AMSOIL®

Donaldson® Endurance™

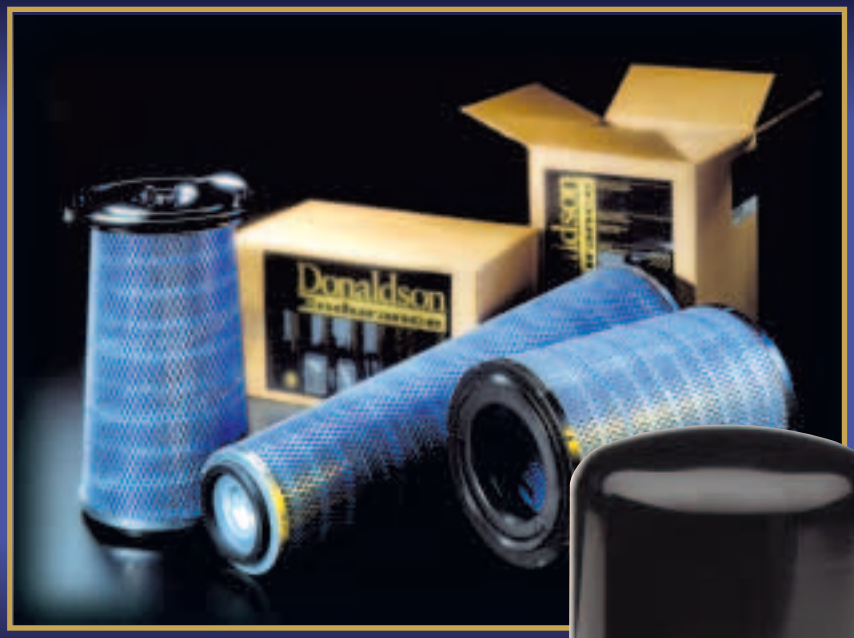
Air and Oil Filters

FOR HEAVY DUTY APPLICATIONS

With Nanofiber Technology

Ideal For Extended Maintenance Intervals

Superior In Prolonging Equipment Life



Donaldson® Endurance™

- **Extended service filters**
- **Increase engine protection**
- **Extend service intervals**
- **Reduce operating costs**

Donaldson® Endurance™ air and oil filters, available through AMSOIL, provide the highest level of filtration efficiency in the industry. Specifically designed for on-road, heavy-duty class 6, 7 and 8 vehicles, Donaldson® Endurance™ air and oil filters feature exclusive nanofiber technology. Class 6 vehicles, 19,501 to 26,000 pounds gross vehicle weight (GVW), include single-axle vans, beverage trucks and school buses; class 7, 26,001 to 33,000 pounds GVW, include refuse trucks, tow trucks and city transit buses; class 8 trucks, 33,000 pounds GVW and greater, include fuel haulers, intercity/tour buses and cement trucks.

Air Filters

Endurance™ Air Filters offer longer engine life, longer filter life, initial efficiency up to 99.99 percent and five times more capacity than conventional cellulose filters.

Endurance™ air filters come with a "twice the miles" guarantee to deliver twice the miles between change intervals over cellulose air filters for on-highway applications, or customers receive a new filter at no charge.

Donaldson® Endurance™ air filters deliver cost saving benefits:

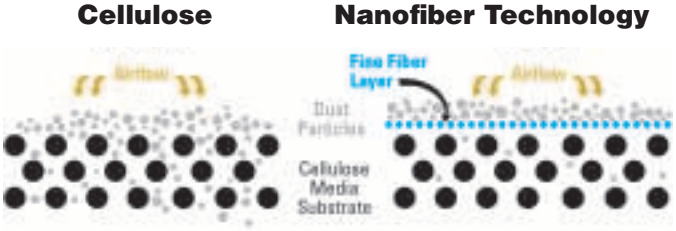
- **Longer Engine Life**
- **Longer Filter Life**
- **Extended Maintenance Intervals**
- **Double Mileage Guarantee**

The nanofiber technology traps submicron contaminants on the surface rather than dispersing them throughout the depth of the filter where there is less area for the air to flow. Therefore, in on-highway applications, where the contaminant is primarily submicron in size, Endurance™ air filters cause less restriction than conventional filters with cellulose media. The smaller, interfiber spaces have higher efficiency and capture more contaminant.

Here's how it works: Imagine two filtration media, a chain link fence and a mosquito net. Each is required to stop contaminants, in this case tennis balls.

