

FILTRATION CARTRIDGES

TECHNICAL INFORMATION 3

EVERBLUE POLYPROPYLENE MELT BLOWN FILTRATION CARTRIDGES

Filtration is an important step in the R.O. membranes protection from clogging coming from suspended solids. Depth filtration is currently used on this duty, because depth filters are able to collect contaminants even inside their structure, not only on their surface. This allows depth filters to last much more on service than surface filters.

This is the reason because depth filters are said to have a volume filtration instead of a surface filtration.

Two are the main kind of depth filter:

- *Wound Cartridges*
- *Melt Blown Cartridges*



Photo 1 - Standard blown melted cartridges

The production

The Everblue melt blown depth filter are designed for efficient and precise removal of particulate impurities from liquids. It is spun from 100% pure polypropylene and designed specifically for fluid filtration applications where high performance of filtering efficacy is required.



Photo 2 – Natural polypropylene granules used for production

In a specific way the polypropylene is mixed with hot compressed air and stratified through a continuous and constant movement around a rigid core, which rotates itself, inducing the fibres to intersect among them continually.

This procedure gives depth to the cartridge and assures uniformity of filtering on the whole surface and, as a consequence, more efficiency, more resistance to the compression, therefore more stability and less loss of the load. The polypropylene fibres, worked at a very high temperature, solder themselves thermally; in this way there is no release of residues. The filters are available in a range of micron ratings from 1 micron to 90 micron. The Everblue filter is characterized by long life, with a low pressure drop.

The different temperature and speed settings of polypropylene and air determine the diameters of the fibers which in turn determine the filtering degrees of the cartridges.

Melt blown cartridges can be produced by spraying the melted polypropylene directly on a steel cylinder (fiber collector) or on a rigid polypropylene support that remains inside the finished cartridge, becoming its support.

