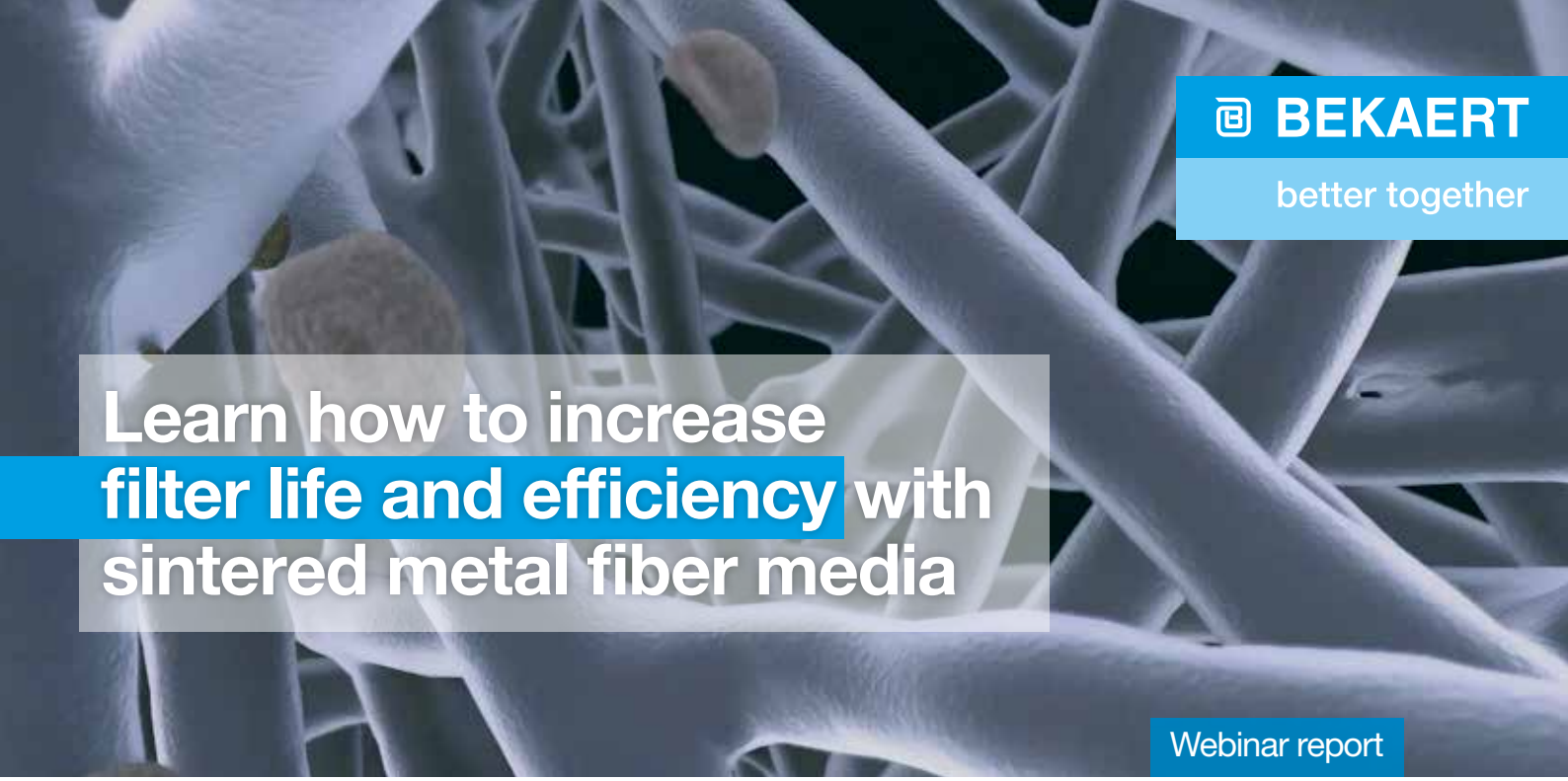


BEKAERT
better together

Learn how to increase filter life and efficiency with sintered metal fiber media

Webinar report

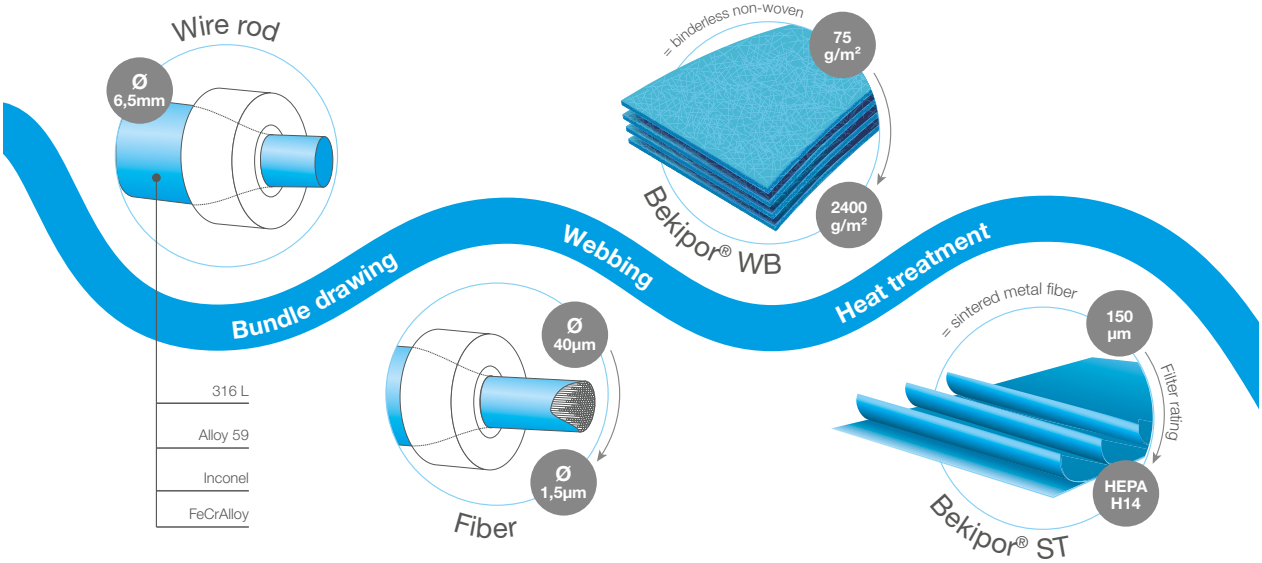
INTRODUCING BEKIPOR® SINTERED METAL FIBER MEDIA

How Bekaert's Bekipor® family of metal fiber, non-woven media is produced?

From wire rod we will move to our Bekipor® porous media through a bundle drawing and webbing operations (see picture). The end result of this process is thin metal filaments with diameters from 1 µm to 80 µm. A human hair is typically 70-80 µm in diameter.

Bekipor® media is available in a wide range of alloys including stainless steel, nickel, Hastalloy, Inconel, Fecralloy, titanium and aluminum.

The fibers are then converted into a binder-less non-woven media containing between 75 g/m² and 2400 g/m² of metal fibers. Bekaert goes one step further by sintering the fibers in an oven at sintering temperature, which causes the fibers to bond to each other. Each fiber has approximately 20 sinter bonds along its length, which



together create a highly stable pore structure. Sintered Bekipor® filter media has a filter rating between 150 µm up to HEPA H14 rating.

