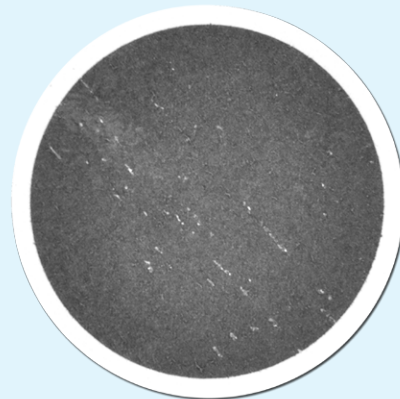
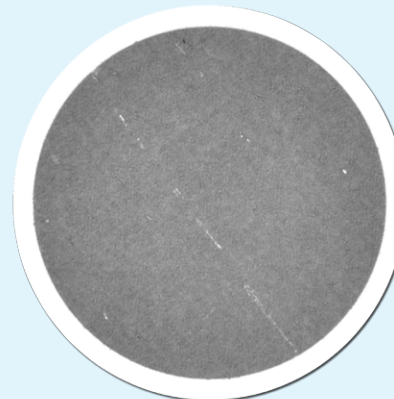


No Retrofit System  
**Uncontrolled Diesel Exhaust**



Retrofitted with  
**Diesel Oxidation Catalyst (DOC)**  
(Level 1)

Old technology  
Little black carbon removal  
Little ultrafine PM removal  
Does not remove lube oil ash



Retrofitted with  
**Partial Filter**  
(Level 2)

Little black carbon removal  
Little ultrafine PM removal  
Does not remove lube oil ash



Retrofitted with  
**Diesel Particulate Filter (DPF)**  
(Level 3)

New technology  
Used on all new trucks since 2007  
>85% black carbon removal  
>85% ultrafine removal  
>85% lube oil ash removal

**Overview:** The exhibits above are actual PM collection samples from an engine testing laboratory used to collect and measure diesel particulate matter (PM) emissions. Test conditions are:

- Test Cycle: UDDS (Urban Dynamometer Driving Schedule)
- Test Distance: 5.5 miles over 17 minutes
- Fuel Consumed During Test: 1.1 gallons
- Test Vehicle: Heavy-duty truck with a 370 hp Cummins engine (1999 model year)
- PM material on collection samples is 1/1,800th of actual

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