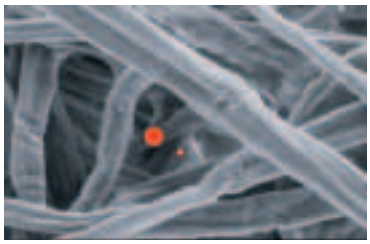
A tennis ball will fit quite nicely into an opening of a chain link fence, but will obstruct the hole almost 100 percent. Now, imagine a tennis ball covering a mosquito net. The tennis ball, at the point of contact with the netting, will obstruct much less filter area than the chain link fence example. In fact, air will flow around the tennis ball all the way to the point of contact. It will take many more particles to obstruct the netting surface area than the chain link fence.

Media Comparative Cross Section



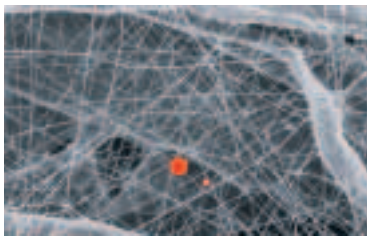
Donaldson® Endurance™ Air Filters With Nanofiber vs. Conventional Cellulose

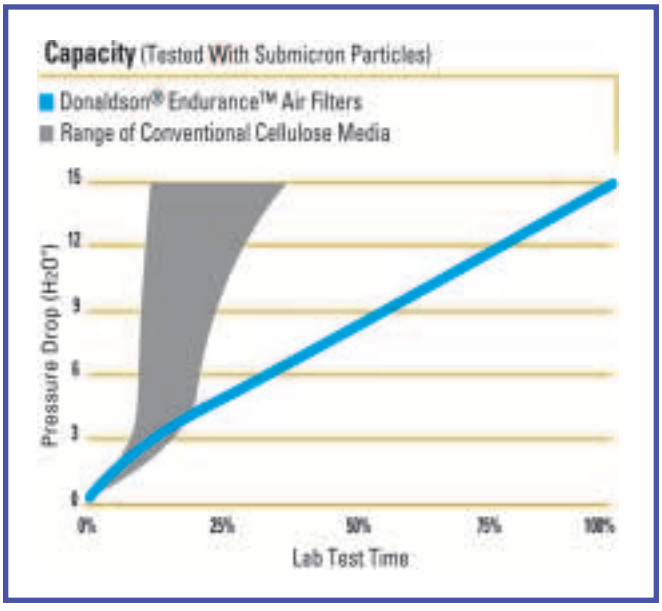
Cellulose fibers are larger than nanofibers, and have larger spaces between the fibers, causing contaminant to load in the depth of the media and plug the airflow path, which results in higher restriction and less capacity.



Red circles represent the diameter of a 2-micron and a 5-micron particle.

Nanofibers have submicron diameters and small interfiber spaces, which result in more contaminant being captured on the surface of the media and lower restriction.





Oil Filters

Donaldson® Endurance™ oil filters are made with advanced synthetic and nanofiber technology that results in fibers that have a controlled size, down to submicron diameters.

This controlled process allows Endurance™ oil filters to deliver both higher dirt holding capacity at the same pressure differential and higher efficiency compared to conventional cellulose filters. The synthetic media also has better durability and increased resistance to water.

Throughout the service life of a cellulose filter, hot oil degrades the resins in the media. The synthetic media technology uses a wire screen backing pleated with the media for superior strength.

Endurance™ oil filters provide a filtering efficiency in accordance with industry standard ISO 4548-12 of 98.7 percent at 15 microns, 50 percent at 7 microns. This is the best rating in the industry.

Engine Protection Filters Drive Costs Down

Donaldson® Endurance™ oil filters are made using exclusive advanced synthetic media technologies. Synthetic media technology delivers cost saving benefits with:

- **Extended service life**
- **Greater engine protection**
- **Prolonged engine and equipment life**
- **Improved lubricant flow**
- **Improved cold start performance**
- **Reduced operating costs**

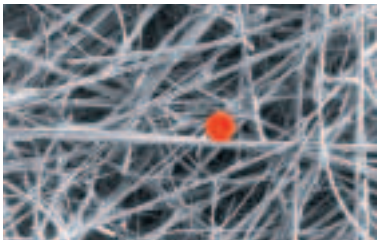
So whether extending maintenance intervals to the limit and running the engine for a million miles without an overhaul, maintaining a national fleet or running a coal mine, Endurance™ filters can lower total operating costs.

Using AMSOIL synthetic oils and the Endurance™ filters, with advanced synthetic technology, makes a superior extended drain combination.

