

SAI ChemPartners India Pvt Ltd



Filtration of mineral and drinking water

PROCESSES AND EQUIPMENT



TECHNOFILTER – FILTRATION TECHNOLOGIES

RESEARCH-AND-MANUFACTURING ENTERPRISE
TECHNOFILTER IS A LEADING RUSSIAN COMPANY
IN DEVELOPMENT AND PRODUCTION OF SYSTEMS
FOR INDUSTRIAL MICROFILTRATION USING DEPTH,
MEMBRANE AND SORPTIVE CARTRIDGE FILTER
ELEMENTS.

Technofilter has a 20-year experience in development and production of microfiltration membranes and pleated filter elements.

Technofilter offers an extensive range of filter elements on the basis of cellulose, glass fibre, Nylon, polyether sulfone, fluoroplastics, stainless steel and other certified materials.

The objective of the company in the field of food industry is development and production of filtration systems improving the quality of beverages and provision of technical and service assistance to the customers.

The equipment produced by Technofilter exhibits reliable performance in production of famous wines, distillery products, mineral waters, juices and non-alcoholic beverages.



Main applications of Technofilter products and processes in filtration of mineral and drinking water

- Sterilizing (microbiological) filtration of “still” water before filling
- Fine filtration of aerated waters before filling
- Preliminary filtration
- Coarse filtration (separation of particles)
- Sterilizing filtration and deodorization of carbon dioxide
- Conditioning of process air





Filter elements

Brief specification of Technofilter's filter elements used for prefiltration and final filtration of drinking water

Grade	Filter medium	Retention efficiency, μm	Properties	Brief description
EPNS (ЭПНС)	Stainless steel mesh	5, 10, 20, 40, 70	Mesh Pleated	The high-flow mesh filter offers a long service life, the possibility of complete reconditioning and multiple re-use, operating temperature of up to 90°C. Used for coarse preliminary filtration
EPV.P (ЭПВ.П)	Textured wound polypropylene filament	5, 10, 20	Depth Wound	A multi-layered structure having a porosity gradient offers increased dirt-holding capacity and extended service life, operating temperature of up to 80°C. Only used for prefiltration.
EPVg.P (ЭПВг.П)	100% chemically resistant polypropylene (pH 1-14)	0.5-50	Depth Pleated	Stable rigid matrix, high retention efficiency, multiple reconditioning, operating temperature of up to 90°C. Used for prefiltration and final filtration
EPV.STs (ЭПВ.СЦ)	Combination of microfibres of glass, cellulose and polypropylene	1.0; 0.8	Depth Pleated	Stable matrix, high porosity, increased adsorption capacity with respect to microparticles, exceptional hydrophilicity of the fibres make it possible to carry out filtration even by gravity. Maximum throughput at low differential pressures ensures low filtration cost. Operating temperature of up to 80°C. Used for high efficiency prefiltration of cognacs.
ERM.K (ЭПМ.К)	Nylon-6	0.2; 0.45; 0.65; 0.8; 1.0	Membrane Pleated	Broad chemical compatibility (pH 3 to 14), increased alkaline stability, prolonged service life resulting from increased surface area up to 0.75 m ² /250 mm, complete separation of microparticles whose size exceeds the selected pore size ensures excellent stable product quality. Only used as a final filter in combination with effective prefiltration.
ERM.PS (ЭПМ.ПС)	Polyethersulfone	0.2; 0.45; 0.65	Membrane Pleated	Broad chemical compatibility (pH 1 to 14), long service life resulting from high porosity, asymmetric structure of the membrane and increased surface area of up to 0.75 m ² /250 mm, multiple reconditioning, superior stable product quality. Used only as a final filter in combination with an efficient prefilter having a high dirt-holding capacity



Preparation of gaseous media (carbon dioxide, nitrogen, air, etc)

Preparation of gaseous media is carried out using multi-stage filtration.

- Fine filter for removal of mechanical impurities (separation of oil, dust and moisture).
- Adsorptive filter on the basis of active carbon for elimination of odours.
- Sterilizing membrane filter for removal of microorganisms

Brief specification of Technofilter's membrane filter elements used at the final filtration stages of gaseous media

Grade	Membrane material	Pore size, μm	Properties	Notes
EPM.F4 (ЭПМ.Ф4)	Ftoroplast-4 (PFTE – Teflon)	0.2	Hydrophobic, operating temperature: up to 100°C	Intended for sterile filtration of air and gaseous media, «breathing» of tanks
EPM.F (ЭПМ.Ф)	F42L hydrophobic fluorocarbon polymer	0.15; 0.25; 0.45; 0.65; 0.8	Hydrophobic, operating temperature: up to 80°C	Intended for sterile filtration of air and gaseous media, «breathing» of tanks

Detailed information on technical and operating characteristics is available on request.

The grade of DS-V (ДС-В) filter holder is selected depending on flow rate and pressure in the filtration system





Configuration of filtration systems

Filtration assemblies

On customer's request, Technofilter produces manually or automatically controlled systems UPF.R or UPF.A (УПФ.Р or УПФ.А) on the basis of multicartridge filter holders, designed for various flow rates (0.5 to 16.0 m³/hour or more). Technofilter designs, fabricates and assembles the systems in accordance with individual requirements of the customer.

