



## Summary of Particulate Matter Testing Performed By an Official New Jersey Testing Center

The testing was performed on a 2004 Mack class 8 dump truck with a 427 hp ASET engine. Here are the particulars about the testing:

- This truck has no particulate matter filtering system (after market or factory).
- There were no maintenance or any other services outside of the installation of the CFT catalyst device performed during the time of testing.
- This truck is used to haul quarry stone at max legal weight limits so the engine has not been detuned for fuel economy or governed outside of factory settings.

The fuel used during these test all came from the same storage tank and from the same batch of fuel. This was done to prevent any changes in the fuel that could affect particulate matter or performance of the engine. Each of the tests was performed in the same emission test center, using the same particulate matter test equipment and tested by the same employee of the test center.

### How to Read the Emission Report

The first 3 Opacity tests are Purging Tests labeled PSAT 1-3 they are calibrations of the truck to the emission equipment.

- PSPREAD: is the difference from the highest purge number to the lowest purge number.
- SAT1-SAT3: are the actual emission test numbers that are used.
- SPREAD: again the highest to lowest difference in the actual test this time.
- AVERAGE: the average of the three numbers
- RISE TIME: the time it takes for the vehicle to go from its Minimum idle RPM to its Maximum RPM set-point.
- ZERO DRIFT: is the amount smoke left behind after the vehicle shuts off this number can vary based upon how quickly the vehicle we shut down after being revved up.



## Stock Particulate Matter Opacity Test

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### OFFICIAL TEST

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DEIC# 000125  
Pass/Fail Qualifications: (Snap Test)  
Approved Limit: 20  
Max PSPREAD: 5  
Max SPREAD: 5  
Max Zero Drift: 2

VID: 431  
Engine Year: 2004  
HP Rating: above 300  
Stack Size: 5  
VR: AM879D  
State: NJ  
Time: 03:57:28  
Date: 06-22-2010  
Ambient Correction: Disabled  
Certificate #

Test Results: Opacity:		Oil Temp:	Min RPM:	Max RPM:	Rise Time:
PSAT1:	12	175	614	2145	1.30
PSAT2:	12	176	610	2141	1.30
PSAT3:	11	177	614	2150	1.30
PSPREAD:	1				
SAT1:	9	178	611	2139	1.30
SAT2:	10	179	621	2140	1.40
SAT3:	9	180	617	2147	1.30
SPREAD:	1				
AVERAGE:	9				
Zero Drift:	0.22				

Inspector: NJC  
Calibration Date: 06/21/10

Page  
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In the stock test (before the install of the CFT Catalyst device) you can see that the average S.A.T. Opacity readings 9.3 (Test equipment rounds to the closest full number) with a rise time of 133.3. The PSAT readings average 11.6



**Particulate Matter Opacity Test**  
**One hour after CFT device was installed**

<b>Blocked for Privacy.</b>	<b>OFFICIAL TEST</b>				
	<b>Blocked for Privacy.</b>				
DEIC# 000125	VID: 431	Engine Year: 2004	HP Rating: above 300	Stack Size: 5	VR: AM879D
Pass/Fail Qualifications: (Snap Test)	State: NJ	Time: 02:21:22	Date: 06-25-2010	Ambient Correction: Disabled	Certificate #
Approved Limit: 20	Oil Temp:	Min RPM:	Max RPM:	Rise Time:	
Max PSPREAD: 5	186	618	2153	1.20	
Max SPREAD: 5	186	621	2147	1.30	
Max Zero Drift: 2	186	624	2149	1.30	
Test Results: Opacity:					
PSAT1: 10	186	620	2149	1.30	
PSAT2: 9	187	619	2149	1.30	
PSAT3: 10	187	621	2146	1.20	
PSPREAD: 1					
SAT1: 9					
SAT2: 9					
SAT3: 9					
SPREAD: 0					
AVERAGE: 9					
Zero Drift: 0.15					
Inspector: WJC					
Calibration Date: 06/21/10					
					<b>Blocked for Privacy.</b>

The test performed after one hour of run time with the CFT Catalyst device was installed you can see that the particulate matter / opacity in the SAT was reduced by 0.3. Rise time went down from a 133.3 to an average of 126.6. Even the P.S.A.T. calibration numbers were reduced from 11.66 to 9.66.



