

Fleetguard®



QSK High Horsepower FF5782 Fuel Filter

FUEL





The Challenges of Global Fuel Cleanliness



Clean, uncontaminated fuel is the key to maximum fuel system performance and longevity for modern diesel engines.



According to the World Wide Fuel Charter (WWFC), approximately 50% of the world diesel fuel supply does not meet ISO 18/16/13 at the retail pump. Reports indicate diesel fuel is getting dirtier.



Modern diesel engines use High Pressure Common Rail Fuel (HPCR) Systems that require unprecedented fuel cleanliness levels.



HPCR fuel systems have tighter clearances that deliver injection pressure up to 30,000 psi (2000 bar).

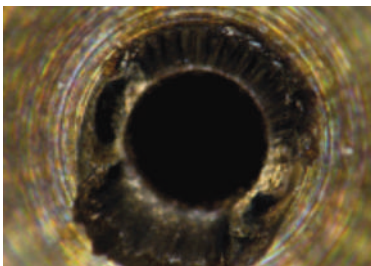


FF5782 performance leads to greater protection of the Fuel Injection Equipment (FIE). Greater protection leads to longer fuel injector life and lower Total Cost of Ownership (TCO).



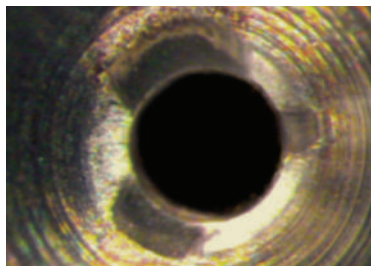
The new FF5782 featuring **NanoNet** media is focused on reducing failure by removing harmful particles and delivering fuel that meets FIE manufacturers' suggested ISO 12/9/6 cleanliness level.

Diesel Metering Valve (DMV) Seat



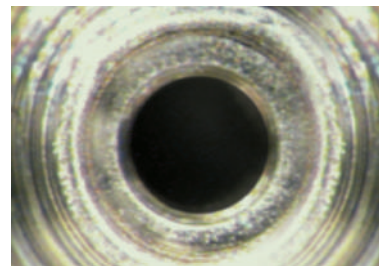
Field Failure

After teardown observation



Dust in Fuel

Testing with competitor media
(After 50 hours)



Dust in Fuel

Testing with NanoNet media
(No failure after 190 hours)

The Fleetguard® Solution:



Why Use Beta?

As a fuel filtration leader, Fleetguard recognizes the importance of providing superior filtration for HPCR fuel systems to operate as designed. Fleetguard's new **NanoNet™** media has a consistent pore size throughout the media unlike conventional synthetic and cellulose medias. Current testing for measuring efficiency uses a single pass process that is less precise for indicating performance. The consistent pore size in Fleetguard's new **NanoNet™** media requires a more rigorous and precise reporting method known as Beta.

How is Beta Calculated?

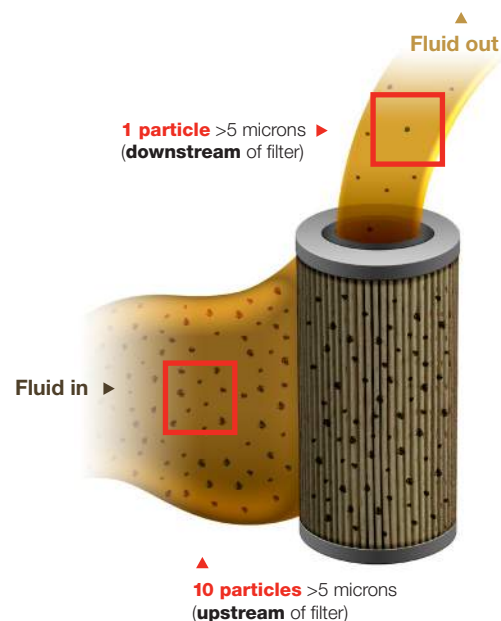
The Beta Ratio, from lab testing, is the current state-of-the-art method used to express a filter's ability to remove contaminants.