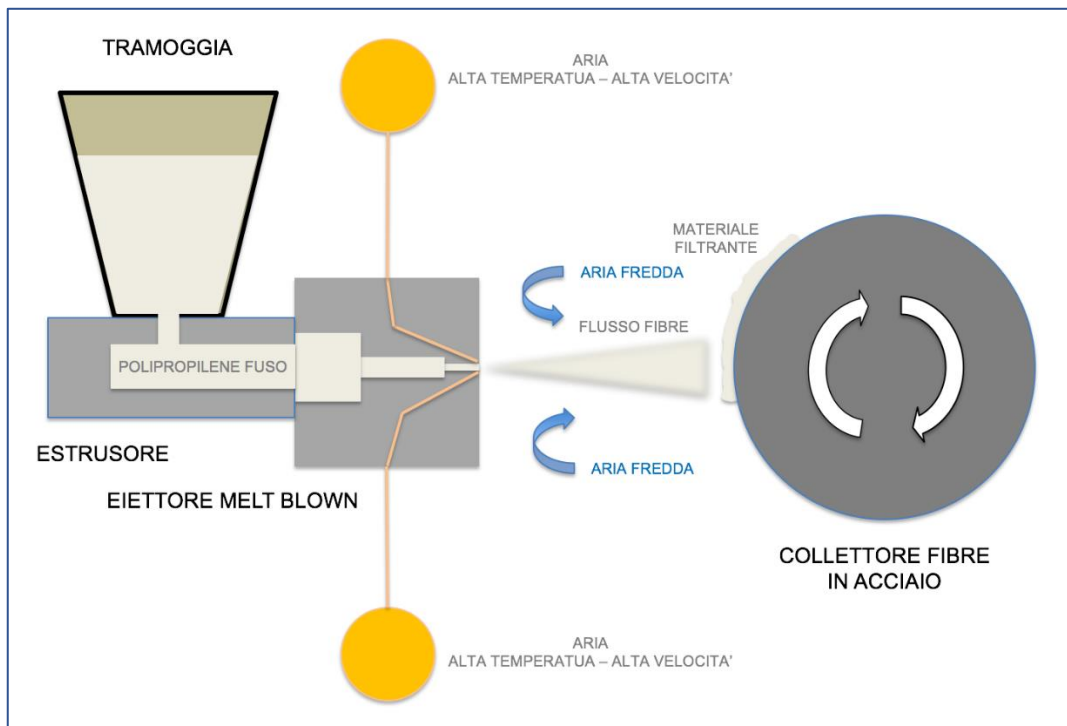


Photo 3 – Cartridges production process diagram without internal support

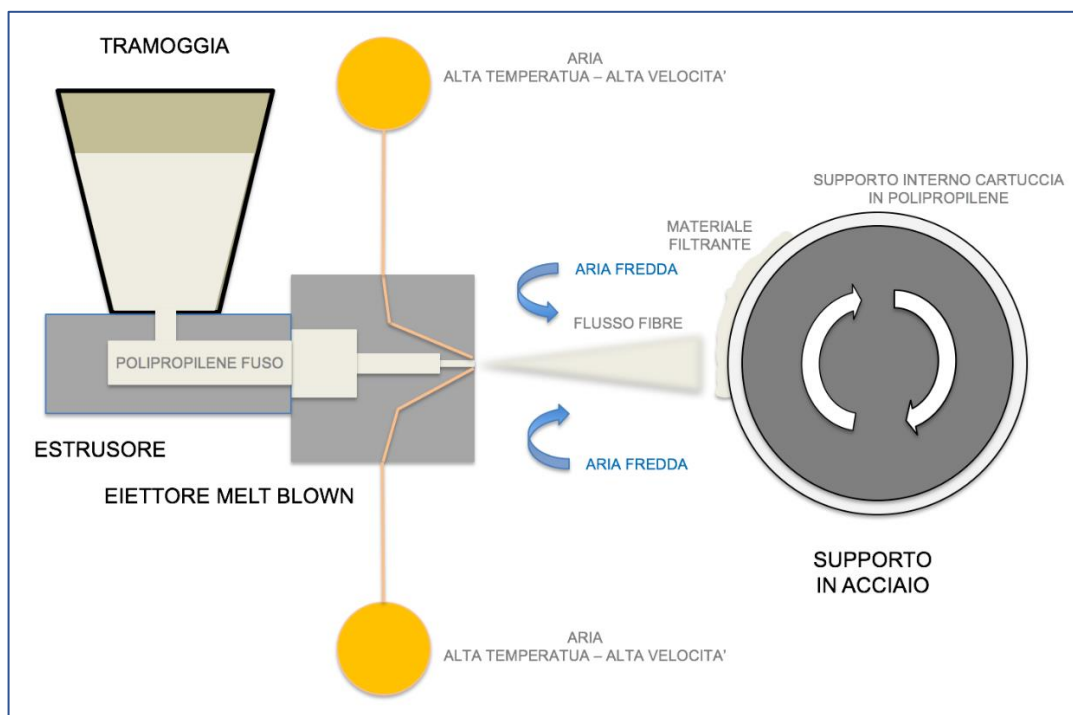


Photo 4 – Production process diagram of rigid internal polypropylene support cartridges



