

State of California  
AIR RESOURCES BOARD

Resolution 88-9  
January 7, 1988

Agenda Item No.: 88-1-4

WHEREAS, Sections 39600 and 39601 of the Health and Safety Code authorize the Air Resources Board (the "Board" or "ARB") to adopt standards, rules and regulations necessary for the proper execution of the powers and duties granted to and imposed upon the Board by law;

WHEREAS, Section 43000 of the Health and Safety Code provides that vehicle emission standards applied to new motor vehicles, and to used motor vehicles equipped with motor vehicle pollution control devices, are standards with which all motor vehicles shall comply;

WHEREAS, Section 43011 of the Health and Safety Code authorizes the Board to establish criteria for the evaluation of the effectiveness of motor vehicle pollution control devices;

WHEREAS, Sections 27156 and 38391 of the California Vehicle Code prohibit the installation, sale, offer for sale or advertisement of any device, apparatus, or mechanism intended for use with, or as a part of any required motor vehicle pollution control device or system which alters or modifies the original design or performance of any such motor vehicle pollution control device or system (hereinafter a "modified part") unless the Board finds either that the modified part does not reduce the effectiveness of any required motor vehicle pollution control device or does not result in emissions from a modified vehicle which exceed the applicable emissions standards for the vehicle;

WHEREAS, on November 4, 1977, the Board adopted the "Criteria for Evaluation of Add-On Parts and Modified Parts" (last amended May 19, 1981) which contain general evaluation criteria and procedures applicable to all types of modified parts for issuing exemptions from the anti-tampering prohibitions of Vehicle Code Sections 27156 and 38391;

WHEREAS, on August 5, 1987, the U.S. Environmental Protection Agency ("EPA") proposed the adoption of the "Enforcement Policy for the Sale and Use of Aftermarket Catalytic Converters"

(hereinafter "EPA Enforcement Policy") which contains evaluation criteria and procedures for enforcing the federal anti-tampering provisions of Section 203(A)(3) of the Clean Air Act (51 FR 28114 (August 5, 1987)) and established the proposed enforcement policy as its interim enforcement policy effective immediately (51 FR 28133 (August 5, 1987));

WHEREAS, EPA's interim enforcement policy applies to new non-original equipment and recycled original equipment catalytic converters;

WHEREAS, the staff has proposed adoption of regulations which would incorporate specific evaluation procedures based on the EPA Enforcement Policy for new aftermarket non-original equipment catalytic converters;

WHEREAS, the staff has also proposed adoption of regulations to clarify that used original equipment catalytic converters may not be sold or used in California without an exemption from the anti-tampering prohibitions of Vehicle Code Sections 27156 and 38391 and has proposed to incorporate the specific evaluation procedures contained in the EPA Enforcement Policy for used original equipment oxidation catalytic converters;

WHEREAS, the California Environmental Quality Act and Board regulations require that no project having significant adverse environmental impacts be adopted if feasible alternatives or mitigation measures to the proposed action are available to reduce and avoid such impacts;

WHEREAS, a public hearing and other administrative proceedings have been held in accordance with the provisions of Chapter 3.5 (commencing with Section 11340), Part 1, Division 3, Title 2 of the Government Code;

WHEREAS, the Board finds that:

The existing "Criteria for Evaluation of Add-On Parts and Modified Parts" do not provide an adequate or cost-effective means of evaluating aftermarket catalytic converters under Vehicle Code Sections 27156 and 38391 because the criteria do not include specific procedures for assessing durability of aftermarket catalytic converters;

Approximately 140,000 new non-original equipment or used catalytic converters are sold annually to enable vehicles to

meet Smog Check Program requirements or because a failing catalytic converter adversely affects vehicle performance;

Because the catalytic converter is a critical component of the emissions control system on converter-equipped vehicles and because the converter's control efficiencies deteriorate with age, improved evaluation procedures are necessary to allow the use of aftermarket catalytic converters without adversely affecting air quality in this state;

The evaluation procedures for new aftermarket non-original equipment catalytic converters with the specified conversion efficiencies as specified in Attachment A will ensure the availability of low-cost new non-original equipment catalytic converters which will not reduce the effectiveness of any required motor vehicle pollution control device when installed on vehicles which are at least 5 years old or with at least 50,000 miles, or which have a missing or tampered catalytic converter;

Used catalytic converters are not functionally identical to a vehicle's original equipment catalytic converter because prior use reduces the converter's performance and durability;

The proposed evaluation procedures for used original equipment oxidation catalytic converters will ensure the availability of low-cost used oxidation catalytic converters which will not reduce the effectiveness of any required oxidation catalytic converter when installed in vehicles which are at least 5 years old or have at least 50,000 miles, or which have a missing or tampered catalytic converter;

The EPA Enforcement Policy for used original equipment three-way catalytic converters does not provide for a showing of adequate NOx conversion efficiency; therefore, it cannot be used to make a finding that such a converter will not reduce the effectiveness of any required motor vehicle pollution control device or will not cause the vehicle on which such a catalytic converter is installed to exceed the applicable emissions standards;

WHEREAS, the Board further finds that:

The additional costs for new aftermarket non-original equipment catalytic converters sold in California pursuant

to the proposed evaluation procedures will increase the cost of these converters to consumers, however, these converters would not otherwise be available to California consumers and are lower in cost than new original equipment converters;

The adoption of specific evaluation procedures for recycled oxidation converters will allow used converter recyclers and salvagers to maintain catalytic converter sales in this state, although sales of recycled three-way and salvaged catalytic converters will be eliminated or significantly decreased as a result of enforcement of Vehicle Code Sections 27156 and 38391;

Adoption of the proposed regulations will result in an emissions benefit of 6.8 tons per day of oxides of nitrogen compared to the Board's current enforcement policy and will not result in any significant adverse environmental impacts; and

The reporting requirements of the proposed regulations which apply to small businesses are necessary for the health, safety, and welfare of the people of the state.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby approves Sections 2222(h) and 2222(i), Title 13, California Administrative Code, and the incorporated evaluation procedures, as set forth in Attachment A hereto.

