



Linda S. Adams  
Secretary for  
Environmental Protection

# Air Resources Board

Mary D. Nichols, Chairman  
9480 Telstar Avenue, Suite 4  
El Monte, California 91731 [www.arb.ca.gov](http://www.arb.ca.gov)



Arnold Schwarzenegger  
Governor

December 21, 2009

Mr. Tom Swenson  
Cleaire Advanced Emission Controls  
14775 Wicks Boulevard  
San Leandro, California 94577

Ref. No.: 09-661-358

Dear Mr. Swenson:

Using the *Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines* (Procedure), Air Resources Board (ARB) staff reviewed your application for conditional verification of the Allmetal™ system for use with off-road diesel engines. 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 Allmetal™ system reduces emissions of diesel particulate matter (PM) consistent with a Level 3 plus device (greater than or equal to an 85 percent reduction and meets the 2009 nitrogen dioxide standard). The Executive Officer also finds that the Allmetal™ system satisfactorily completed 33 percent of the durability demonstration period. Accordingly, the Executive Officer determines that the system merits conditional verification and, subject to the terms and conditions specified below, classifies Cleaire's Allmetal™ system as a Level 3 plus system for off-road vehicles and portable equipment using engines from the engine families listed in Attachment 1.

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

- The Allmetal™ system is conditionally verified for a period not to exceed one year from the date of this letter. For the Allmetal™ system to be considered for full verification, Cleaire must complete all remaining requirements as specified in the letter 09-661-357 within one year of the date of this letter.
- Conditional verification is equivalent to verification for the purposes of satisfying the requirements of in-use emission control regulations.
- Only one filter may be installed per engine.

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- The engine must be originally manufactured from model year 1996 through 2010 and have an engine family name listed in Attachment 1.
- The engine must not be certified as having exhaust gas recirculation.
- For engines certified to 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, the application must have a duty cycle with an exhaust temperature profile greater than or equal to:
  - 300 degrees Celsius for at least 80 percent of the time, or
  - 400 degrees Celsius for at least 25 percent of the time.
  - Engines for which one of these criteria must be met are listed in Table 1 of Attachment 1. Engines listed in Table 2 of Attachment 1 must either meet these criteria or the alternative criterion described below.
- For engines certified to a PM emissions level of at most 0.15 g/bhp-hr, and greater than 0.01 g/bhp-hr, the application may alternatively have a duty cycle with an exhaust temperature profile greater than or equal to 260 degrees Celsius for at least 55 percent of the time. Engines for which this alternative criterion applies are listed in Table 2 of Attachment 1.
- The engine must have a maximum power output rating of at least 150 horsepower and at most 600 horsepower.
- The engine displacement must be between 6.7 and 18.2 liters, inclusive.
- 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 diesel particulate filter.
- The engine must be in its original certified configuration, except that if an OEM oxidation catalyst is present, it may be removed if the Allmetal™ system is installed. Should the Allmetal™ system be removed, the OEM oxidation catalyst must be re-installed, returning the engine to its original certified configuration.
- The engine must have a four-stroke combustion cycle.
- The engine can be turbocharged or naturally aspirated.
- The engine can be mechanically or electronically controlled.
- 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, must 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 (ppm) by weight.

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- The Allmetal™ system must not be operated with fuel additives, as defined in section 2701 of Title 13, of the California Code of Regulations (CCR), unless explicitly verified for use with fuel additive(s).
- The Allmetal™ system 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 Allmetal™ system, manufactured by Cleaire Advanced Emissions Controls of 14775 Wicks Boulevard, San Leandro, California 94577, has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore the Allmetal™ system 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 Allmetal™ system consists of a diesel oxidation catalyst, a metal wall-flow diesel particulate filter, driver notification lights with identification label, an electronic controller, and a back pressure and temperature sensor. The major components of the Allmetal™ system are identified in Attachment 2. Schematics and pictures of the approved product and engine labels are shown in Attachment 3.

This conditional verification letter is valid provided that installation instructions for the Allmetal™ system 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 Allmetal™ system, as exempted by ARB, which adversely affect the performance of the vehicle's pollution control system, invalidates this conditional verification.

No changes are permitted to the device. ARB must be notified, in writing, of any changes to any part of the Allmetal™ system. Any changes to the device must be evaluated and approved in writing by the ARB. Failure to do so invalidates this conditional verification.

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Cleaire must ensure that the installation of the Allmetal™ conforms to all applicable industrial safety requirements.

Marketing of the Allmetal™ system using identification other than that shown in this conditional verification letter or for an application other than that listed in this conditional verification letter is 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 conditional verification letter. Changes or modifications to the label or label placement are prohibited without prior written approval from ARB.

This conditional verification does not apply to any Allmetal™ system advertised, offered for sale, sold with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

A copy of this conditional verification letter must be provided to the ultimate purchaser at the time of sale.

As specified in the Procedure, ARB assigns each diesel emission control strategy a family name. The designated family name for the conditional verification as outlined above is:

**CA/CLE/2009/PM3+/N00/OF/DPF02.**

As stated in the Procedure, Cleaire is responsible for recordkeeping requirements (section 2702), honoring the required warranty (section 2707), and conducting in-use compliance testing (section 2709).

This conditional verification 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 must 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 (ASTM) specification D6751 applicable for 15 ppm sulfur content; and
- The diesel fuel portion of the blend complies with Title 13, CCR, sections 2281 and 2282.

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

In addition to the foregoing, ARB reserves the right in the future to review this conditional verification letter and the exemption provided herein to assure that the exempted and conditionally 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 conditionally verified in this letter must conform to all applicable California emissions regulations.

This conditional verification does not release Cleaire from complying with all other applicable regulations.

Violation of any of the above conditions is grounds for revocation of this conditional verification.

Thank you for participating in ARB's diesel emission control strategy verification program. If you have any questions or comments, please contact Ms. Shawn Daley, Manager, at (626) 575-6972 or by email at [sdaley@arb.ca.gov](mailto:sdaley@arb.ca.gov).

Sincerely,



Robert H. Cross, Chief  
Mobile Source Control Division

Attachment 1: ARB-Approved Engine Families for the Cleaire Allmetal System

Attachment 2: Parts List for the Cleaire Allmetal System

Attachment 3: Label for the Cleaire Allmetal System

cc: Ms. Shawn Daley, Manager  
Retrofit Assessment Section

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