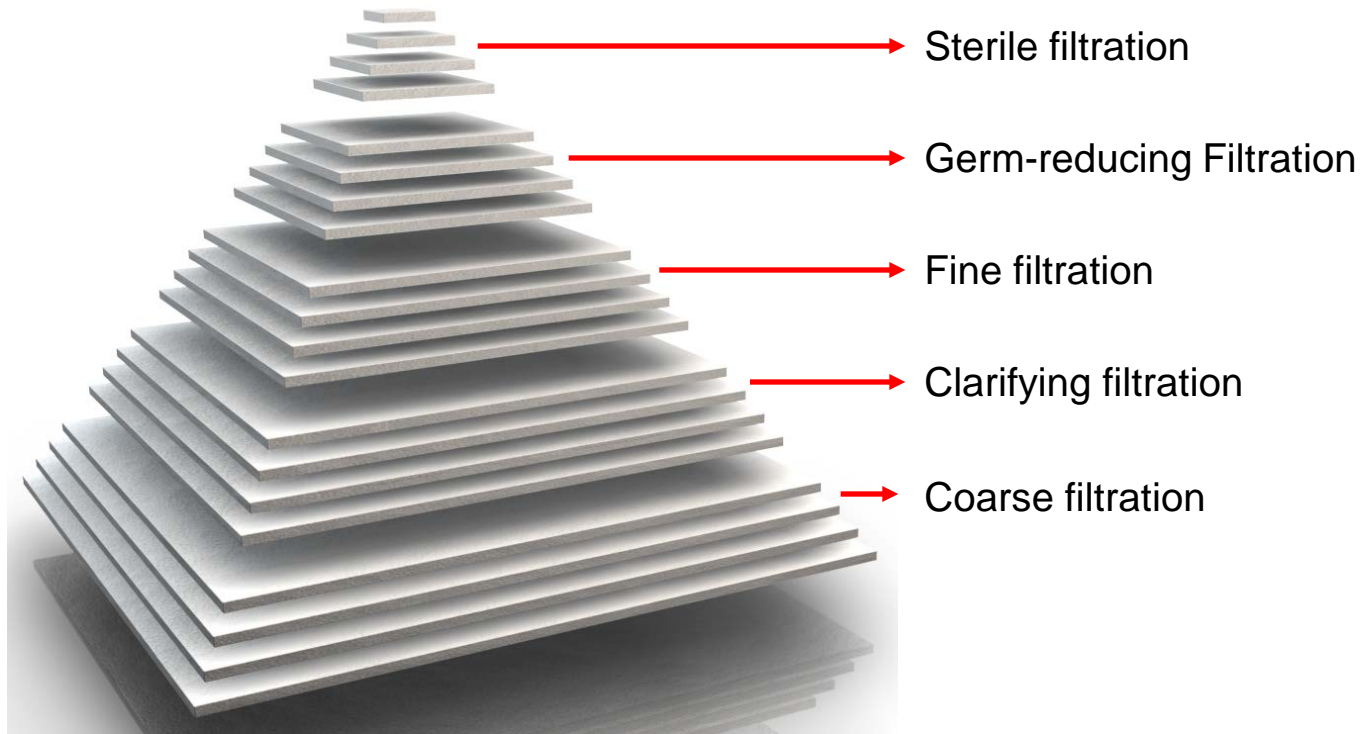
# Properties o depth filtersheets

Adsorption



# BECOPAD Performance

Adsorptive filtration with Activated carbon sheets



Precoat filtration (Kieselguhr, Perlite, Cellulose)  
with support sheets

# BECOPAD Components

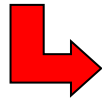
Only certified celluloses

No synthetic fibers

Targeted application of a special cellulose based on the  
**special bepure processing method**



**No inorganic  
components**



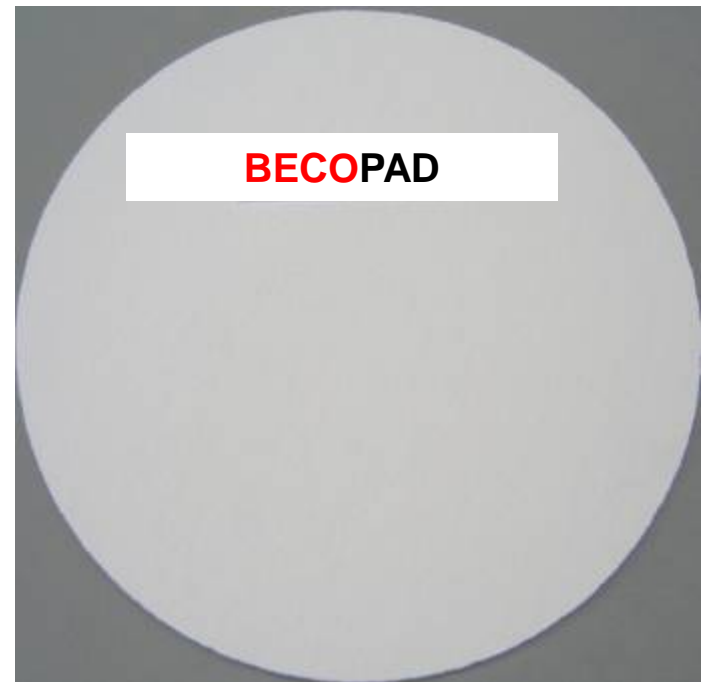
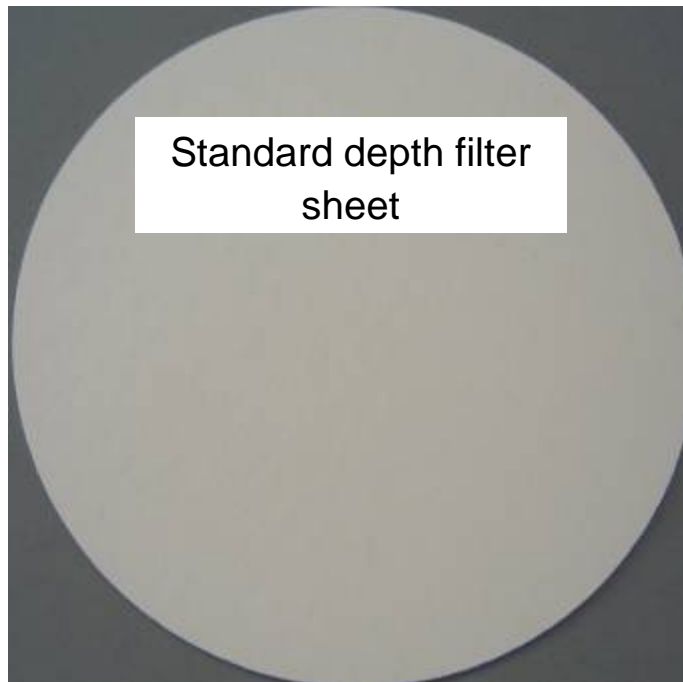
**White depth filter sheet  
with outstanding purity  
Compostable according  
to:**

