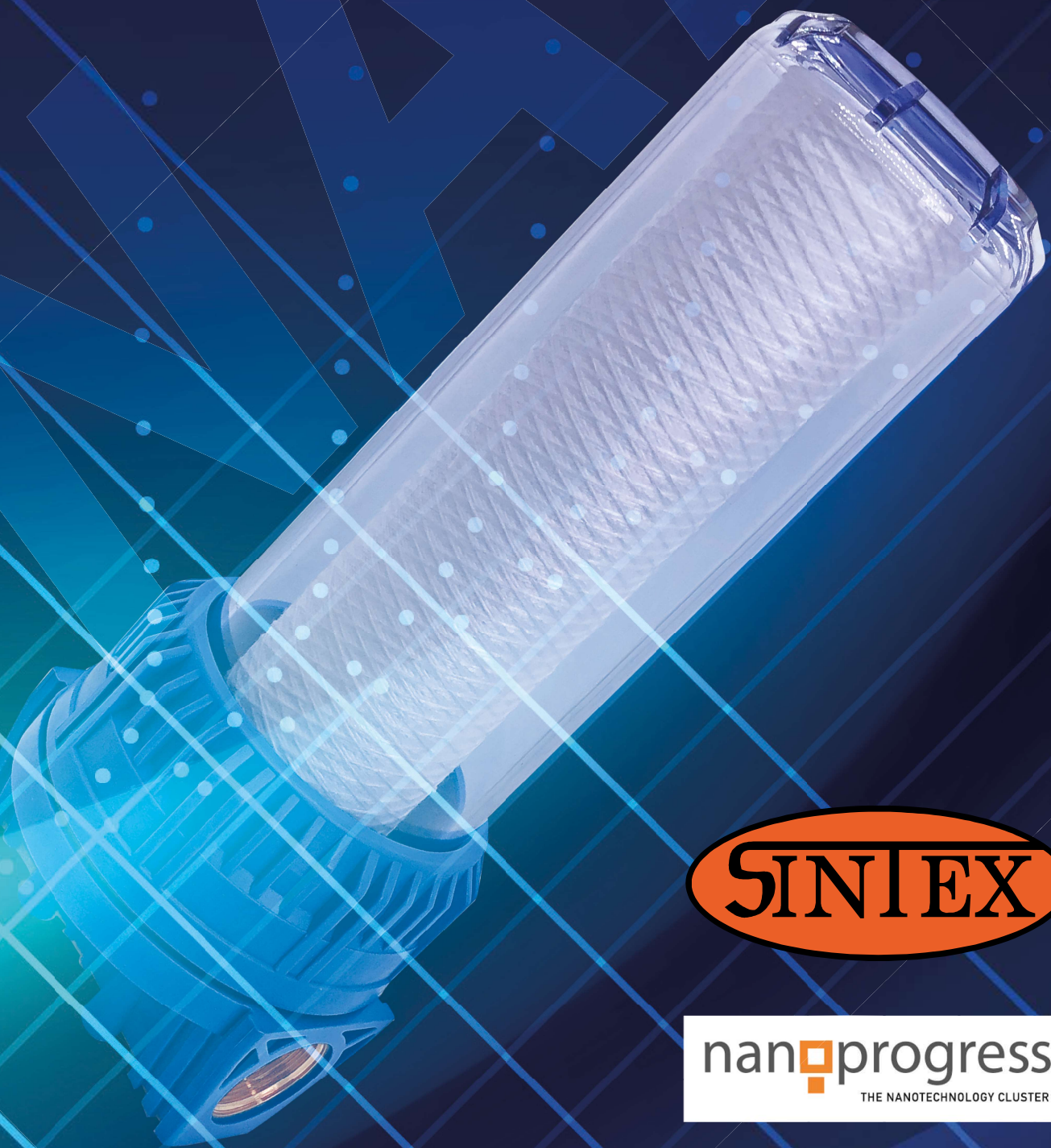


MANUFACTURER OF CANDLE FILTERS AND NANOFILTERS



nanoproggress
THE NANOTECHNOLOGY CLUSTER

FILTRATION

SINTEX, a.s. is a manufacturer of wound candle filters for the separation of solid particles from liquids and gases for more than 30 years. They are made of perforated polypropylene tube, on which is wound polypropylene thread or crude yarn of polypropylene, cotton, aramid, etc.

Classical wound candle filters are manufactured on a precision cross-winding machine. The length of the filters is usually 5, 10, 20 inch, the inner diameter is 28 mm, the outer diameter of the coil is 61 ± 2 mm. Ekofil wound plug inserts are ideally suited for filtering solid particles of 0.5 - 200 μm size.

