



Dispenser Filters at retail (flow rate less than 15 gallons per minute) (Section 4.3 (237-3))

Support the Consumer

Require 10-Micron Diesel Fuel Filter

Reported problems: Issues with high pressure common rail diesel engines -- plugged vehicle fuel filters, fuel pump failure due to overheating, internal wear of engine components (pistons, seats), sticking injectors

Causes of problems: Particulates and water contamination, corrosion of steel components of storage system, salts

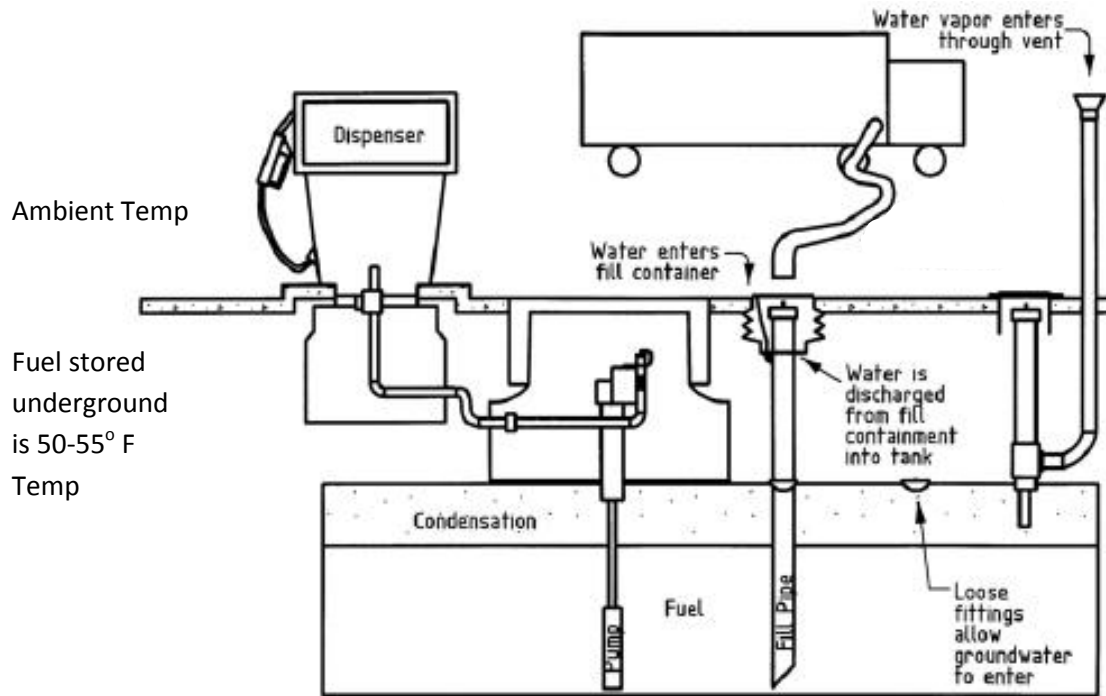
What issues does a 10-micron filter address? Particulates and water contamination (microbial growth, flakes, etc)

Industry Research: Corrosion in ULSD systems (EPA), Salts and diesel cleanliness (CRC), Individual company research

Solutions to particulate/water : Install 10-micron filters at retail (low flow-rate) stations and Proper storage tank maintenance

Who supports 10-micron filters? Truck and Engine Manufacturers Association, GM, VW, API

Study	Issue/Topic	Finding/Results	Applicability to 10-micron filter discussion?
PMAA Testing Program – Diesel Filters (Research Laboratories, Inc.)	Comparison of 30- and 10-micron filter performance in differing temperatures	30 micron filter at minus-10 ⁰ F filters twice as many gallons as 10 micron filter	No. Filter tests done at -10F while the fuel is stored underground and is typically 55 ⁰ F.
CRC-667, Diesel Fuel Storage and Handling Guide	Storage and handling of diesel fuel	Particle erosion can take place in common rail injectors	Yes.
Clean Diesel Fuel Alliance -- Guidance for Underground Storage Tank Management at ULSD Dispensing Facilities	Storage and handling of diesel fuel	Solid or semi-solid contaminants, microorganisms, water, or fuel quality problems (e.g., high paraffin content, fuel degradation, etc.) are the most likely causes of filter blockages.	Yes.
Caterpillar, Bulk Fuel Filtration for Off-Road Applications (IFC10-019) (R. Douglas, Caterpillar)	Need for filtration of off-road diesel	Filtration before delivery to the vehicle improves vehicle performance	Yes. Vehicles benefit from filtered fuel
SAE, Internal Injector Deposits in High-Pressure Common Rail Diesel Engines (2010-01-2242) (Afton Chemical Corp.)	HPCR injector deposits	Salts in fuels causing sticking valves can be addressed with an additive	No.



Diesel filter clogged with the "slime" resulting from microbial activity in the storage tank