**ISO 14855**

**DIN EN 13432**

# BECOPAD

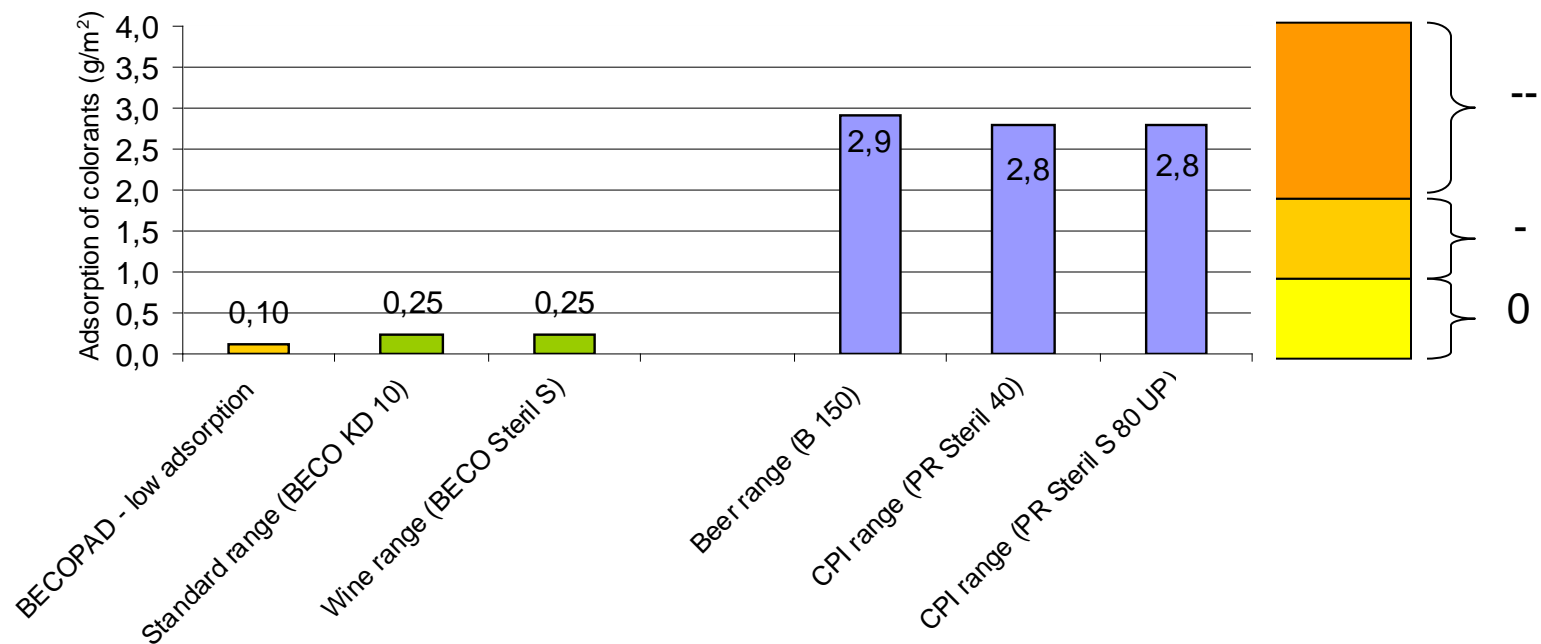
## Colour/Visual Appearance



# BECOPAD

## Adsorption of Colorants

Adsorption of colorants (laboratory trial/standardised solution)