**Particulate Matter Opacity Test  
18 Days after CFT device installed**

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**OFFICIAL TEST**

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DEIC# 000125  
Pass/Fail Qualifications: (Snap Test)  
Approved Limit: 20  
Max PSPREAD: 5  
Max SPREAD: 5  
Max Zero Drift: 2

VID: 431  
Engine Year: 2004  
HP Rating: above 300  
Stack Size: 5  
VR: AM879D  
State: NJ  
Time: 04:59:05  
Date: 07-09-2010  
Ambient Correction: Disabled  
Certificate #

Test Results:	Opacity:	Oil Temp:	Min RPM:	Max RPM:	Rise Time:
PSAT1:	7	174	632	2154	1.30
PSAT2:	7	174	617	2144	1.30
PSAT3:	8	175	615	2147	1.20
PSPREAD:	1				
SAT1:	8	176	618	2148	1.20
SAT2:	9	176	616	2150	1.30
SAT3:	8	177	618	2149	1.30
SPREAD:	1				
AVERAGE:	8				
Zero Drift:	0.52				
Inspector:	WJC				
Calibration Date:	07/09/10				

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The 3<sup>rd</sup> test was performed 18 days after the install of the CFT Catalyst device. The SAT testing dropped from 9.3 to 8.3, a drop of 11% of particulate matter. The P.S.A.T. starting at 11.66 was now down to a 9.66



## Particulate Matter Opacity Test 24 Days after CFT Catalyst Device Installed

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**OFFICIAL TEST**

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DEIC# 000125  
 Pass/Fail Qualifications: (Snap Test)  
 Approved Limit: 20  
 Max PSPREAD: 5  
 Max SPREAD: 5  
 Max Zero Drift: 2

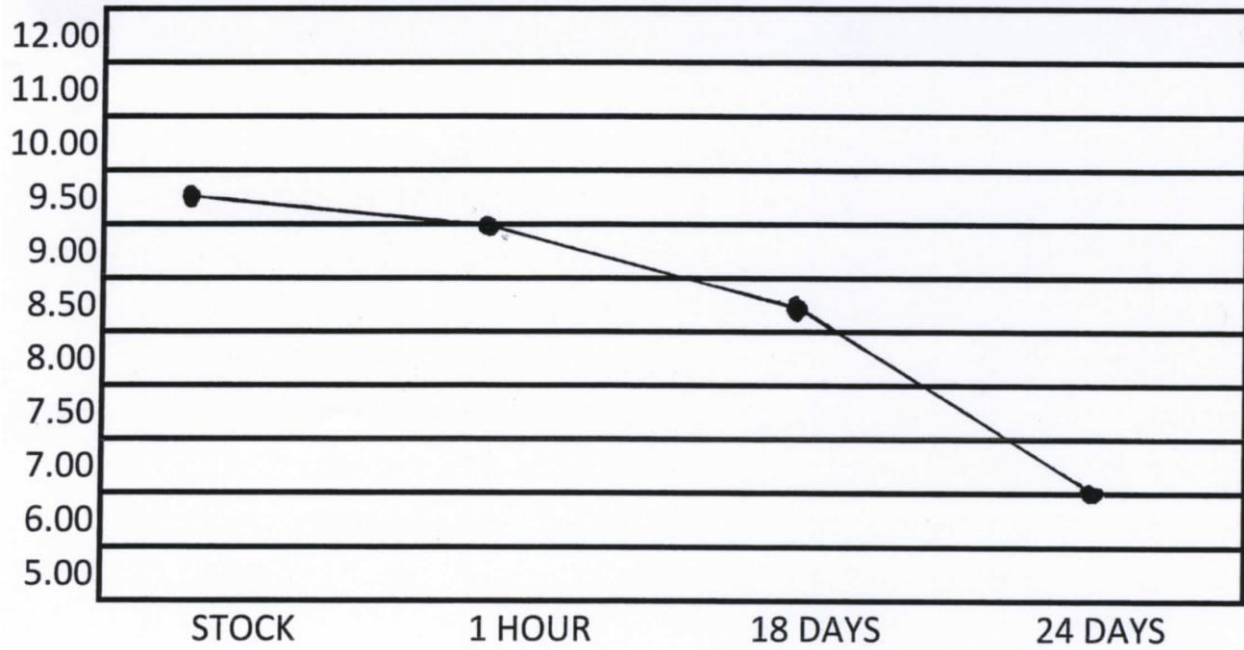
VID: 431  
 Engine Year: 2004  
 HP Rating: above 300  
 Stack Size: 3  
 VIN: AM879D  
 State: NJ  
 Time: 12:54:28  
 Date: 07-15-2010  
 Ambient Correction: Disabled  
 Certificate # H663009