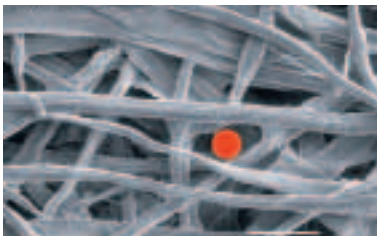
Donaldson® Endurance™ Oil Filters With Synthetic vs. Conventional Cellulose Media

Small synthetic fibers trap smaller particles and hold more contaminants, resulting in lower restriction.

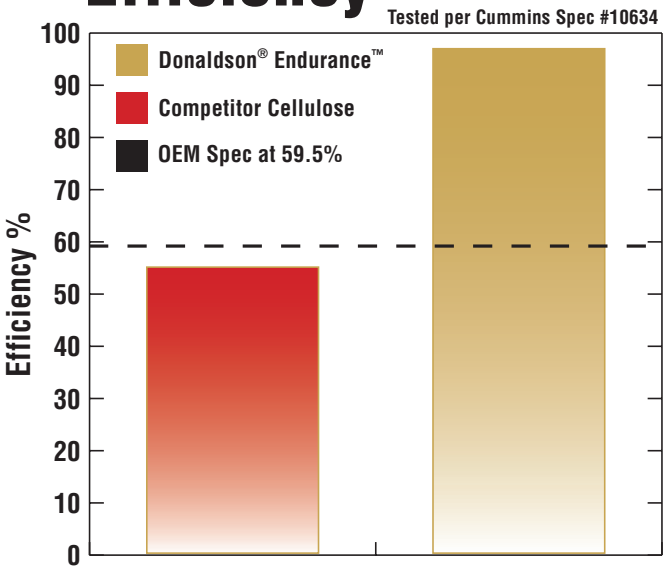
Red circle represents the diameter of a 20-micron particle.



Cellulose fibers are inconsistent in size and shape, allowing more contaminants to pass through, resulting in higher restriction and lower capacity.



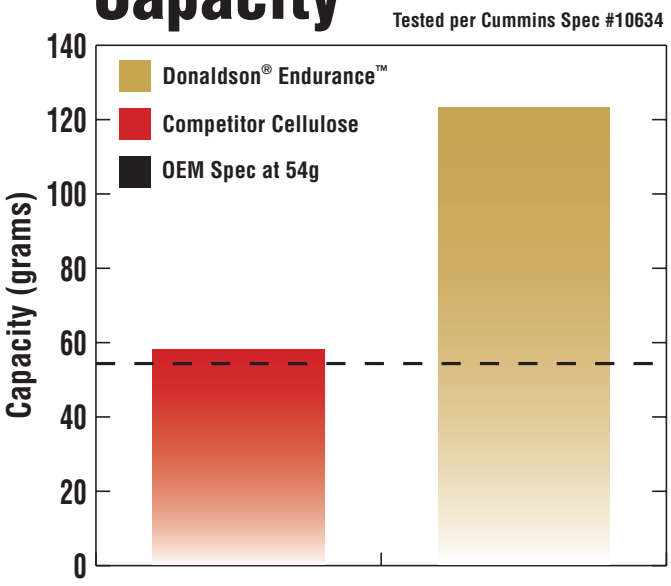
Efficiency



Higher Efficiency

Dirt and other small contaminants cause wear that reduces engine and equipment life. Endurance™ lube filters are more effective than cellulose media in removing these small contaminants.