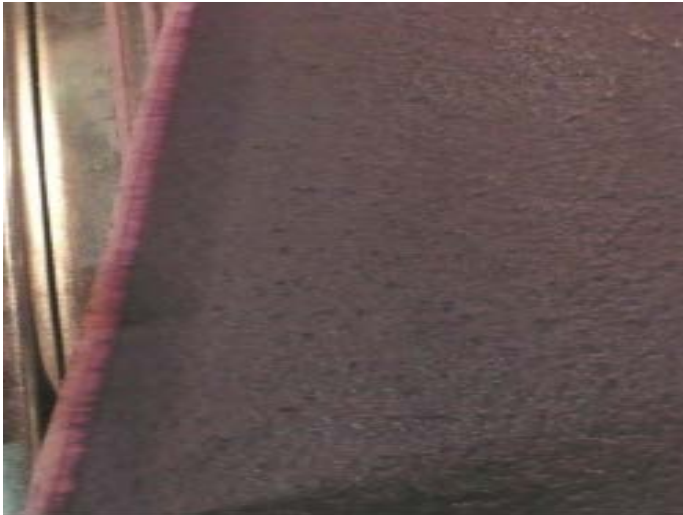


# BECOPAD

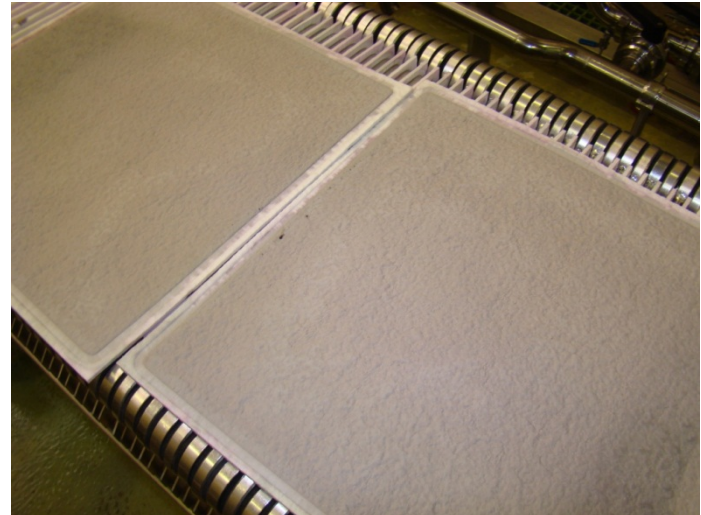
## Adsorption of Colorants

**Depth filter sheets backwashed with water  
White wine filtration following a red wine filtration**

**KD**



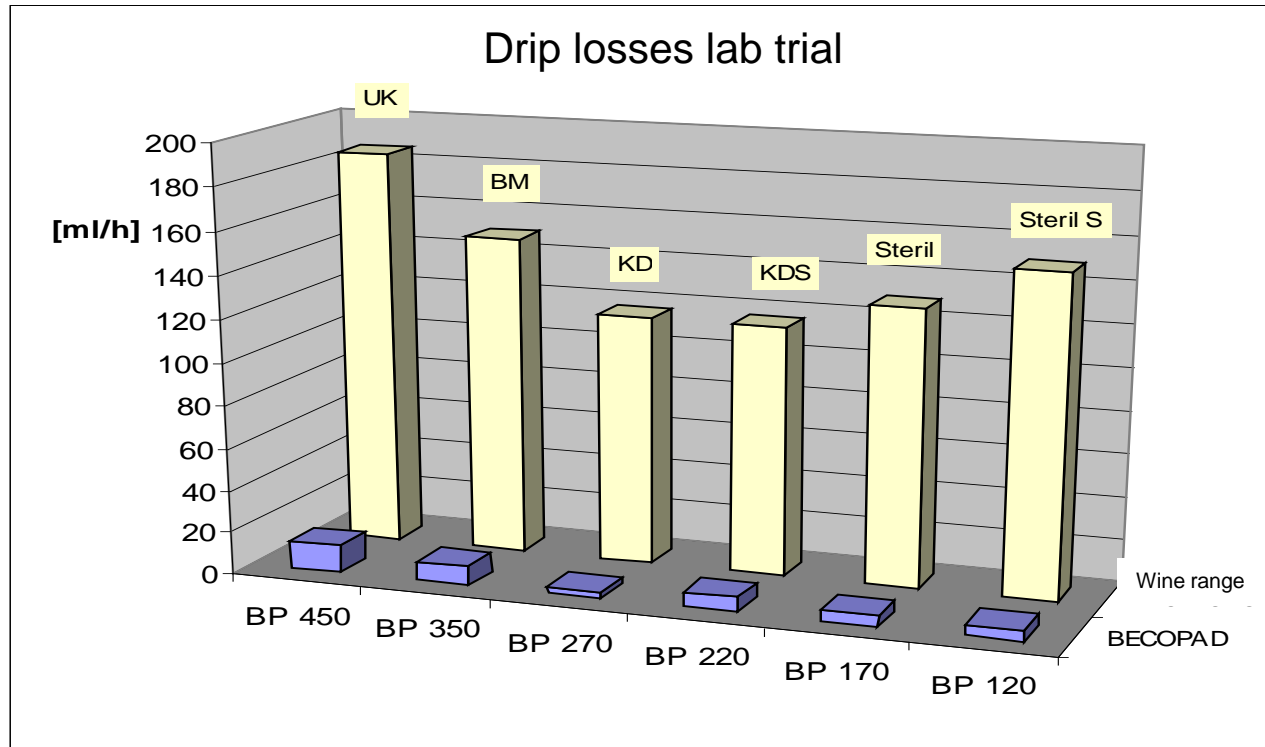
**BECOPAD 350**



# BECOPAD

## Drip Losses

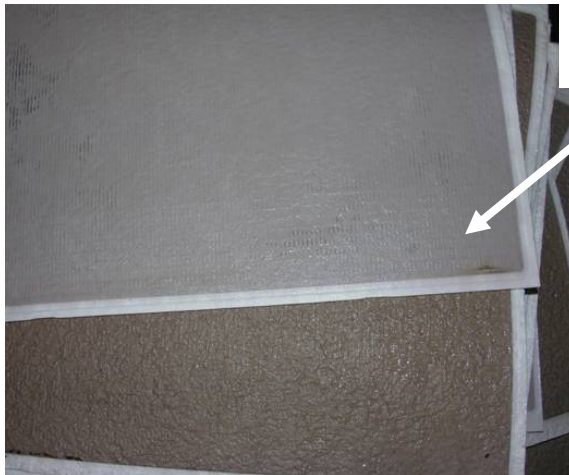
Detection of drip losses BECOPAD vs. conventional depth filter sheets [lab test]