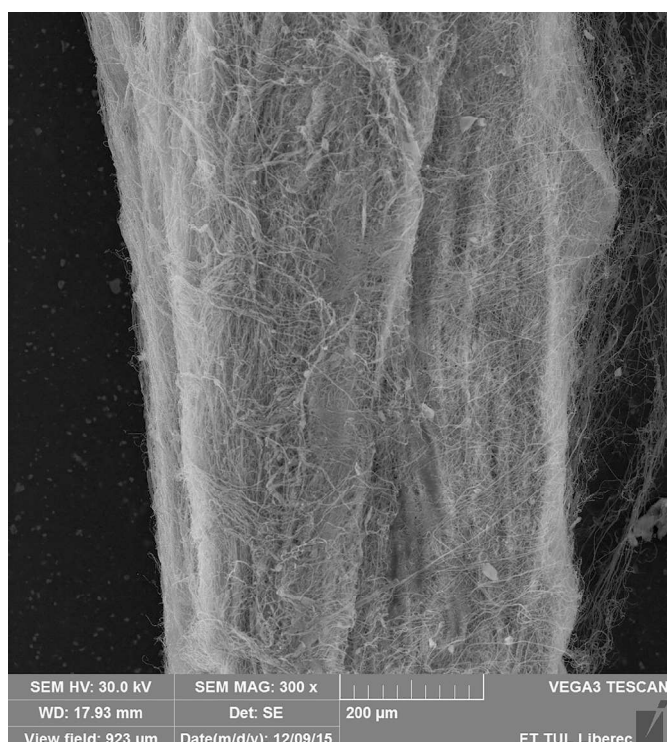


ULTRAFILTRATION

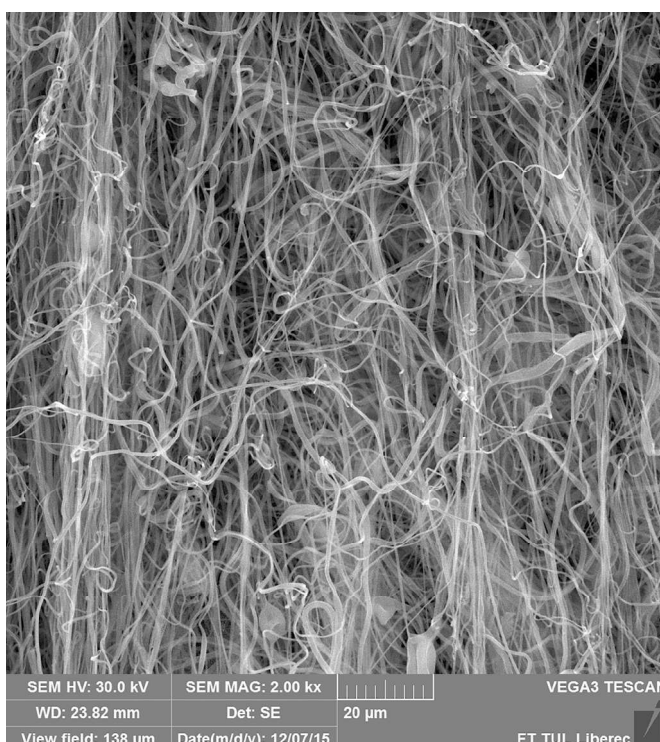
The principle of the separation process based on membrane technologies is mechanical filtration of the liquid medium through a membrane module. The essence of this technology is a semipermeable membrane which allows the molecules of water and depending on the type of membrane, also the other selected particles up to certain size to pass through the membrane.

Ultrafiltration belongs to membrane processes. It is a method of water filtration, involving the membrane as a filter in separation of the particles from a liquid medium. Membranes utilized in the ultrafiltration process have the porosity of 0,1 to 0,01 μm . The driving force is the hydrostatic pressure difference. During the process of ultrafiltration, the inlet water is divided into a retentate, which remains on the inlet side, and the permeate, which passes through the membrane.

Linear nanofibrous composite (1D)



Flat nanofibrous composite (2D)

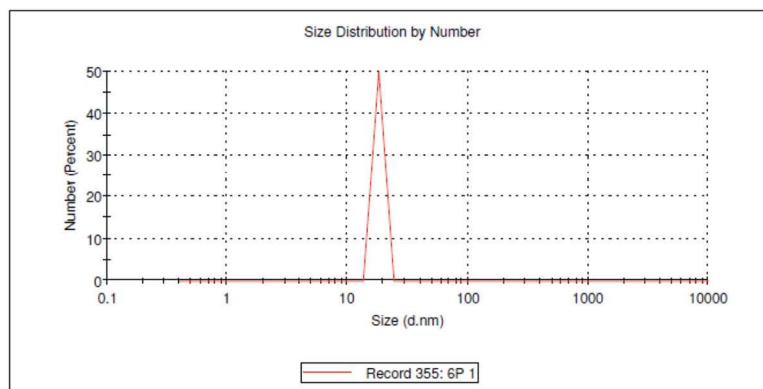


Within the NANOPROGRESS cluster, the method of effective use of nanofibers into candle filters with different content and composition of nanofibers has been solved for a long time. The technical solution is related to the liquid and gas filtration through three-dimensional (3D) filter with flat (2D) and linear (1D) composition of nanofibrous structures.

