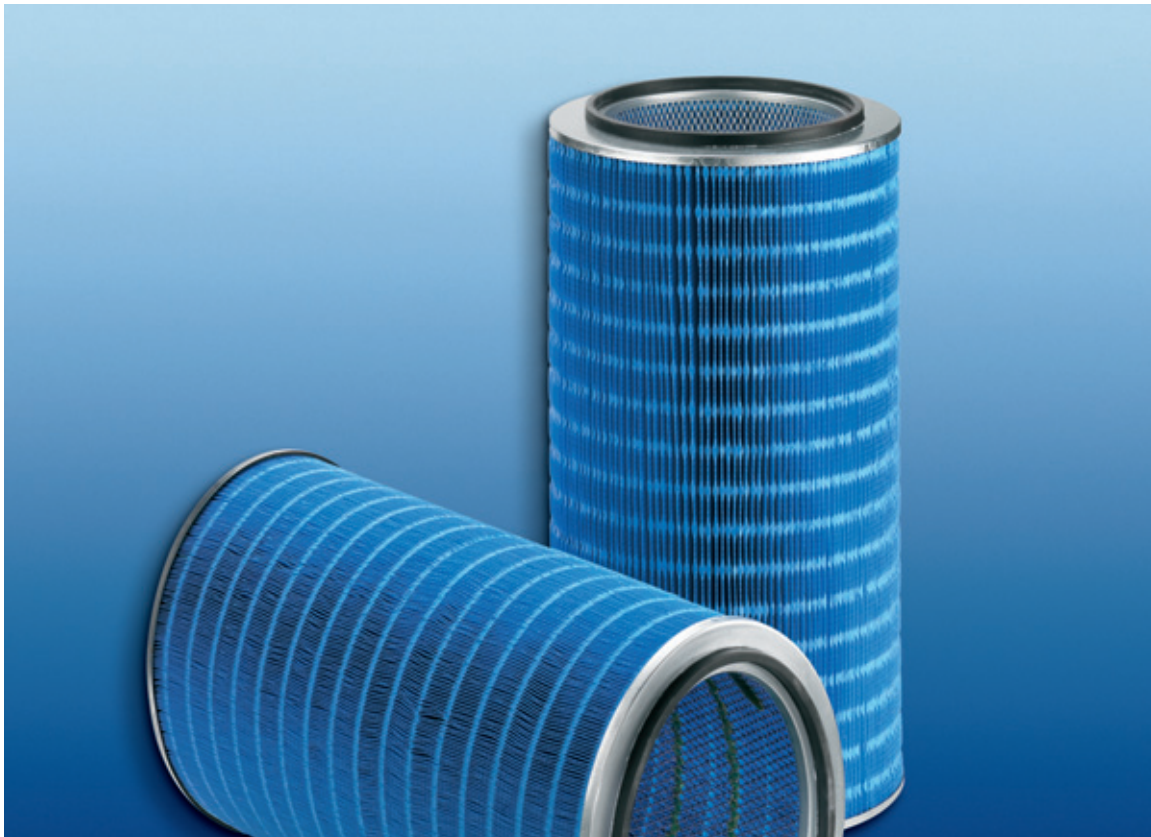




Donaldson[®]
FILTRATION SOLUTIONS



Ultra-Web[®]
High Efficiency Nanofiber Filters

Longer life, cleaner air, cost savings!

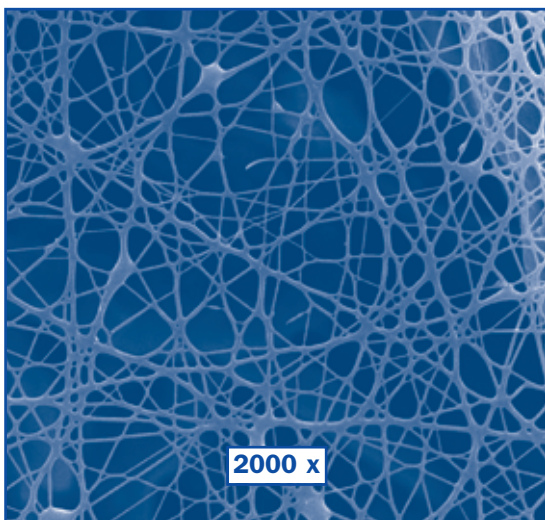
The Ultra-Web advantage is cleaner air

▶ Nanofibers are scientifically proven to have an advantage in efficiency and pressure drop. Ultra-Web nanofibers are patented and made with an electrospinning process that produces a very fine, continuous fiber of 0.2-0.3 micron in diameter to form a permanent web-like net with very fine interfiber spaces. This nanofiber “web” is constructed on a variety of media, resulting in:

- ▶ Advanced media that captures submicron and larger dust particles
- ▶ A media that traps dust on the surface and promotes self-cleaning
- ▶ Better pulse cleaning and lower stabilized pressure drop
- ▶ Cleaner air, longer filter life, and greater cost savings

Nanofibers are Smaller than a Fly Eye!

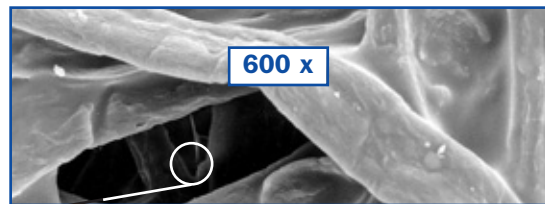
▶ Ultra-Web nanofibers are the smallest synthetic fibers used in filtration today. To put it into perspective, compare Ultra-Web nanofibers to the eye of a fly



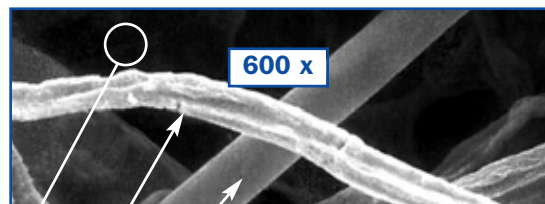
Ultra-Web



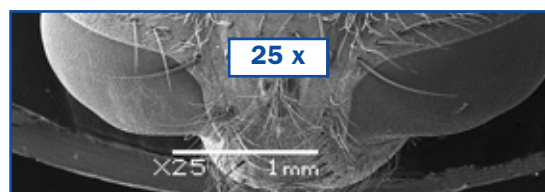
10 Micron, Nanofiber Technology



10 Micron, Cellulose Media



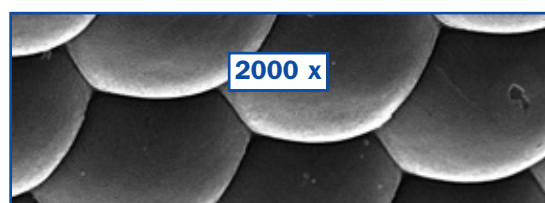
10 Micron, Cellulose/Synthetic Media Blend



Fly Head



Fly Eye

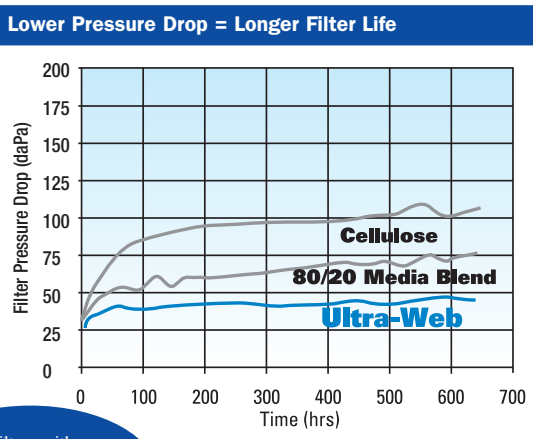


Fly Eye

Lasts longer

Ultra-Web filters last up to 2 times longer

▶ Pressure drop starts high and rises quickly with depth-loading commodity filters such as plain cellulose or cellulose/synthetic (80/20) media blends. Ultra-Web nanofiber technology provides phenomenal surface loading ability and superior dust release capabilities due to its nano-fine interfiber spaces. Filtration scientists have long attributed surface loading with lower operating pressure drop over a much longer period of time. As a result, the web-like nanofiber technology allows Ultra-Web filters to last up to 2 times longer than commodity filters.