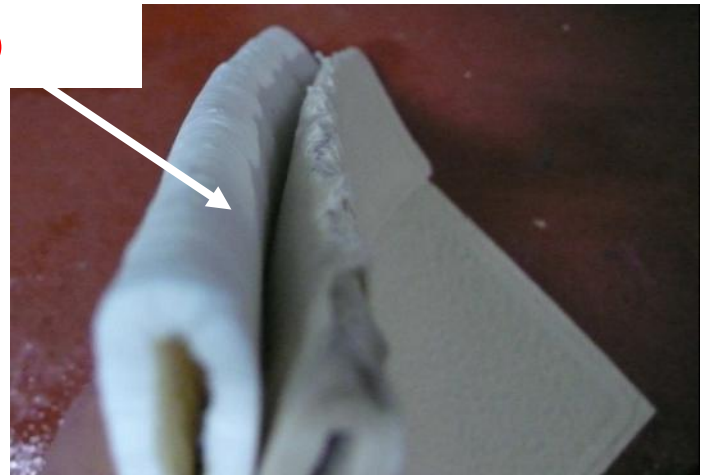
# BECOPAD

## Wet strength

- Comparison of removing **BECOPADs** to depth filter sheets
- high wet bursting strength → significantly improved handling



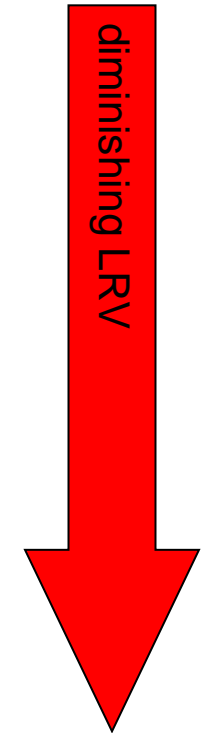
**BECO**



„folding-test“

# BECOPAD

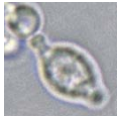
## Microbiological Retention Rate



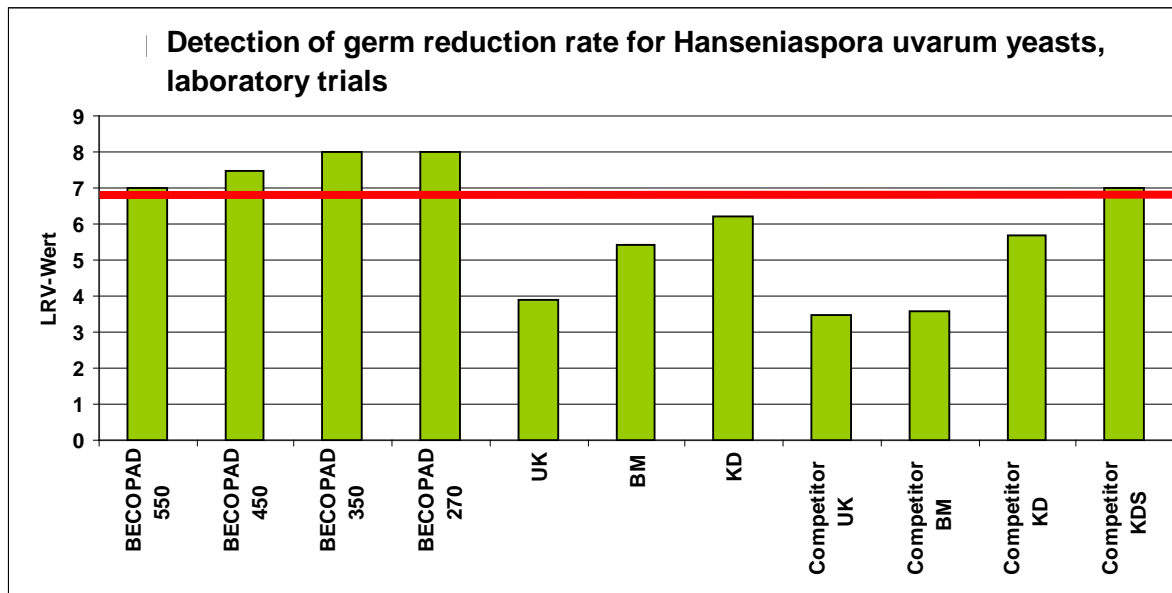
# BECOPAD

## Microbiological Retention Rate – Wild Yeast

- *Hanseniaspora uvarum*/Kloeckera apiculata: volatile acid, high germ counts in the must, very active at the beginning of alcoholic fermentation
- Smallest wild yeast known in wine, therefore „worst case“