Photo 5 – Production process details

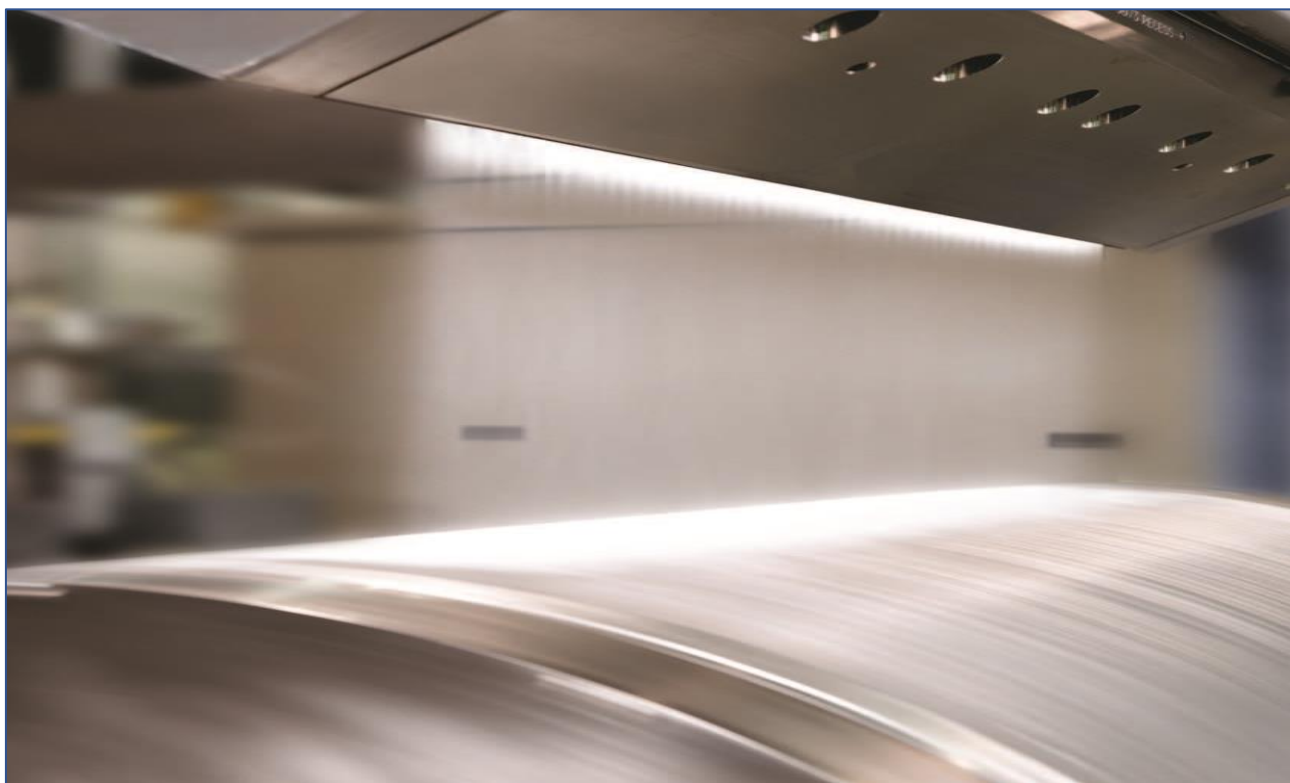


Photo 6 – Production process details

masters of filtration

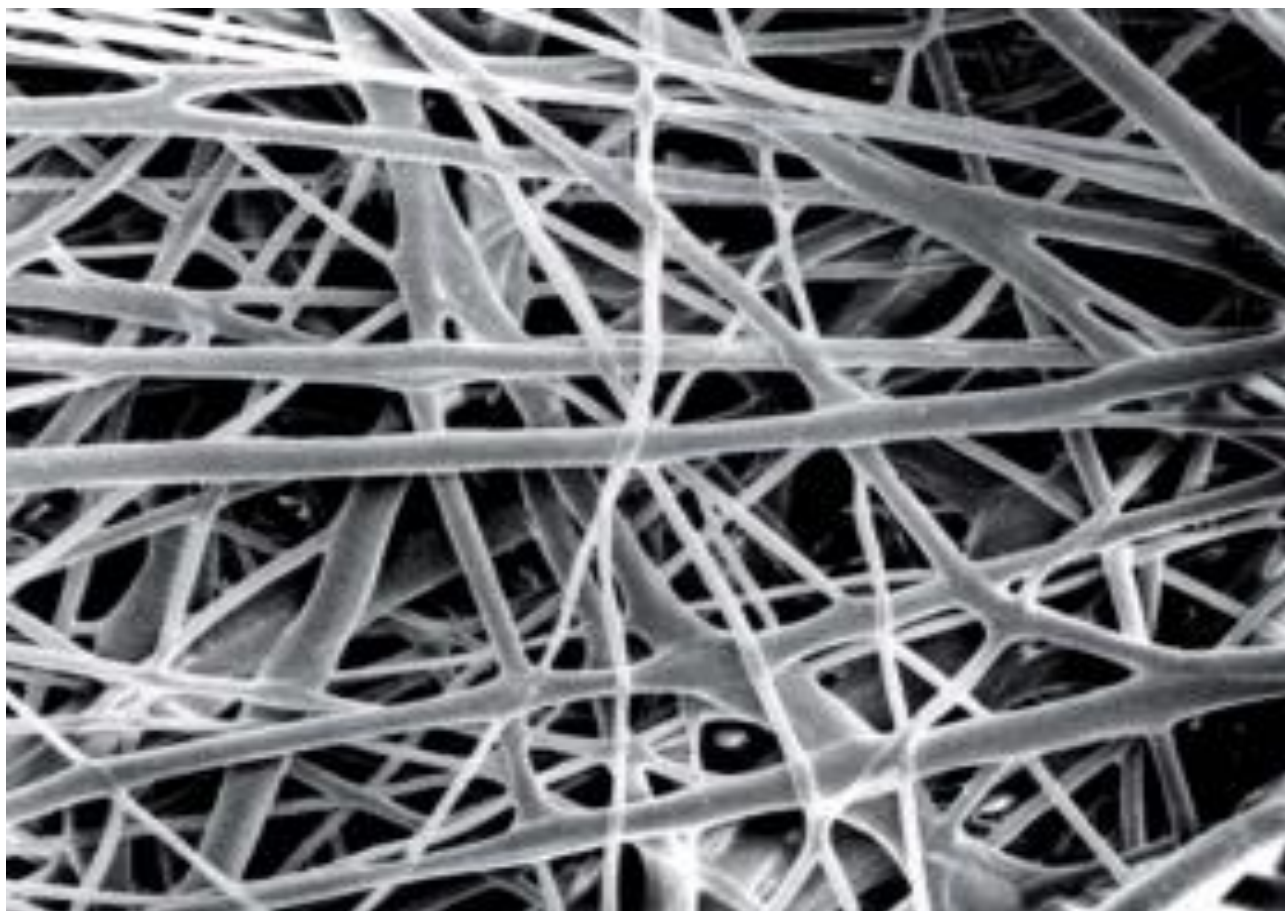