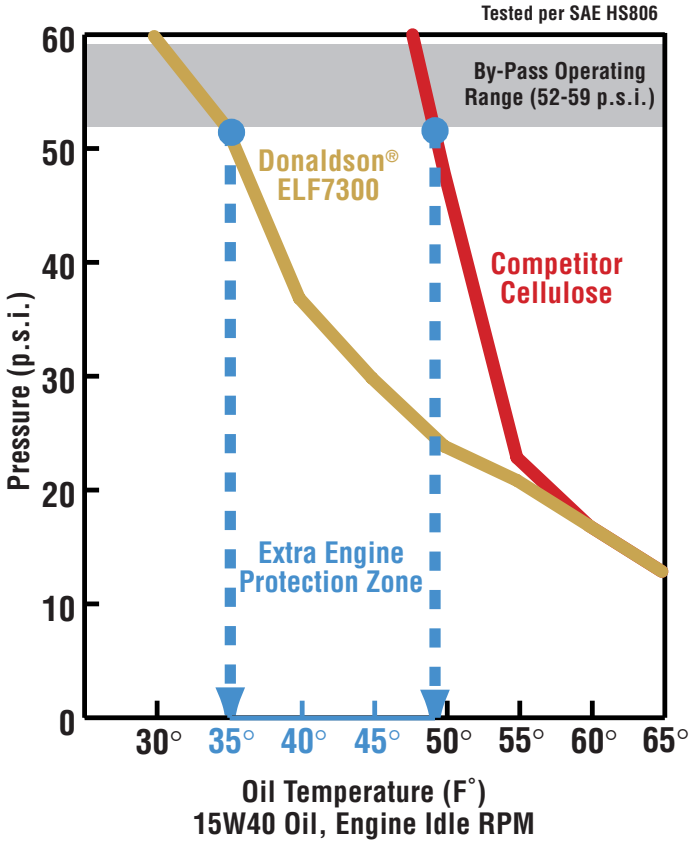
Capacity



Higher Capacity

Contaminant holding capacity is a major factor in determining when a filter needs to be changed. Endurance™ lube filters have greater contaminant holding capacity than conventional cellulose filters.

Flow Restriction During Cold Starts



Better Engine Protection During Cold Starts

Endurance™ oil filters have significantly lower restriction than conventional cellulose media filters. During the engine warm-up period, an Endurance™ lube filter allows the oil to flow through the filter at a colder temperature than a typical cellulose filter. The additional filtering time decreases engine wear.

Improved Gasket and Grommet

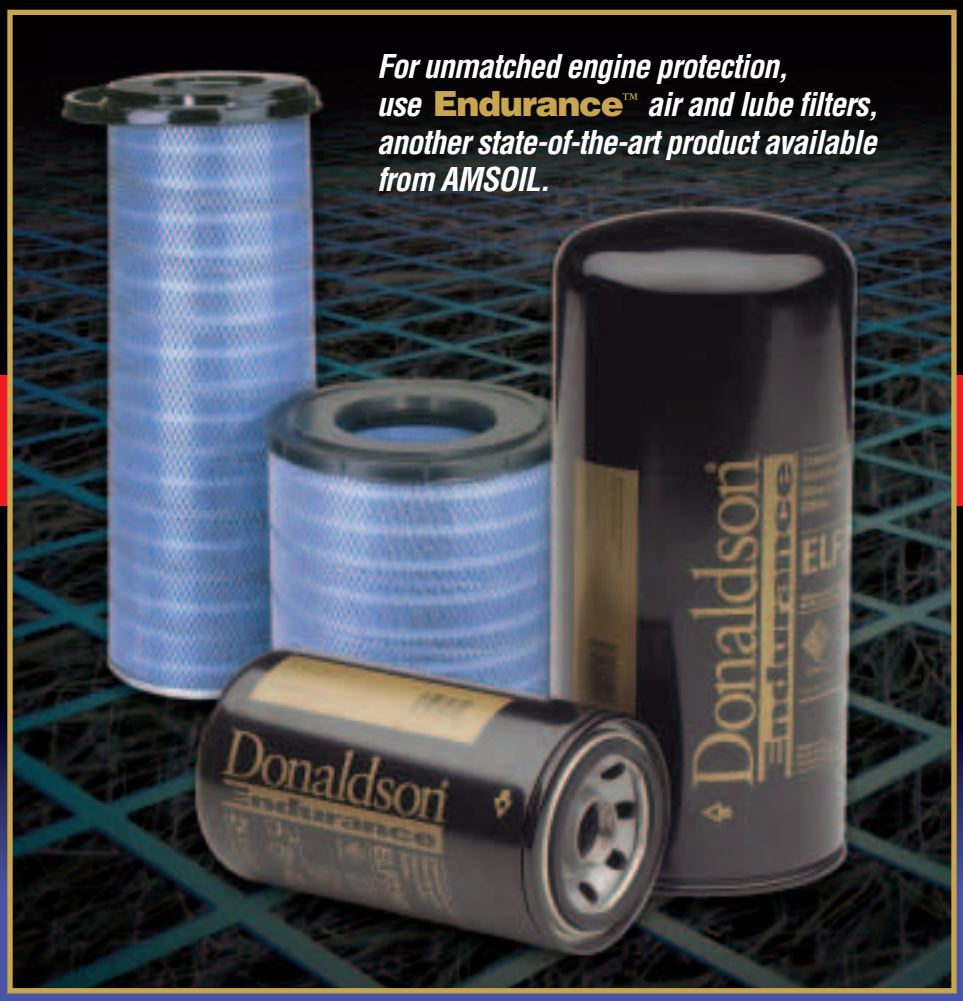
The Endurance™ filter's high grade material stays flexible and sealed during extended exposure to hot oils with advanced additive packages.