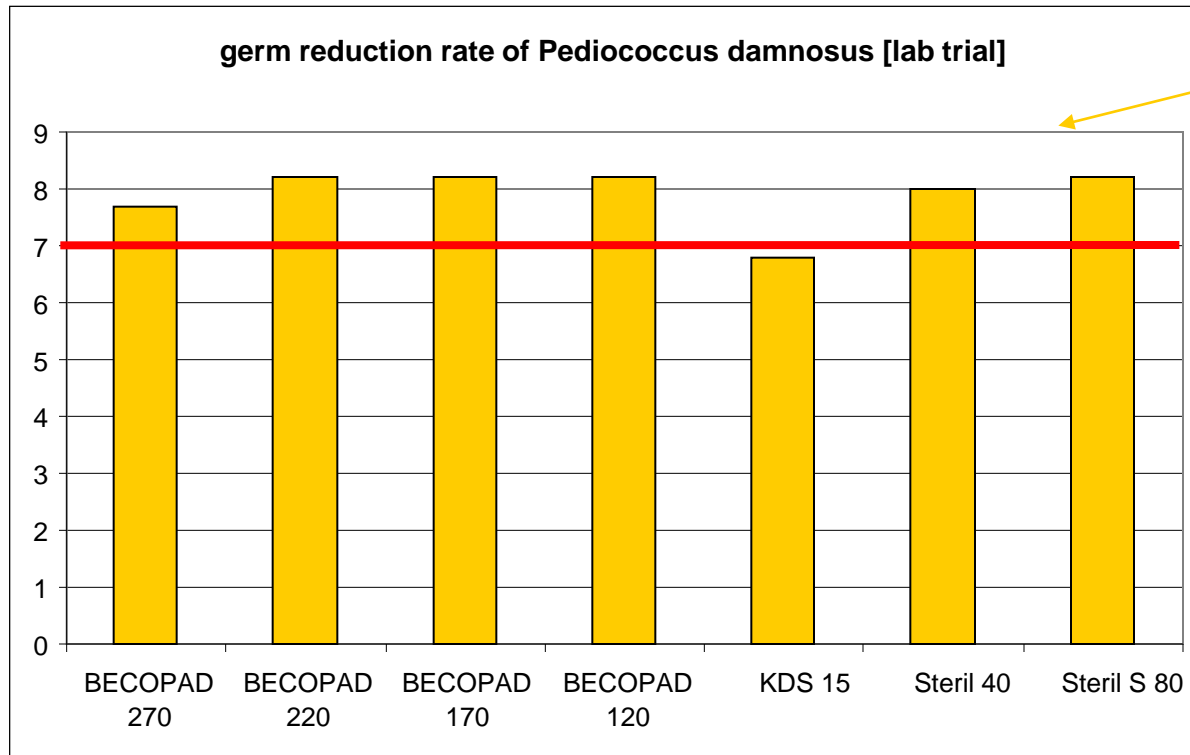
0.8 – 1.2 µm



# BECOPAD

## Microbiological Retention Rate – Bacteria

*Pediococcus damnosus*:

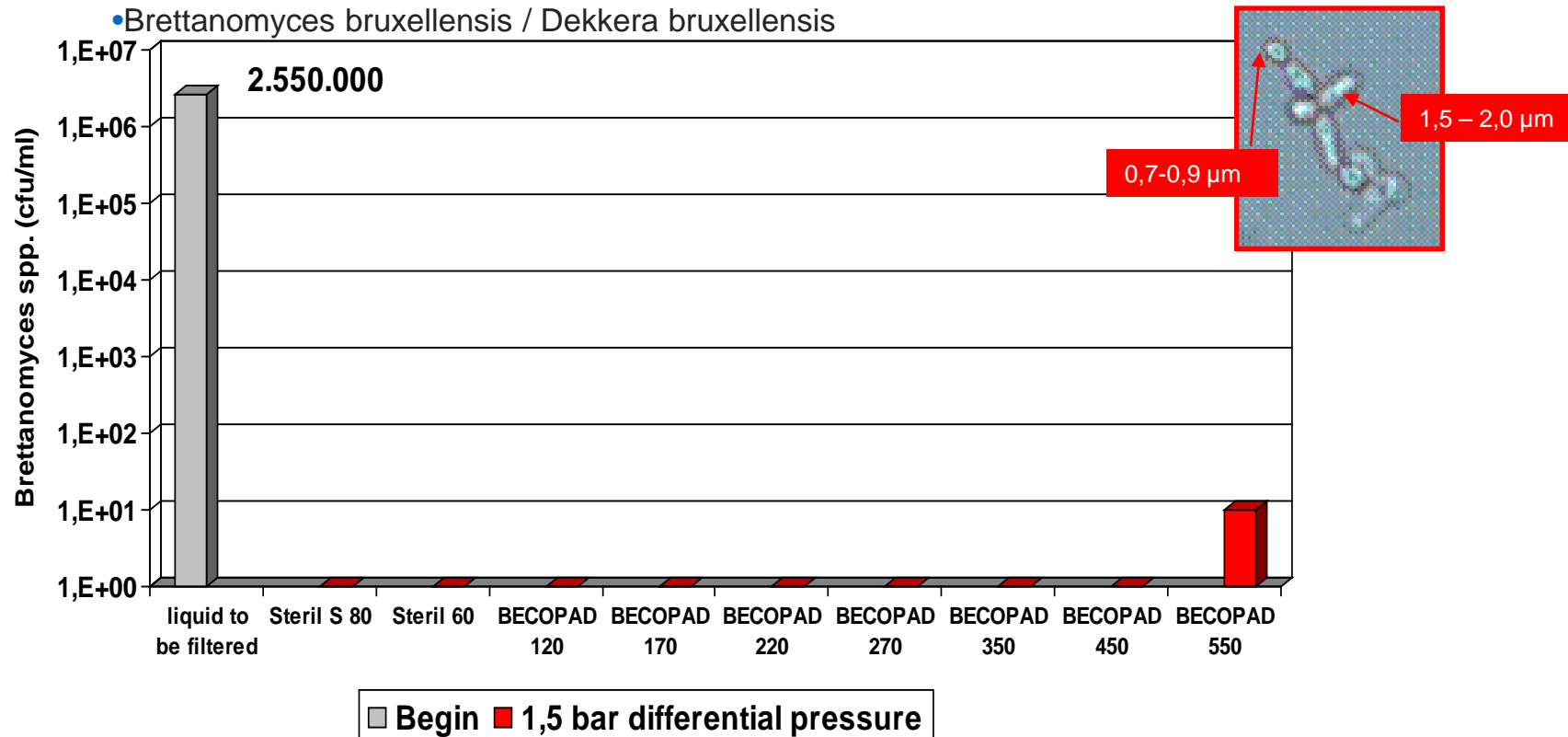
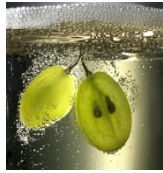