Photo 7 – Polypropylene fiber detail

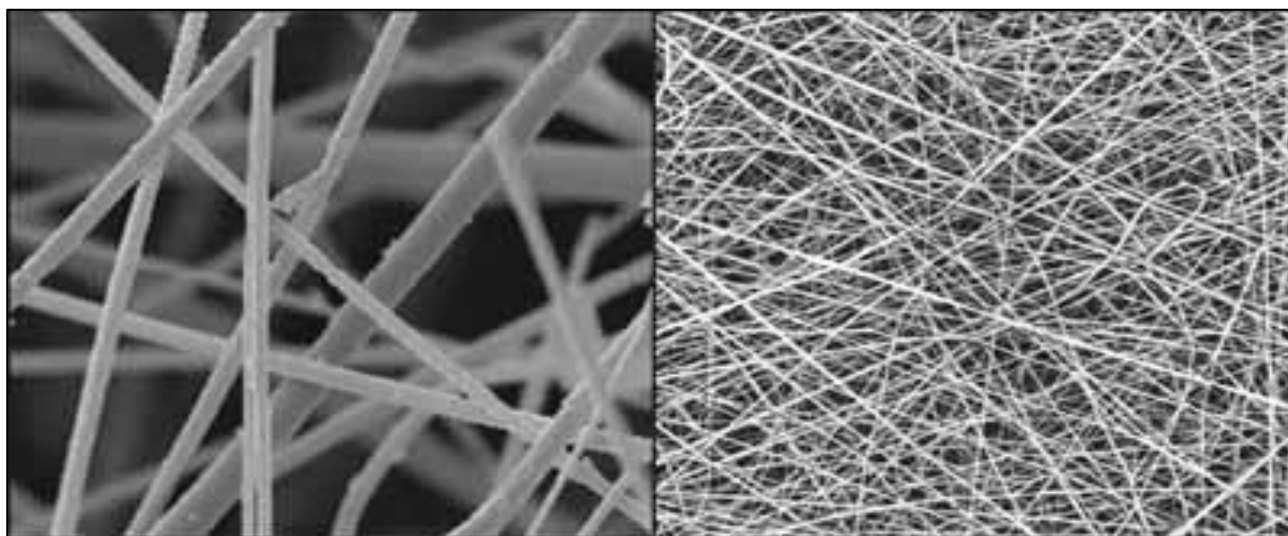


Photo 8 – Detail of polypropylene fibers 100 micron cartridge (left) and 1 micron cartridge (right)