Donaldson® Endurance™ OIL FILTER CROSS REFERENCE

Donaldson® Endurance™	AMSOIL	Hastings	Fleetguard	LuberFiner	Application
ELF3998	SDF77	LF250XS	LF3620	LFP2160	Detroit Diesel, GMC
ELF7300	SDF74	LF448	LF3000	LFP3000	Cummins
ELF7345	N/A	LF395	LF3345	LFP3900	Case, Cummins
ELF7349	SDF80	LF408	LF3349	LFP780	Dodge, Light-Duty Trucks; Case, Cummins
ELF7367	N/A	LF284	LF3883	LFP2285	Agco, Terex; Detroit Diesel, International, Navistar
ELF7405	SDF73	LF282XS	LF691A	LFP4005	Caterpillar
ELF7483	SDF70	LF531XS	LF667	LFP3191XL	Mack, Volvo, White Trucks
ELF7670	SDF72	LF262	LF670	P670/LFP911	Cummins, Detroit Diesel
ELF7739	SDF70	LF327XS	LF9667/LF3379	LFP3191	Caterpillar
ELF7900	N/A	LF499	LF9001	LFP9001	Cummins
ELF7947	N/A	LF273	LF3333SC	LFP947	Detroit Diesel

Donaldson® Endurance™ AIR FILTER CROSS REFERENCE

Donaldson® Endurance™	Hastings	Fleetguard	LuberFiner	Primary Application
EAF5069	AF2120	AF25139M	LAF1849	Duramax, Mercedes, Cummins, Detroit 60, Volvo, Cat
EAF5107	AF2302	AF25598	LAF5873	Kenworth, Peterbilt
EAF5108	AF2315	AF25687	LAF8691	Mack
EAF5106	AF2216	AF25219	LAF2536	Cummins, Freightliner, Peterbilt
EAF5067	AF2093	AF4878	LAF1878	Caterpillar, Cummins, Kenworth, Ottawa, Peterbilt, Sterling; Deere, Magnum, GMC
EAF5053	AF785	AF1968M	LAF3551	Freightliner, Kenworth, Mack, Western Star, White, Donaldson®
EAF5109	AF2248	AF25359	LAF3930	Chevrolet, Sterling; Deere, Kenworth
EAF5040	AF576	AF899M	LAF5069	Case, Caterpillar, Terex, Euclid, Komatsu, Donaldson®
EAF5047	AF797	AF1969	LAF695	Mack, Donaldson®
EAF5025	AF583	AF931M	LAF9472	Ford, GMC, International, Mack, White, GMC, Donaldson®
EAF5027	AF700	AF1817M	LAF2100	Caterpillar, International; Universal Coach, Donaldson®
EAF5038	AF574	AF879M	LAF5069	Caterpillar, Euclid, Terex, Donaldson®
EAF5039	AF240	AF851M	LAF9155	Caterpillar, Eucild, Terex, Volvo, Donaldson®
EAF5034	AF217	AF418M	LAF6587	Ag-Chem, Allis Chalmers, Case, Caterpillar, Clark, Daewoo, Massey Ferguson, New Holland; Iveco, R.V.I. Buses, Donaldson®
EAF5008	AF469	AF852M	LAF6918	GMC, Kenworth, Mack; Caterpillar, Cummins, Donaldson®
EAF5042	AF658	AF1605M	LAF8407	Ingersoll Rand; Hitachi, Terex, Donaldson®
EAF5098	N/A	AF25435	N/A	Volvo
EAF5028	AF608	AF979M	LAF9545	International, Kenworth, Mercedes, Perterbilt, Donaldson®
EAF5024	AF2312	AF954M	LAF9396	Ford, GMC, International, Mack, Donaldson®



Donaldson® Endurance™

Donaldson® **Endurance**™ synthetic air and oil filters and AMSOIL synthetic lubricants together deliver:

- **Unrivaled protection**
- **Longer engine life**
- **Reduced maintenance costs**

for on-highway trucks, vans and buses in classes 6, 7 and 8 for fleets across the nation.

AMSOIL products and Dealership information are available from your local AMSOIL Dealer.

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