Note: Keep in mind there is a difference between surface and depth filtration orientation and that the different filtration flow directions are suitable for different applications.

Click here if you want to know more about depth filtration?

A major advantage of Bekipor® fibers is that they can be handled as a mesh, so can be pleated, bent and welded. Pleating, for example, leads to higher throughput, reduced initial pressure drop, and longer life.

As to the actual mechanism of filtration, the random orientation of the fibers allows particles to be trapped extremely effectively; much more so than with the more uniform arrangement within a woven wire cloth.

COMPARING DIFFERENT FILTRATION MEDIA

What is a perfect filter? "How to find the perfect balance between air permeability, efficiency and dirt holding capacity?

3 differents filtration media tested:

- Bekaert's sintered metal fiber Bekipor®
- Commonly available standard industrial woven wire mesh
- Engineered Dutch Weave, typically consisting of finer wires in the fill direction.

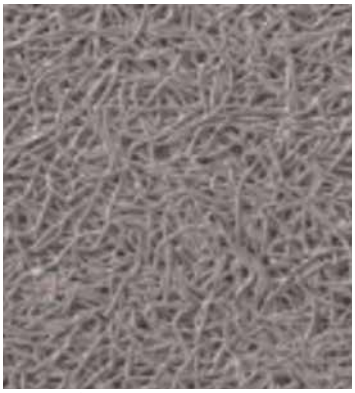
The tests were conducted according to standard protocols, and the various caveats were briefly explained.