0.5 – 1.0 µm

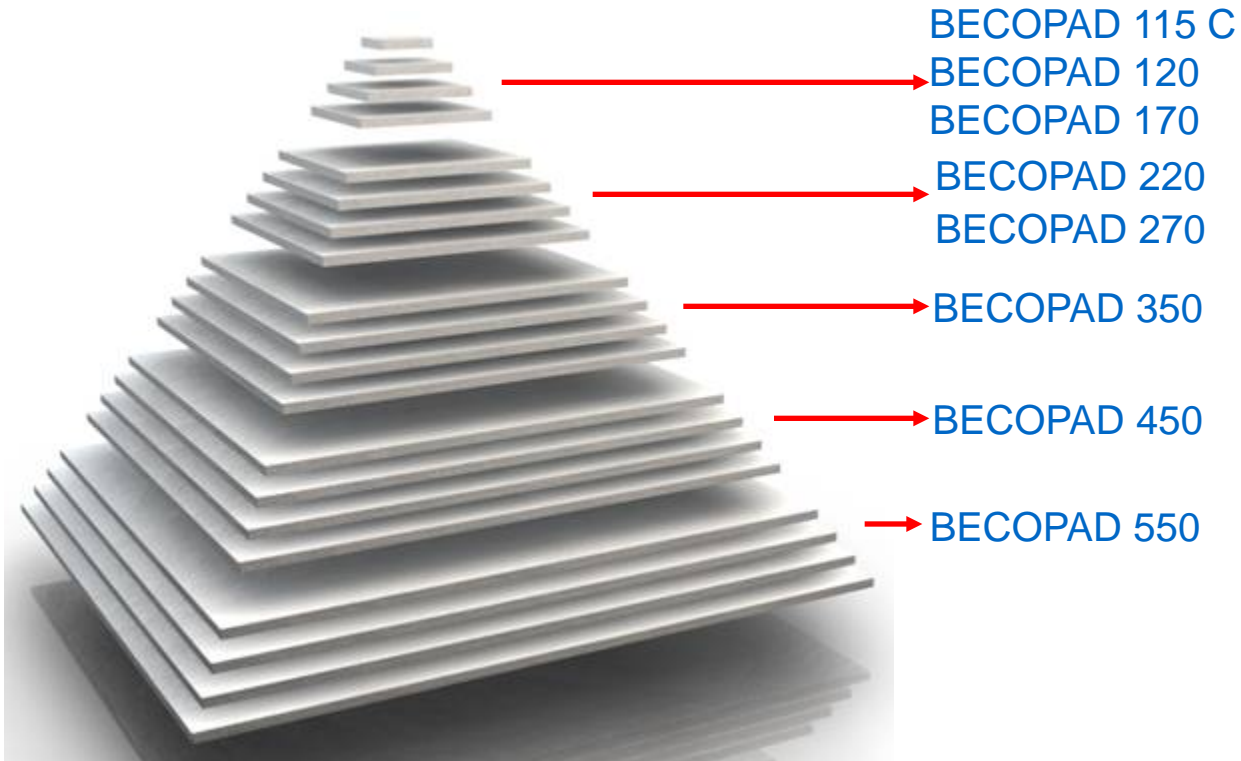


# BECOPAD

## Microbiological Retention Rate – spontaneous yeast



# BECOPAD



# BECOPAD

## Experience for Filter pressing

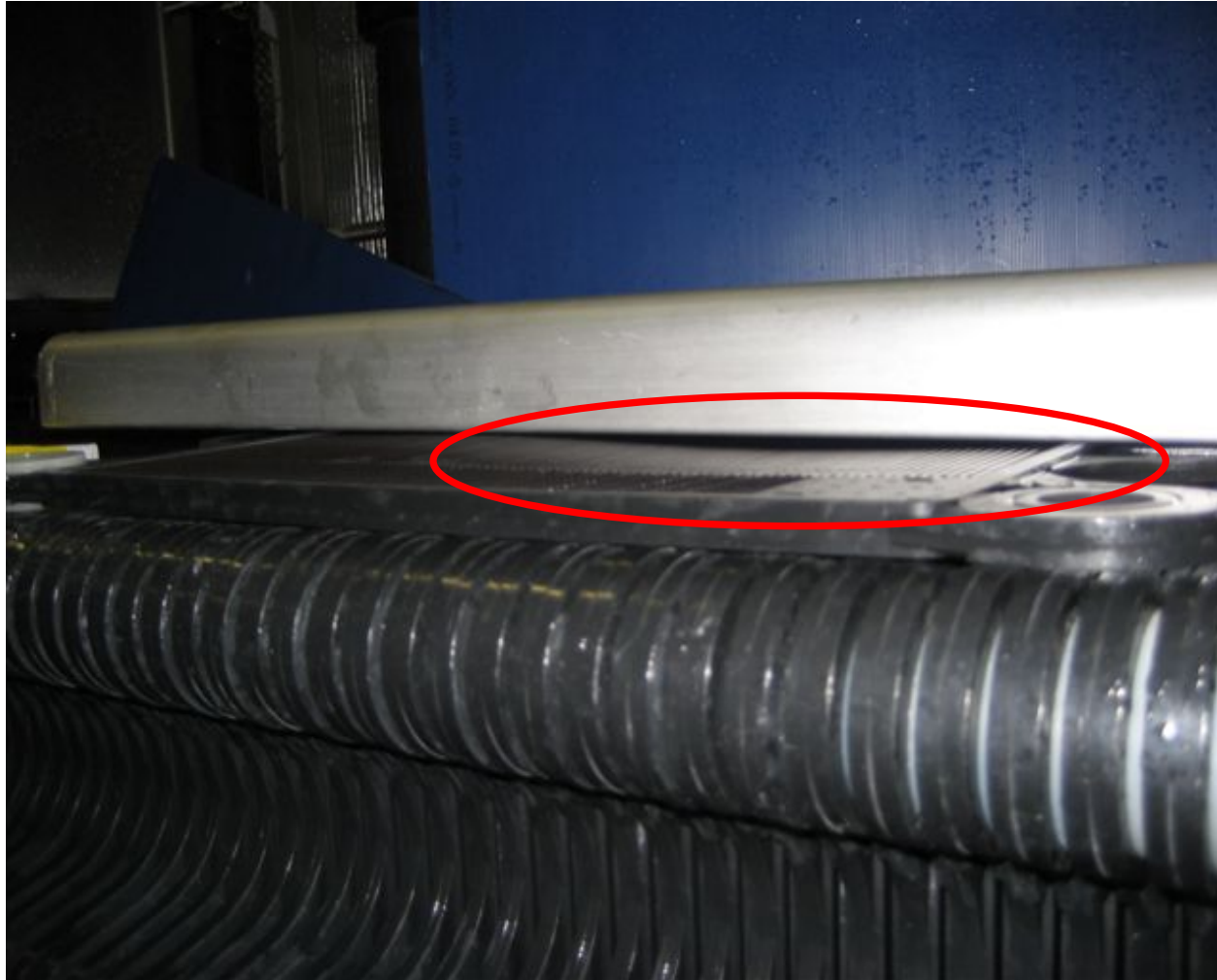
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- Standard layers (40 format) are usually compressed to only 1.2 to 1.4 mm
- the BECOPAD should be compressed to approximately 0.8 mm.  
=> this means that a disk package with for example 100 plates, could be 4 to 6 inches shorter
- Filter with hydraulic piston and cylinder are normally closed better as filters, which are on a spindle and pressed also by hand

