

Technical Bulletin Q&A

Subject: E85 Fuel and Fuel Filtration Systems

Date: December, 2005

E85, One Micron Filters and other Mysteries

What IS E85?

E85 is a blend of 15% gasoline and 85% ethanol.

IS THIS THE SAME ETHANOL THAT IS USED IN GASOHOL?

Yes, exactly the same but in a much higher concentration. Standard Gasohol is only 10% ethanol and 90% gasoline.

WHAT FILTER MICRON RATING SHOULD BE USED WITH E85?

PetroClear recommends 10 micron.

WHY DOES THE DEPARTMENT OF ENERGY RECOMMEND A ONE MICRON FILTER?

There has been a lot of misinformation in recent weeks about the E85 fuel blend and how it should be filtered. A presentation at the NACS/PEI Show in Las Vegas in November recommended a One Micron filter be used when dispensing E85. This recommendation was tied to a Department of Energy Handbook on Ethanol Fuels that was written in 1992. No one has been able to find out who made the determination that one micron filters should be used nor how that determination came about. Since the specifications for a one micron filters are so drastically tight (a grain of pollen is 10 microns-a red blood cell is 7 microns) it is assumed that some SAE test procedure was conducted with E85 or consultation was made with OEM car makers in order to justify that recommendation. After many calls to many people it remains a mystery as to who, how and why a one micron filter was recommended since there is no other basis in fact to support it. The Renewable Fuels Association (www.ethanolfra.org) says 10 micron but please read on.

There are some important facts that are known about the filtration of E85. Champion Laboratories has worked closely with the Big Three car companies and other offshore OEM manufacturers for over twenty years. Champion has three resident engineers based in the Detroit area who work daily with the OEM's in designing new filters for applications that are as far out as five years from now. Champion supplies millions of new car oil, air, and fuel filters annually to the OEM's. The engineering relationship between Champion and the OE manufacturers allows us access to information including the specifications for OEM filters.

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After reviewing all OEM fuel filter specs we have verified that **the most stringent OEM fuel filter requirement is 10 micron**. Ford specs for flexible fuel vehicles on-board fuel filters is 35 micron with an efficiency of 98%. GM is 20 micron at 95%. There is no reason to filter any vehicle fuel finer than the on-board filter rating. The OEM manufacturers have determined the maximum allowable particle size that will pass through their fuel system without causing engine concerns. If the OEM manufacturer has a 10 micron spec for the on-board fuel filter that clearly states that anything smaller than 10 micron is not harmful.

ARE ANY UNIQUE FILTERS REQUIRED TO FILTER E85?

Not really. PetroClear filters are designed for ethanol concentrations up to 100%. The highest concentration normally available is E85 (85% ethanol). We have had these in service with for over seven years.

IS A MICROGLASS FILTER NEEDED FOR E85?

No. Some companies offer what they represent as a one micron filter. They are good for high efficiency and lower restriction but they really are not cost effective. Cellulose/synthetic blended medias, as used in PetroClear filters, offer the same performance at about one third the cost of a microglass filter.

High concentrations of ethanol will scour tanks, hoses, etc. and will many times result in throwing a lot of contaminant at the filter during the transition. You should be prepared to change out the filters once or twice while this scouring process is taking place. The same filters can be used during the change to E85 and other ethanol blends as are used for long term use.

BOTTOM LINE IS YOU DO NOT NEED ANY SPECIAL FILTERS FOR E85 OR OTHER ETHANOL BLENDS DUE TO CHANGING FROM STANDARD GASOLINE.

YOU DEFINITELY DO NOT NEED NOR WANT A ONE MICRON FILTER!

WHERE YOU WILL NEED A SPECIAL FILTER IS FOR PHASE SEPARATION WHEN WATER GETS INTO THE ETHANOL BLENDED FUELS.

PETROCLEAR “ALERT” FILTERS ARE WHAT YOU NEED IN THOSE SITUATIONS.