Features

- constant filtration over time
- high filtration efficiency
- high quality of the raw material (100% pure polypropylene - Made in Europe)
- approved for contact with drinking water
- wide chemical compatibility
- wide range of lengths and diameters

Melt Blown Cartridges

The particular production process, described above, gives the filtering material that constitutes the cartridge, a gradualness of filtration from outside to inside together with a high reproducibility of the performances capable of remaining identical until complete clogging.

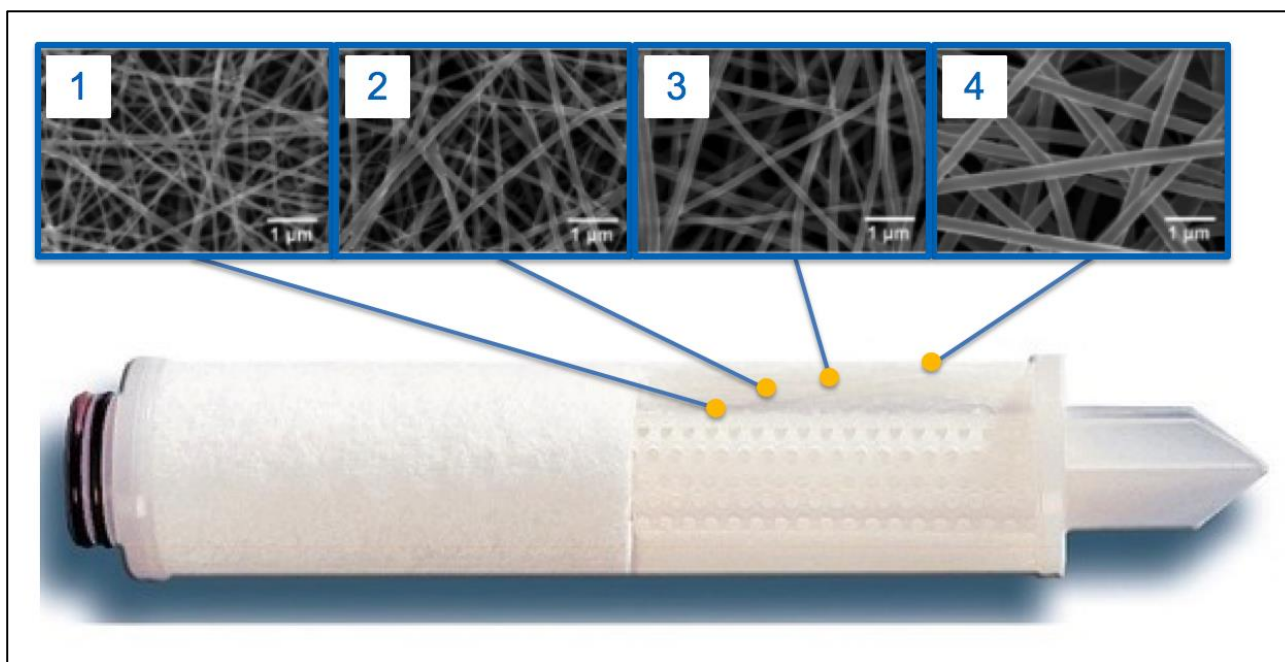


Photo 9 – Fiber and pore size in an Everblue melt blown cartridge

These are the main reasons why such filters guarantee SDI value requested to protect R.O. membranes. They allow SDI value < 3.

A further step in melt blown depth filtration has been made introducing filters having a larger diameter of the standard cartridges (diameter 63-70 mm) as the Everblue filtration cartridges model BIG BHF (diameter 4" – 101 mm), FilterOne (diameter 5,5" – 140 mm), CL (diameter 6" – 150 mm) and BL (diameter 8" – 200 mm).