The systems are compact, mobile and easy to operate. They can be installed permanently on a specific position, on a frame or on a mobile carriage. The systems consist of several filtration units, are completely assembled (pumping unit, measuring equipment, control valves, piping, etc) and are ready for operation.

«Absolute-quality» automatically controlled systems for the filtration of vodkas and alcoholic beverages

Advantages

- Steadily high quality of beverages
- Optimum set of options, compact size
- Smooth start-up, no hydraulic blows
- Full exhaustion of service life of filter elements
- Real-time control over all filtration parameters of filter elements
- Reliable component parts



«ABSOLUTE-QUALITY» SYSTEMS MAKE THE PROCESS OF FILTRATION EXTREMELY GRAPHIC, RELIABLE AND COST-EFFICIENT FOR THE CUSTOMER. THE USER CAN HAVE COMPLETE CONTROL OVER THE PROCESS OF FILTRATION AND FEEL ASSURED OF THE FINAL PRODUCT QUALITY.



Functional capabilities:

- the automatic unit ensures adjustment of the filtration system to any filling line (having mechanical, electromagnetic or pneumatic valve)
- Operator's touchpad for real-time control over all filtration parameters
- Automatic control devices provide optimum conditions for operation of filter elements (smooth start-up, no hydroblows)
- Automatic control of differential pressure at each filtration stage rules out the possibility of mechanical destruction of the filter package in the course of its plugging
- Automatic devices make it possible to use a more powerful pump which ensures complete exhaustion of the service life of filter elements
- The automatic system having PI regulator maintains a preset pressure of the product at the output of the assembly
- The use of a bypass line in combination with a shock absorber makes it possible not only to suppress hydroblows, but also to rule out any sharp pressure surges in the filters and at the output of the assembly
- The filtration system makes it possible to clean filter elements of micronaps in a closed loop.





Main applications of Technofilter's products and technologies in the beverage industry

Vodka and alcoholic beverages

- Regulated patented technique for producing vodkas using no carbon columns – «Silver filtration» – EPSF.UAg0.4 (ЭПСФ.УАг0.4).
- New regulated filtration technologies for the improvement of organoleptic properties of vodkas:
 - «Platinum filtration» – EPSF.UPt (ЭПСФ.УPt);
 - «Golden filtration» – EPV.PAu (ЭПВ.ПАu) (Golden Silk).
- Polishing filtration of vodkas before automatic filling machine using «Absolute – quality» series automatic systems.
- Stabilization of coloured alcoholic beverages using cartridge membrane filtration.
- Filtration of wine blends.
- Filtration of ingredients (of alcoholic tinctures, fruit drinks, aromatic alcohols, sugar syrup, colour, etc)
- Cleaning alcohol from mechanical impurities in the course of reception from transportation tanks or alcohol storages.
- Improvement of organoleptic properties of alcohol (removal of bitter taste) and water using new sorptive filter elements.
- Refiltration of process waste.
- Improvement of organoleptic properties of drinks using a unique product, the natural modifier of taste and aroma «Lepestki Roz» («Petals of Roses»).

Cognac

- Polishing filtration before filling.
- Removal of excessive amounts of metals for the purpose of stabilizing the beverage.
- Improvement of organoleptic properties of the beverage.

Wine

- Polishing of wines in the course of preparation for filling.
- Microbiological stabilization (defertilization) of still wines before bottling (cold filling).
- Prefiltration.
- Removal of excessive amounts of metals for the purpose of stabilizing the wine.
- Preparation of service media.

Low-alcohol and soft drinks

- Filtration of blends.
- Filtration of sugar syrup.
- Filtration of carbonic acid.
- Filtration of water for preparation of the drink.

Beer, kvass, non-alcoholic beverages

- Prefiltration.
- Trap filtration (fine filtration after a precoat diatomaceous earth filter).
- Defertilization (sterilization) (for cold sterile filling) by membrane cartridge filtration.
- Sterilizing filtration of process air, carbonic acid, nitrogen.
- Water treatment (sterilizing filtration, prefiltration).

Mineral and bottled waters

- Sterilizing (microbiological) filtration of «still» water before filling.
- Fine filtration of aerated waters before filling.
- Prefiltration.
- Coarse filtration (removal of particles).
- Sterilizing filtration of carbonic acid.

Juices, fruit drinks, syrups, liqueurs

- Prefiltration.
- Fine filtration before hot filling.
- Cold sterilization.

Service media

- Air:
 - Removal of oils and moisture;
 - Removal of particles;
 - Sterile filtration of carbonic acid;
 - Deodorization;
 - «Tank breathing».
- Water:
 - Disinfection of filters and equipment;
 - Preparation of water for product formulation;
 - Aseptic treatment.
- Vapour:
 - Fine cleaning;
 - Preparation of sterile vapour.

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A quality management system in compliance with requirements of ISO 9001:2000 standards has been adopted by the company.