# Practical issues



# Practical issues



# Practical issues





# Practical issues

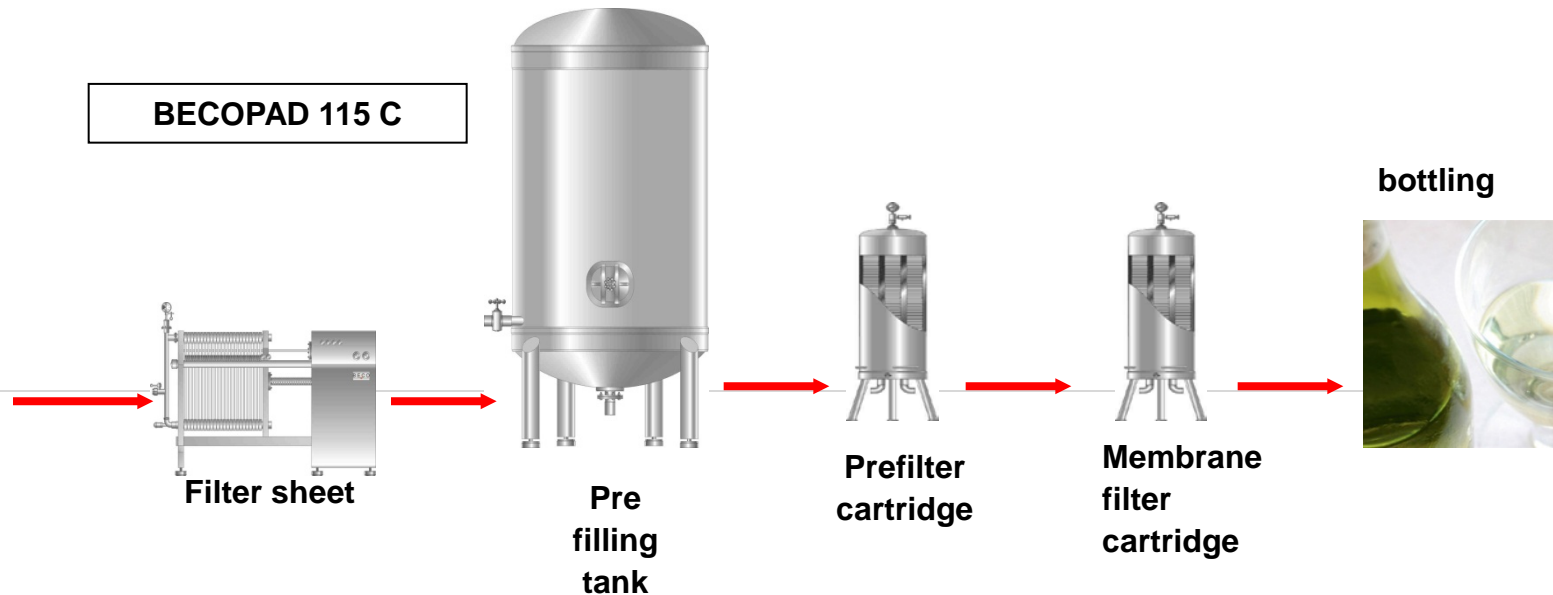


# Practical issues



# Filtration scheme

## Cooperative with Pre- and Membrane Filter cartridge before bottling

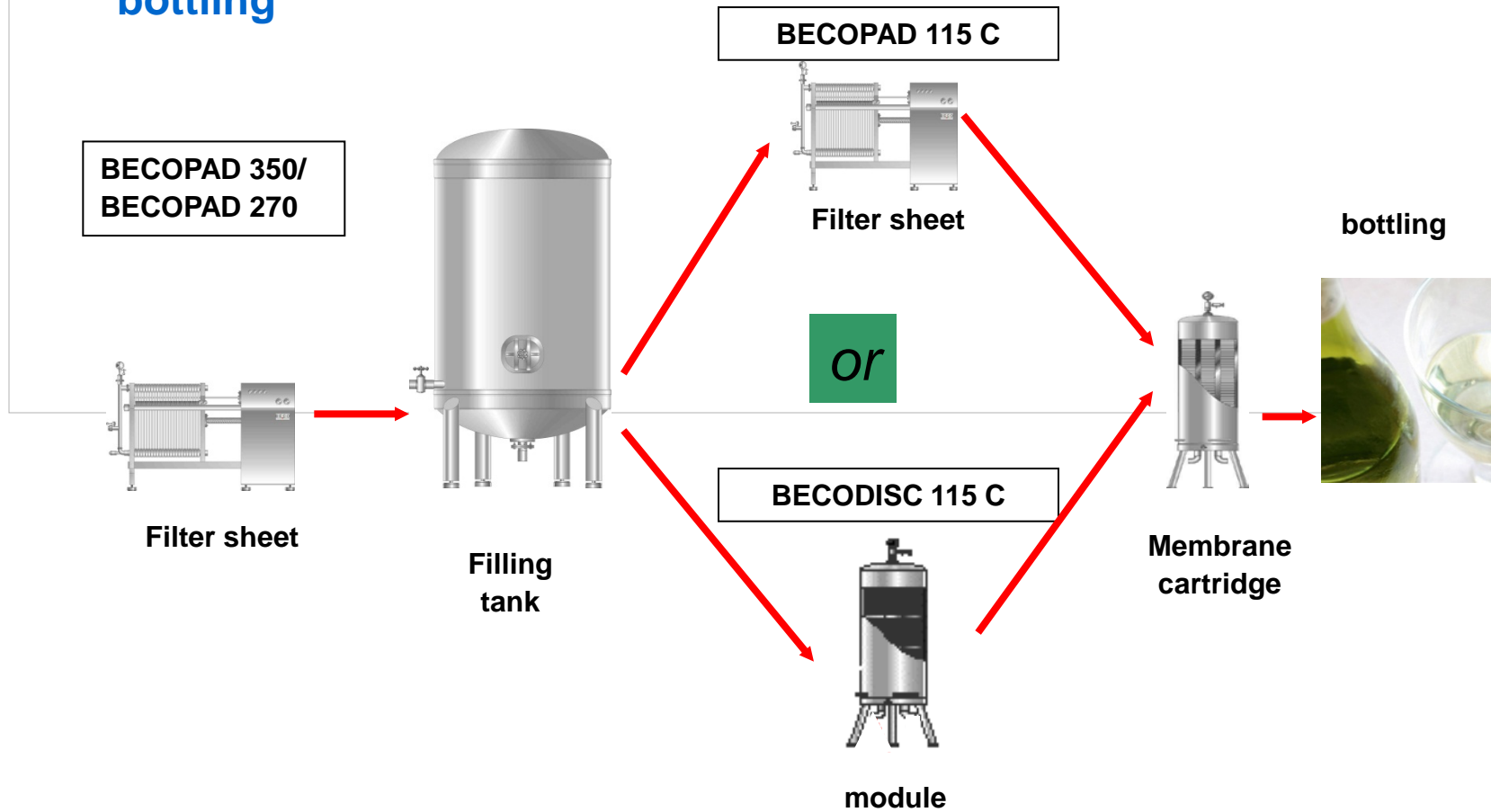


### Advantage:

- Sterile Filtration with „police filter“
- Bottling of different wines (National and International)
- Excellent protection for membrane filter cartridge
- BECOPAD 115 C: good filter index and regeneration

# Filtration scheme

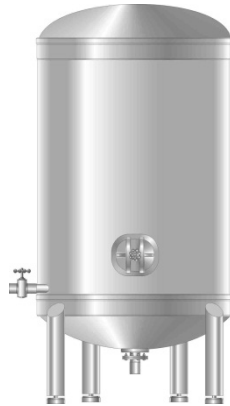
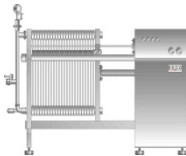
Bottler on truck BECOPAD 115 C and membrane filter cartridge before bottling



