BorsoPVPP

Convenient, Robust and Economic Stabilisation of Beverages

VAN BORSELEN FILTERS

Van Borselen is a leading supplier of porous polymeric materials and filter cartridges. **BorsoPVPP** has been developed as unique technology that is at the interface of Van Borselen Filters' filtration and porous material technology. The unique manufacturing process allows contact between the adsorbent and the beverage to be at its optimal.

The **BorsoPVPP** filter is manufactured in the format of a filter cartridge and will fit into most industry standard housings used in the food and beverages industry; thus providing an economic means by which the stabilisation process can be integrated into the processing of beverages.

BorsoPVPP is highly flexible due to the robustness of the composite material, which enables it to be to be easily incorporated into any process where beverage stabilisation is required.

Features and Benefits:

• Highly efficient
Ideal contact between the beverage and the adsorbent allowing high flow rates and minimal contact time.

• Easy regeneration
Hot caustic regeneration in a safer and more environmentally-friendly format, with easy integration into caustic regeneration processes.

• Robust characteristics
Higher pressure drops are feasible with no hysteresis and damage as compared to powder beds.

• Clean and safe process
No requirement to handle loose powder with associated risks to operators, equipment damage and loss of adsorbent.

• Rapid replacement
Rapid replacement of cartridges, saving downtime between batches; there is no requirement to build a powder bed.

• Flexible and dynamic stabilisation
Degree of stabilisation required can easily be altered by changing the flow rate to increase or decrease the contact time between the adsorbent and the beverage at any stage during the process.

• Capacity is easily increased at minimal cost
More processing capacity or higher stabilisation are simply achieved by increasing the height or number of cartridges.

• Accurate and reproducible
Polymer matrix and adsorbent are precisely manufactured to ensure the dosage is accurate to minimise batch-to-batch variation.

• Minimal loss of beverage in adsorbent media
The beverage is easily expelled from the matrix, which has low liquid retention properties.

• Low Capital Cost and Investment
Widely available low cost filter housings available can be used to house the cartridges. A minimal amount of technical training is required to use the cartridge.

Specifications

Materials of Manufacture

Filter membrane:	Vyon Porous Plastic cosintered with ePolyvinylpolypyrrolidone (PVPP)
End fitting:	Polypropylene

Cartridge Dimensions

Diameter:	70mm (2.8")	
Length:	1 module (short):	125mm (5")
	1 module:	254mm (10")
	2 modules:	508mm (20")
	3 modules:	762mm (30")
	4 modules:	1016mm (40")

Gaskets and O-Rings

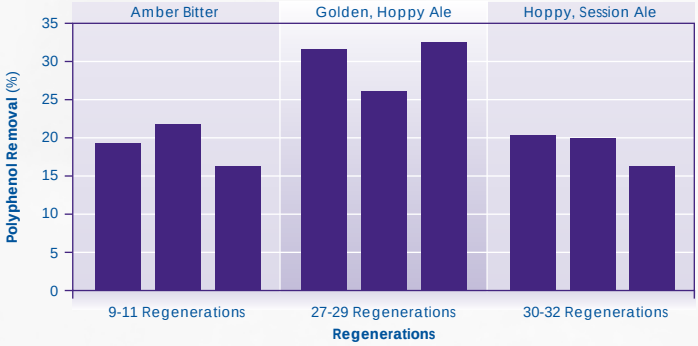
FDA approved Ethylene Propylene, FEP encapsulated, Silicone, Viton® and Nitrile available.

Operating Temperature

Maximum continuous: 80°C (176°F)

Product Evaluation

Below is a chart showing polyphenol (tannoid) reduction of a selection of beers dosed at an equivalent of 26g/hl of adsorbent.



A number of different types of beers were processed through a scaled down BorsoPVPP in the form of a small module. The selected flow rate gave an adsorbent/beer contact time of 25 seconds. For every 6 litres of beer processed, the system underwent in-situ regeneration with caustic and reverse-osmosis water. A nitric acid wash was added every 3rd regeneration cycle to negate any effects of beer stone formation.

A 44-fold regeneration of the BorsoPVPP indicated no loss in stabilisation performance. Furthermore, no powder was present in the any of the processed beer.