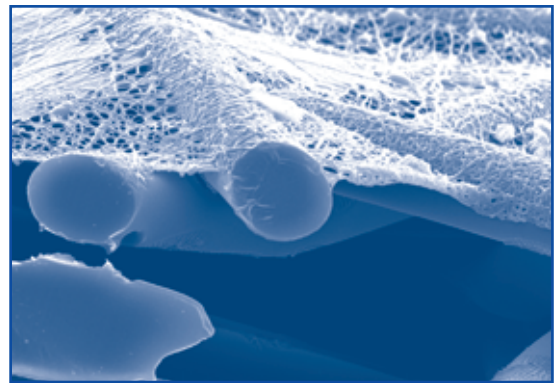
Filters with Ultra-Web nanofibers lasts up to **2x Longer**

Results were derived testing Atomite test dust in an 8-cartridge collector at 2,3 g/m³, 6,2 bar cleaning pressure, 100ms on time 10 second off time.
Airflow goal = 6900 m³/hr.

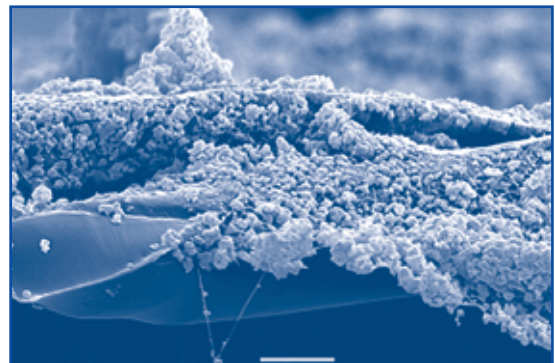
Ultra-Web captures what the eye can't see

▶ Only Ultra-Web efficiently captures submicron dust particulate. Cellulose and 80/20 blend media are not efficient enough to rate on submicron dust particulate. Typical cellulose and 80/20 blend media are rated to capture 1-3 micron dust particles and some competitive 80/20 blend media is only rated to capture larger 3-10 micron particulate.

Surface Loading Promotes Self Cleaning



Clean Ultra-Web Filter



Surface-Loaded Ultra-Web Filter (The substrate is still clean)

Ultra-Web nanofiber media is loaded with ISO fine dust. Dust particles collect on the surface of the media and clean off easily while the substrate stays clean. A depth-loading filter would allow dust particles to penetrate deeply into the substrate where they build up and choke off the airflow.

- ▶ Ultra-Web provides 40% lower emissions on 1µm dust particles
- ▶ Ultra-Web provides 58% lower emissions on 0,5µm dust particles
- ▶ BIA dust class M efficiency
- ▶ Start up efficiency – 99,9% on 0,2-2 micron dust particles
- ▶ Reflects highest industry standard
- ▶ Operational fractional efficiency – 99,999% on 0,5 micron dust particles

Saves money

Ultra-Web improves the bottom line

▶ Count on significant savings with the most powerful filtration media available. Cartridge filters made with Ultra-Web nanofiber technology last longer, resulting in fewer filter changes, lower replacement and labour costs, and less production downtime. Extraordinary surface loading performance provides lowest pressure drop and significant annual energy savings.

Reduces energy costs
By 25 to 50%

Lower Pressure Drop Saves Energy

	Standard media	Ultra-Web media
Filter elements (No.)	24	24
Airflow (m ³ /h)	10600	10600
Operating Delta P (daPa)	125	75
Installed fan power (kW)	15	15
Power consumption (kW)*	5,05	3,03
Annual energy use (Euro)	€1.413	€848

* Consumed kW to overcome the filter operating pressure

This is one example of energy savings due to lower pressure drop. Energy savings can further increase with larger collectors. These energy savings are calculated based on the following assumptions. Cartridge collector running 4000h per year and energy costs are 0,07 Euro per kWh.

See the savings add up with Ultra-Web

▶ Cellulose or 80/20 commodity filters cost less than Ultra-Web, but Ultra-Web nanofiber filters save you more money in the long run, particularly with energy savings that can't be beat. No other filtration

technology provides the powerful combination of higher efficiency and cleaner air, lowest pressure drop and longer life, plus high energy savings.

