

**State of California
AIR RESOURCES BOARD**

EXECUTIVE ORDER DE-08-004-1

Pursuant to the authority vested in the Air Resources Board by Health and Safety Code, Div. 26, Part 5, Chap. 2; and pursuant to the authority vested in the undersigned by Health and Safety Code section 39515 and 39516 and Executive Order G-02-003;

Relating to Exemptions under Section 38395 of the Vehicle Code, and Verification under Sections 2700 through 2710 of Title 13 of the California Code of Regulations (CCR)

Caterpillar Incorporated
Caterpillar[®] Diesel Particulate Filter

The California Air Resources Board (ARB) has reviewed Caterpillar Incorporated's request for verification of the Caterpillar[®] Diesel Particulate Filter (DPF). Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of the ARB hereby finds that the Caterpillar[®] DPF reduces emissions of diesel particulate matter (PM) consistent with a Level 3 device (greater than or equal to 85 percent reductions) (Title 13 CCR, sections 2702 (f) and section 2708) and is compliant with the 2009 nitrogen dioxide emissions limit. Accordingly, the Executive Officer determines that the system merits verification and, subject to the terms and conditions specified below, classifies the Caterpillar[®] DPF as a Level 3 Plus system for heavy-duty off-road vehicles using engines from the engine families listed in Attachment 1.

The aforementioned verification is subject to the following terms and conditions:

- Only one filter is installed per engine. For engines that are original engine manufacturer dual exhaust systems, including two exhaust manifolds, two turbochargers, etcetera, one filter may be installed per exhaust manifold.
- The engine is originally manufactured from model year 1996 through 2005 having an engine family name listed in Attachment 1.
- The engine does not employ exhaust gas recirculation.
- The application must have a duty cycle with an exhaust temperature profile greater than 240 degrees Celsius for at least 40 percent of the time.
- The engine may or may not have a pre-existing oxidation catalyst from the original equipment manufacturer (OEM).
- The engine must not have a pre-existing OEM DPF.
- The engine must be certified for off-road applications.
- The engine must be certified at a PM emission level of at most 0.2 grams per brake horsepower hour (g/bhp-hr), and greater than 0.01 g/bhp-hr.

- Tier 1 engines must be certified with an oxides of nitrogen (NOx) emissions level greater than or equal to 5.1 grams per kilowatt hour (g/kwhr) or 3.8 g/bhp-hr.
- Tier 2 engines must be certified with a non-methane hydrocarbons plus NOx (NMHC + NOx) emissions level greater than or equal to 5.1 g/kwhr or 3.8 g/bhp-hr.
- The NOx to PM emissions ratio must be greater than or equal to 25.
- The engine must be four-stroke.
- The engine must have a maximum power output rating of at least 175 horsepower and at most 600 horsepower.
- The engine displacement must be less than or equal to 13 liters.
- The engine must be in its original certified configuration, except that if an OEM oxidation catalyst is present, it may be removed if the Caterpillar® DPF is installed. Should the Caterpillar® Diesel Particulate Filter be removed, the OEM oxidation catalyst must be re-installed, returning the engine to its original certified configuration.
- The engine can be turbocharged or naturally aspirated.
- The engine can be mechanically or electronically injected.
- The engine must be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- The end user must monitor and keep accurate records of the engine's oil consumption rate for the duration of time that the system is installed. These records must be readily available to ARB or the system manufacturer upon request.
- Lube oil, or other oil, should not be mixed with the fuel.
- The engine must be operated on fuel that has a sulfur content of no more than 15 parts per million by weight.
- The product must not be operated with fuel additives, as defined in Section 2701 of Title 13, of the CCR, unless explicitly verified for use with fuel additive(s).
- The product must not be used with any other systems or engine modifications without ARB and manufacturer approval.
- The system must be installed with a backpressure monitor to notify the operator when the backpressure limit is reached. The notification must occur and be clearly visible to the operator while the vehicle or equipment is in use.
- The other terms and conditions specified below.

IT IS ALSO ORDERED AND RESOLVED: That installation of the Caterpillar® DPF, manufactured by Caterpillar Incorporated of 100 North East Adams Street, Peoria, Illinois 61629 has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore, the Caterpillar® DPF is exempt from the prohibitions in Sections 38390 and 38391 of the Vehicle Code for installation on off-road vehicles using engines listed in Attachment 1.

This exemption is only valid provided the engines meet the aforementioned conditions.

The Caterpillar® DPF consists of a catalyzed diesel oxidation catalyst, non-catalyzed wall-flow particulate filter, and a backpressure monitor. The major components of the Caterpillar® DPF are identified in Attachment 2. Schematics of the approved labels are shown in Attachment 3.

This Executive order is valid provided that installation instructions for the Caterpillar® DPF do not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the Caterpillar® DPF, as exempted by the ARB, which adversely affect the performance of the vehicle's pollution control system, shall invalidate this Executive Order.

No changes are permitted to the device. ARB must be notified in writing of any changes to any part of the Caterpillar® DPF. Any changes to the device must be evaluated and approved in writing by the ARB. Failure to do so shall invalidate this Executive Order.

Caterpillar® must ensure that the installation of the Caterpillar® DPF conforms to all applicable industrial safety requirements.

Marketing of the Caterpillar® DPF using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior written approval is obtained from ARB.

Identification must include both device and engine labels consistent with the requirements of title 13, CCR, section 2706 and Attachment 3 of this executive order. Changes or modifications to the label or label placement are prohibited without prior written approval from ARB.

This Executive Order does not apply to any Caterpillar® DPF advertised, offered for sale, sold with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

This Executive Order must be provided to the ultimate purchaser at the time of sale.

As specified in the Diesel Emission Control Strategy Verification Procedure (title 13, CCR, section 2706 (j)), the ARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is:

CA/CAT/2008/PM3+/N00/OFF/DPF01

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, Caterpillar Incorporated is responsible for honoring the warranty (Section 2707) and conducting in-use compliance testing (Section 2709).

This Executive Order is valid provided that the diesel fuel used in conjunction with the device complies with title 13, CCR, sections 2281 and 2282, and if biodiesel is used, the biodiesel blend shall be 20 percent or less subject to the following conditions:

- The biodiesel portion of the blend complies with the American Society for Testing and Materials specification D6751 applicable for 15 parts per million sulfur content;
- The diesel fuel portion of the blend complies with title 13, CCR, sections 2281 and 2282; and

Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this Executive Order.

In addition to the foregoing, ARB reserves the right in the future to review this Executive Order and the exemption and verification provided herein to assure that the exempted and verified add-on or modified part continues to meet the standards and procedures of title 13, CCR, section 2222, et seq and title 13, CCR, sections 2700 through 2710.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

This Executive Order does not release Caterpillar Incorporated from complying with all other applicable regulations.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

This Executive Order DE-08-004-1 hereby supersedes Executive Order DE-08-004 dated October 23, 2008.

Executed at El Monte, California, this 10th day of December, 2009.



Robert H. Cross, Chief
Mobile Source Control Division

- Attachment 1: ARB Approved California Engine Families for the Caterpillar® DPF
- Attachment 2: Parts List for the Caterpillar® DPF
- Attachment 3: Labels for the Caterpillar® DPF