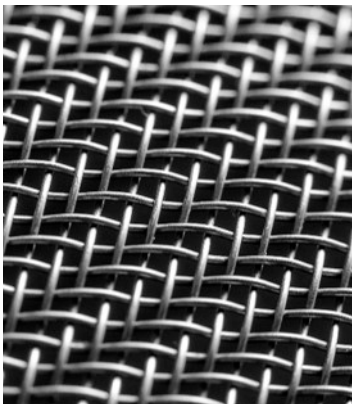
In terms of testing comparative **air permeability**, Bekipor® media lies in the middle of the three materials: at the same micron rating, it usually displays higher permeability than the standard wire mesh, but lower permeability than the high-spec Dutch Weave.

Looking at **filtration efficiency**, Bekipor® media has a wider pore size distribution for a broader ability to capture particles smaller than the rated media.

The comparative **dirt holding capacity** of the three materials were also examined. This is a key test because it is linked to filter life, which is of interest because in most cases long on-stream filter life is desired.

It was clearly seen that the dirt holding capacity of Bekipor® media


Bekipor® filter media


Woven wire mesh

significantly outperforms that of standard woven wire mesh and the special Dutch Weave at every micron rating. Even a 10 micron Bekipor® media has a higher dirt holding capacity than a 45 micron Dutch Weave. This has interesting consequences. It means that if you are using a 45 micron wire mesh, you could go down to a 25 micron Bekipor® media to improve your filtration efficiency and also get a much longer filter life.

In fact, Bekipor® media exhibits up to **8x higher dirt holding capacity** with fine media, and up to 10x higher with coarse media. This has significant implications on Total Cost of Ownership (TCO). While the initial purchase price of Bekipor® media is higher than the other two filtration media, when the collateral costs are taken into consideration, as well as the increased lifetime and the increased filter performance of Bekipor® media, the Bekaert solution has a **much more favorable TCO**.

In practice, this means that with Bekipor® media you can use fewer new filters in an installation; you can maintain the current filter rating and get a longer life; or you can select a lower micron rating/ better efficiency and maintain (or even increase) your current filter life. Significant savings for applications are possible, especially considering the high collateral cost of filter changes.

KEY TAKEAWAYS

- Made from small diameter fibers, air laid into a web, then furnace sintered
- Very high permeability, dirt holding capacity and efficiency
- Better performance than woven wire mesh in most areas, though careful analysis is required to select the best media for each application
- Stable pore structure, resistant to corrosion & high heat and is cleanable/and reusable when used in many applications
- Typically used as a depth media, but can also be used as a surface media

QUESTIONS &ANSWERS

Other questions were asked during the webinar. All the answers are available in the recording

What is the impact of pleating Bekipor® on performance and integrity?

Pleating increases the filtration area of the media, which in turn increases the filter's performance. Generally speaking, a pleated polymer filter element, compared to a normal cylindrical element, will increase the effective filtration area by up to four times, which translates generally into the same performance increase. Pleating will not affect media stability, as long as the pleating is done properly and with the correct pleating equipment. You need to apply enough pressure to cause it to bend to the right configuration, but not too much to crack the filtration media.

Is Bekipor® media also applicable for gas filtration for pump cleaning applications?

There are differences between gas filtration and depth filtration, but the tests for depth filtration are still 100% applicable to gas filtration. If it is for a back-flush gas filtration, it will change the efficiency but will also do the same with the mesh. If the question refers to back-flush, similar dirt holding capacity differences apply, but we can talk about this and find the right solution.

What cleaning method is best for metal fibers?

Generally speaking, we recommend that cleaning metal fiber media is conducted as gently as possible, although this is often not the most efficient or cost-effective. You have to keep in mind that you are dealing with fibers of diameter 2-4 microns with a tremendous amount of surface area, so the corrosion rate for our filter media is potentially higher than it would be for flat plate or perforated plate filtration media. Filter cleaners have become very adept at cleaning depth media with chemicals, pressure and ultrasonics, but I don't want to endorse a particular method.

Is sintered metal fiber media stable at high differential pressures? How does its stability compare to woven wire mesh?

Sintered metal fiber media is stable at high differential pressures for 30 or 40 years or even longer, such as in high DP polymer applications. Typically a filter element is manufactured, it may be rated for as high as 1500 psi DP, although most people won't necessarily go as high as this. Our media is used on a daily basis up to 1200 psi DP. In the media selection process it's important to let your filter manufacturer know the level of pressure that you plan to reach, as some of our media are compressible at very high differential pressures.

Watch the full webinar