Foodgrade approved

FDA 21 CFR 177.1520
FDA 21 CFR 177.2600
EC 10/2011

Cartridge Construction

BorsoPVPP cartridges are constructed from FDA CFR Title 21 tested materials that proven to be food-safe and meet EC 10/2011.

BorosPVPP cartridges do not contain ‘soluble additives’ and hence meet the requirements of German ‘Beer Purity Laws’.

BorsoPVPP cartridges are built using technology that is unique to Van Borselen Filters' filter cartridges and porous polymers. No glues or resins are used to bond the adsorbent, polymer or cartridge hardware.

Applications

• Beer and Wine Stabilisation
Removal of haze-active polyphenols to allow beer to be stored and minimise reduction in clarity. Reduce chill haze in beers that are served extra-cold.

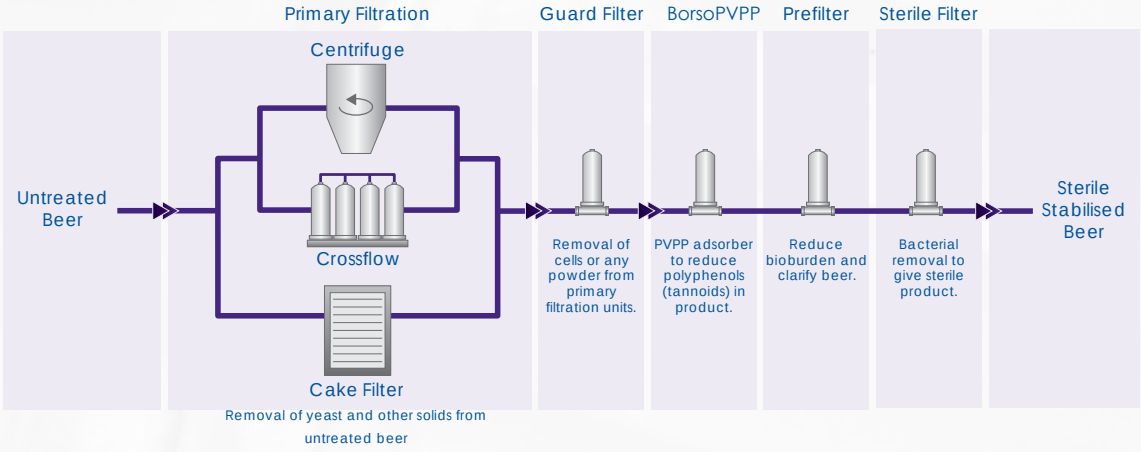
• Spirits
Reduction of haze caused by trace amounts of polyphenols prevalent in raw materials e.g. brandy.

• Vinegar
To ensure a clear and stable product by removing trace amounts of haze-active polyphenols.

• Fruit Juice
To enable a clear product to be manufactured and stored. Apple juice, coconut juice and grapefruit juice are typical applications.

• Ice Tea
To remove astringency and improve the product's taste in 'real' iced teas.

BorsoPVPP within the Treatment System



Additional Information

Range
Van Borselen Filters Supplies a full range of filtration products: e.g.: Filtercartridges (Meltblown/ Membranes/ Activated Carbon) Filterhousings, Filterbags, Lenticular Module Filters, Self Cleaning Filters, Filter Sheets, Sieving Machines, Porous Sintered Metal, Oilskimmers, Strainers and many more..

Material Conformity and Validation
The bio-safety of all materials used in the manufacture of BorsoPVPP cartridges is assured by FDA approval to Title 21CFR.177. and EC 10/2011

Chemical Compatibility
The BorsoPVPP materials of construction are compatible with a wide range of chemicals and solvents, however care must be taken to select the appropriate seal material. Advice on chemical compatibility is available. Since operating conditions vary considerably between applications, verification by the end user is recommended.

Quality control
Our factories are all located in Western Europe and are accredited to ISO 9001-2008.

All our filters are fully traceable and manufactured under clean room conditions.

Engineering capacities
One of our strengths is developing filter vessels for critical applications in the chemical industry.

We have a wide experience in supplying filter vessels, like Duplex (UNS S31803), Super-Duplex (UNS S32750/60), Titanium, RvS316L, CS (optionally with a coating or lining).

Our filter vessels comply with the necessary design codes (ASME VIII, EN13445, U-stamp and PD5500) and comply to ATEX and PED 97/23/ EC standards. Both liquids and gasses PED classes I, II, III, IV, all modules

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