These large diameter melt blown cartridges are produced in two stages:

- *in the first phase the innermost layer of the cartridge is produced*
- *in the second phase the outer layer is produced*

The combination of these two layers is called "dual gradient".

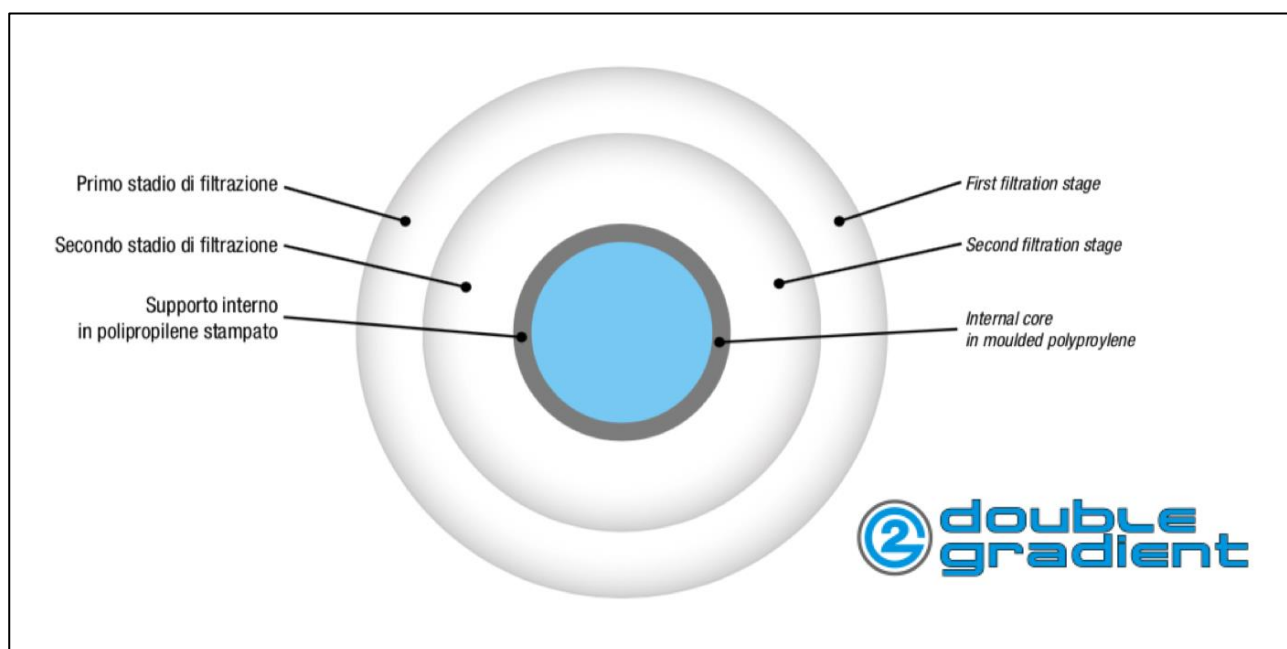


Photo 10 – Example "Everblue double gradient" cartridge

These new cartridges combine the graduality and perfect filtration efficiency typical of "melt blow" cartridges, with a very high collection capacity of suspended solids obtained with the extension of the gradualness of filtration and large volume of filter material.

This leads to lower investment cost and overall in maintenance cost.

Filtering efficiency

Le cartucce melt blown Everblue sono suddivise per efficienza in 3 gruppi principali:

The melt blown Everblue cartridges are divided in 3 main group base of efficiency:

- efficiency 85% initial identification code N85 __
- efficiency 95% initial identification code N95 __
- efficiency 99,98% (absolute) initial identification code N99 __

The Everblue cartridges with initial code N85, have been tested to achieved at least 85% of filtration. As an example, a 10 micron cartridge with initial code N85 will stop at least 85% of all 10 micron particles.

The Everblue cartridges with initial code N95, have been tested to achieved at least 95% of filtration. As an example, a 10 micron cartridge with initial code N95 will stop at least 95% of all 10 micron particles.

The Everblue cartridges with initial code N99, have been tested to achieved at least 99,98% of filtration. As an example, a 10 micron cartridge with initial code N99 will stop at least 99,98% of all 10 micron particles.