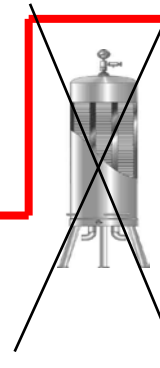
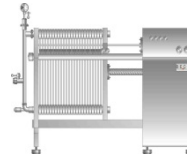
# Base wine and premium wine

Premium wine

BECOPAD 350/  
BECOPAD 270



BECOPAD 220/  
BECOPAD 170

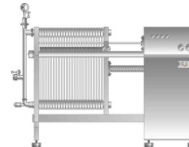
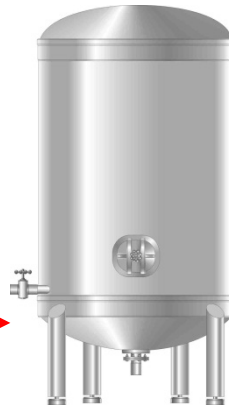
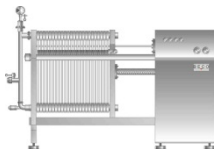


Bottling



Base wine

BECOPAD 350/  
BECOPAD 270



Bottling







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Increasing Colour and Stability of Pinot Noir

Aspects of Grape and Oenology Technology on Aromatic Whites

Sparkling Blanc de Noir Production

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