Test Results:	Opacity:	Oil Temp:	Min RPM:	Max RPM:	Rise Time:
PSAT1:	8	187	615	2135	1.20
PSAT2:	8	187	612	2140	1.20
PSAT3:	7	187	617	2140	1.20
PSPREAD:	1				
SAT1:	8	187	618	2130	1.30
SAT2:	7	188	615	2142	1.20
SAT3:	6	189	618	2132	1.20
SPREAD:	2				
AVERAGE:	7				
Zero Drift:	0.08				
Inspector:	WJC				
Calibration Date:	07/09/10				

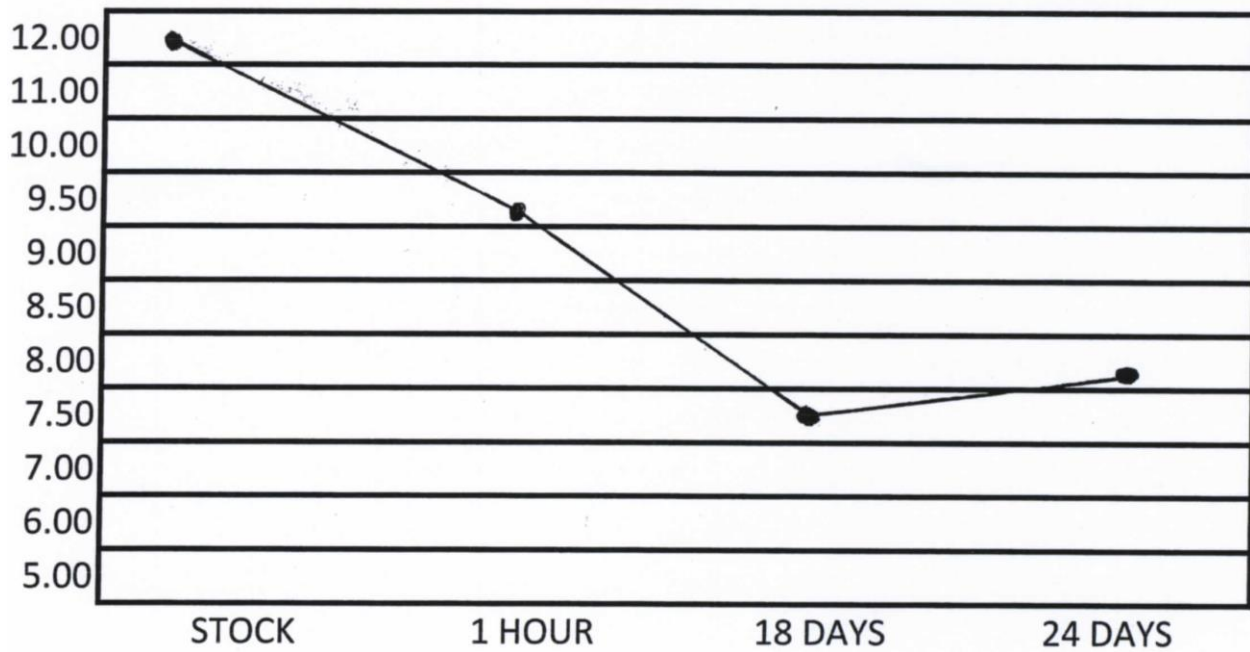
The Fourth Test was performed 24 days after the CFT Catalyst device was installed. The average of the S.A.T. Opacity reading had dropped to 8.3 after the 18<sup>th</sup> day to 7.0 after the 24<sup>th</sup> day. For a total of 24.73% from the start of testing. The rise time went from a 133.3 to a 123.3 showing an increase in performance. The P.S.A.T. Calibration numbers went from an 11.6 to a 7.6.



## PARTICULATE MATTER S.A.T. CHART



## PARTICULATE MATTER P.S.A.T. CHART





### ENGINE RISE TIME