Fewer Changeouts Save Energy, Maintenance & Filter Costs

Annual total savings up to €3.882

Nr. of Ultra-Web filter elements	Annual maintenance & filter cost savings	Annual energy savings	Total annual savings
8	€135	€188	€323
12	€203	€283	€486
24	€405	€565	€970
36	€608	€848	€1.456
48	€810	€1.131	€1.941
72	€1.215	€1.696	€2.911
96	€1.620	€2.262	€3.882

Maintenance and filter replacements calculation are based on a comparison of standard media cartridges and Ultra-Web cartridges. Standard media filters are replaced after 4000h, Ultra-Web filters after 6000h. Standard media is priced at 100 Euro, Ultra-Web at 135 Euro. Labour rate equals 45 Euro per hour; filters are replaced at a rate of 16 filters per hour.

Proven Performance

Cleaner air

▶ Captures submicron particles with patented nano-fiber technology and pre-HEPA MERV 13 efficiency

Longer filter life

▶ Lasts up to 2 times longer than cellulose or blended media, depending on the application

Greater cost savings

▶ Provides the best value and long-term savings

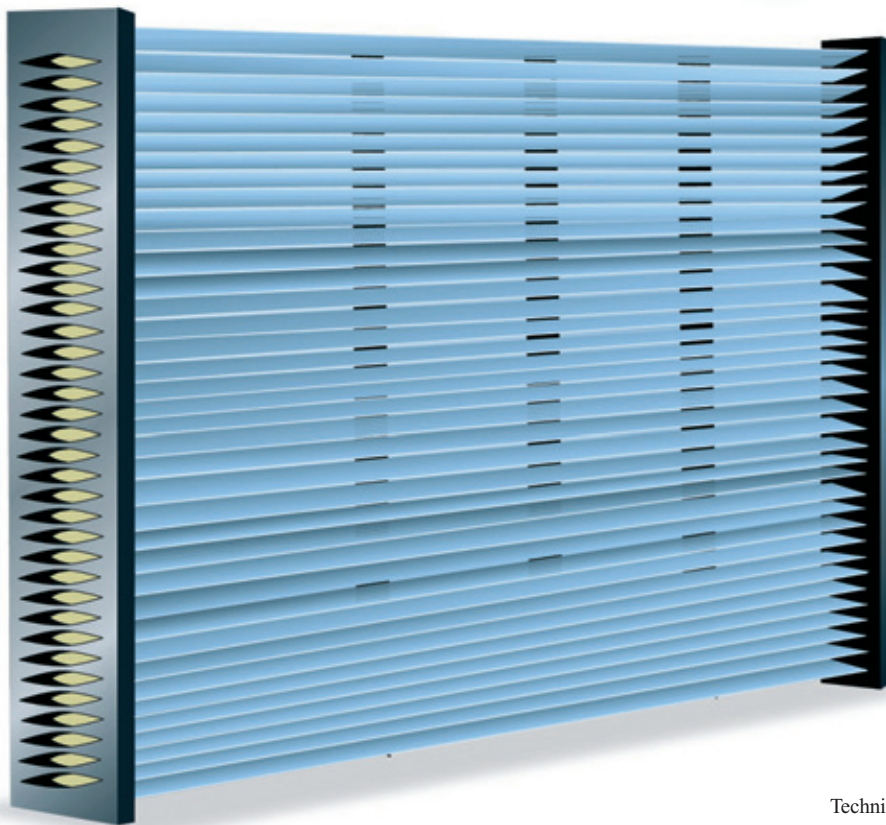
For all collectors

▶ Ultra-Web filters are standard on all Donaldson Torit DCE cartridge collectors

▶ Ultra-Web filters are also available as replacement for all brands of cartridge collectors

www.UltraWebisAlwaysBetter.com

U.S. Patents 6,955,775; 6,924,028; 6,716,274; 6,743,273; 3,512,559



Donaldson. *And everything just got better.*

Total Filtration Management

▶ Donaldson offers a wide variety of solutions to reduce your energy costs, improve your productivity, guarantee production quality and help protect the environment.

Compressed Air Filtration, Sterile Filtration, Process Filtration, Refrigerant Drying, Adsorption Drying, Condensate Drains, Condensate Purification Systems, Water Chillers, Air / Oil Separation, Dust and Fume Removal, Process Air and Gas Processing, Oil Mist Separation, Industrial Hydraulics

Total Filtration Service

▶ A comprehensive range of services especially designed to keep your production at peak performance and at the lowest total cost of ownership.

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