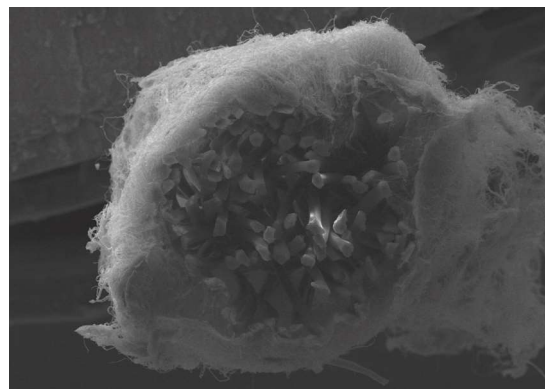
The most efficient nanofiber candle filter is composed of wraps of flat nanofiber membrane and winding of linear nanofibrous formation, with final diameter of the candle 61 ± 2 mm. Such a composite filter, composed of flat and linear nanofibrous structures, has a permeability of particles of 20 - 50 nm.

Permeability of TiO₂ particles in aqueous dispersion after filtration through a wound candle nanofilter with a flat nanomembrane and a linear nanofibrous composite

The particle size was determined using a Zetasizer Nano ZS operating on the DLS principle



Cross section of linear nanofibrous composite

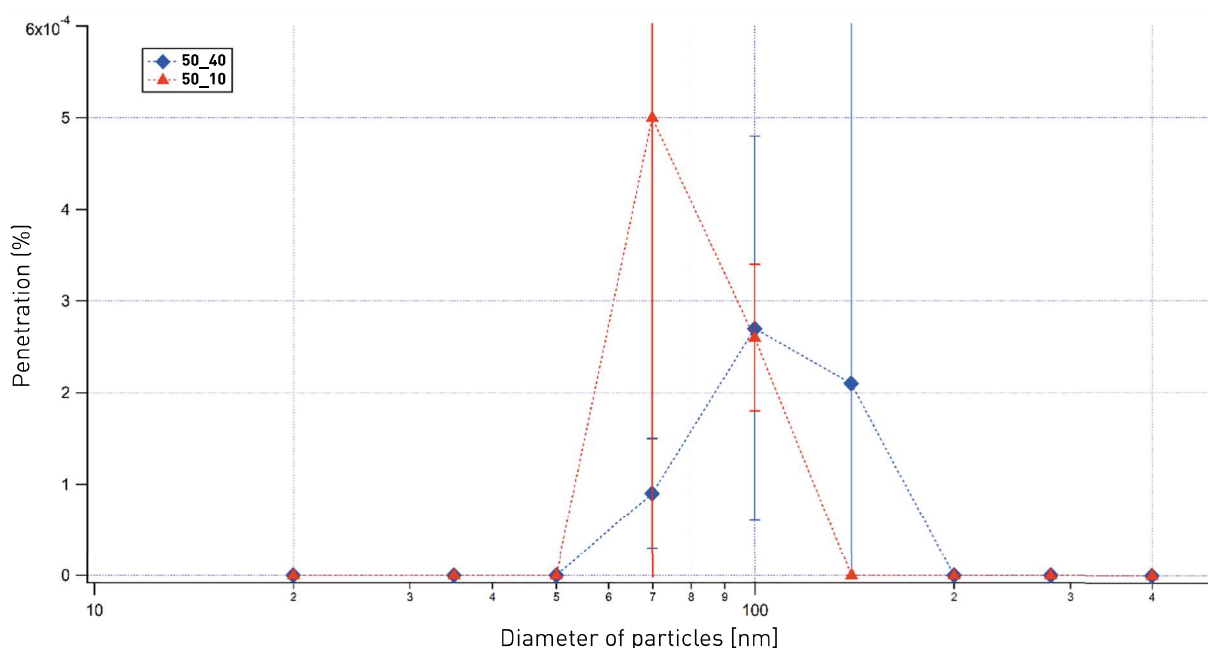


In case of need of ultrafiltration in the area of 100 - 300 nm capture of solid particles, we supplement the wraps of flat nanomembranes by wrapping polypropylene filament yarn 1000 - 3000 dtex to the full diameter of the candle 61 ± 2 mm.

Candle nanofilters are useful in food filtration of little contaminated liquids with fine solid particles, especially in final filtration of wines, spirits, milk, beer and vegetable oils.

In addition to ultrafiltration of liquids, candle nanofilters are also highly effective for gas filtration, in particular for the filtration of polluted air from solid particles of dust, smog, aerosols, allergens, bacteria and viruses.

Penetration measuring of ammonium sulphate aerosol particles through a candle filter with nanofibres at air flow rates of 10 and 40 l / min



SINTEX, a.s. is a company based in the Czech Republic, engaged in textile production at all production levels, i.e. from yarn production, through production of knitted and woven fabrics to finished ready-made products. Our long-term program is the production of filters. In addition to purely production programs and activities, the company's core business is also research and development, together with an accredited textile laboratory. Within the NANPROGRESS cluster we have developed application of wound candle filters with linear and flat surface nanofibrous formations.



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