The Beta Ratio is calculated as follows:

$$\text{Beta Ratio} = \frac{\text{\# of Upstream Particles}}{\text{\# of Downstream Particles}}$$

Efficiency is a derivative and is calculated as follows:

$$\text{Efficiency \%} = \frac{\text{Beta Ratio} - 1}{\text{Beta Ratio}}$$



Beta Explained

Beta measures the relationship between upstream particles and downstream particles of a given size. Beta also provides a ratio which relates to an efficiency and particle size.

Beta Ratio	Efficiency	# Upstream	#Downstream
2	50%	100,000	50,000
4	75%	100,000	25,000
10	90%	100,000	10,000
20	95%	100,000	5,000
40	97.50%	100,000	2,500
60	98.30%	100,000	1,667
75	98.70%	100,000	1,333
100	99.00%	100,000	1,000
125	99.20%	100,000	800
200	99.50%	100,000	500
300	99.60%	100,000	333
500	99.80%	100,000	200
1000	99.90%	100,000	100

$$B_4(c) = 75$$

Micron Size (c)

This ratio of 75 states that this filter is 98.7% efficient at 4 micron (c)

Current Media Performance Specification (Absolute Value)

FF5782 Performance
Provides **13x better** protection of the engine fuel system.



Proven Real World Testing

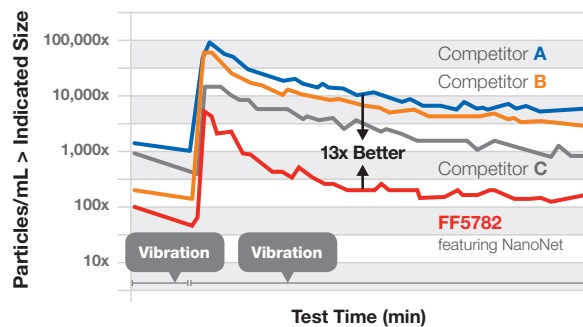
Real world testing that simulates engine vibration shows how previously captured particles are released into the downstream fuel supply. The FF5782 featuring **NanoNet™** media retains captured particles during engine vibration better than any competitive product.

FF5782 performance leads to greater protection of the FIE. Greater protection leads to longer fuel injector life and lower Total Cost of Ownership (TCO).

HHP Particle Retention Testing Results*

Downstream counts @ 4 micron(c)

Goal is to be as **low as possible** through test cycle.

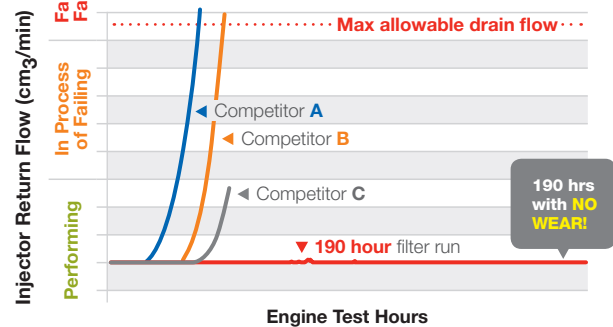


FF5782 featuring NanoNet retains hard particles and recovers from vibration faster than competitive products.

Fast Cycle Engine Testing Results*

Injector return fuel flow

Goal is to be as **low as possible** through test cycle.



FF5782 featuring NanoNet reduces injector wear by removing harmful particles even with engine vibration.

For more information regarding the above testing, please contact your local Cummins Filtration representative.

The FF5782 High Horsepower Fuel Filter ensures the best performance and longer life for your HPCR fuel system.

Fleetguard Genuine Filtration fuel system products are manufactured to meet and exceed OE standards for optimum protection, extended service intervals and reduced operating costs. With extensive experience in integrated system solutions for modern diesel engines, Cummins Filtration offers products to support the rigorous requirements of modern high pressure fuel systems.

* All are 2-element filters
Test date: 11/18/10



For more information, visit cumminsfiltration.com

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