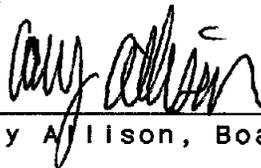
BE IT FURTHER RESOLVED that the Board directs the Executive Officer to adopt Sections 2222(h) and 2222(i), Title 13, California Administrative Code, and the incorporated evaluation procedures as set forth in Attachment A, after making them available to the public for a period of 15 days, provided that the Executive Officer shall consider such written comments as may be submitted during this period, shall make modifications as may be appropriate in light of the comments received, and shall present the regulations to the Board for further consideration if he determines that this is warranted.

BE IT FURTHER RESOLVED that the Board hereby determines that the amendments approved herein will not cause the California emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards, will not cause the California requirements to be inconsistent with Section 202(a) of the Clean Air Act and raise no new issues affecting previous waiver determinations of the Administrator of the

Environmental Protection Agency pursuant to Section 209(b) of the Clean Air Act.

BE IT FURTHER RESOLVED that if necessary the Executive Officer shall forward the amended regulation to the Environmental Protection Agency with a request either for confirmation that the amendments are within the scope of the existing waiver or for issuance of a new waiver, pursuant to Section 209(b)(1) of the Clean Air Act.

I hereby certify that the above is a true and correct copy of Resolution 88-9, as adopted by the Air Resources Board.



---

Cary Allison, Board Secretary

State of California  
AIR RESOURCES BOARD

Response to Significant Environmental Issues

Item: Public Hearing to Consider Regulations Regarding New and Used  
Aftermarket Catalytic Converters Offered for Sale and Use in  
California.

Agenda Item No.: 88-1-4

Public Hearing Date: December 3, 1987  
January 7, 1988

Response Date: N/A

Issuing Authority: Air Resources Board

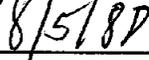
Comment: No comments were received identifying any significant  
environmental issues pertaining to this item. The staff report  
identified no adverse environmental effects.

Response: N/A

Certified:

  
\_\_\_\_\_  
Board Secretary

Date:

  
\_\_\_\_\_

ATTACHMENT A

Adopt new subsections 2222(h) and 2222(i), Title 13, California Code of Regulations\*, to read as follows:

(h)(1) The Executive Officer shall exempt new aftermarket non-original equipment catalytic converters from the prohibitions of California Vehicle Code Sections 27156 and 38391 based on an evaluation conducted in accordance with the "California Evaluation Procedures for New Aftermarket Non-Original Equipment Catalytic Converters" as adopted by the state board on \_\_\_\_\_.

(2) No person shall install, sell, offer for sale or advertise, any new non-original equipment aftermarket catalytic converter in California after 180 days from the date of filing of these regulations with the Secretary of State unless they have been exempted pursuant to the procedures as provided in this subsection.

(3) For the purposes of this regulation, a new aftermarket non-original equipment catalytic converter is a catalytic converter which is constructed of all new materials and is not a replacement part as defined in Title 13, CAC, Section 1900, or which includes any new material or construction which is not equivalent to the materials or construction of the original equipment converter.

(i)(1) Except as provided in Subsection (i)(2) below, no person shall install, sell, offer for sale or advertise, any used catalytic converter in California unless the catalytic converter has been exempted pursuant to the "Criteria for Evaluation of Add-On Parts and Modified Parts", adopted by the state board on November 4, 1977, as amended May 19, 1981.

(2) The Executive Officer shall exempt used original equipment oxidation catalytic converters which comply with the U.S. Environmental Protection Agency interim enforcement policy for used converters (published at 51 Federal Register (FR) 28114 (August 5, 1986) and 51 FR 28132 (August 5, 1986)) from the prohibitions of California Vehicle Code Sections 27156 and 38391 for the vehicle applications indicated by the federal label and installation instructions.

\* Modifications to the regulation as originally made available for public comment October 16, 1987 are shown in double underline and strikeout.

(3) No person shall install, sell, offer for sale or advertise, any recycled or salvaged used catalytic converter in California more than 30 days after the date of filing of these regulations with the Secretary of State unless they have been exempted from the prohibitions of California Vehicle Code Sections 27156 and 38391 pursuant to the procedures provided in this subsection.

(4) For the purposes of this regulation, a "used catalytic converter" is a catalytic converter which is not a new aftermarket non-original equipment catalytic converter as defined in Subsection (1)(b)(h)(3), or a replacement part as defined in Section 1900; and "oxidation catalytic converter" is a catalytic converter designed for the control of only hydrocarbon and carbon monoxide emissions.

NOTE: Authority cited: Sections 39600, 39601, 43000, and 43011 Health and Safety Code. Reference: Sections 39002, 39003, 39500, 43000, 43011 and 43644 Health and Safety Code and Sections 38391, 38395 and 27156 Vehicle Code.

State of California

AIR RESOURCES BOARD

California Evaluation Procedures for New Aftermarket  
Non-Original Equipment Catalytic Converters

Adopted: \_\_\_\_\_

NOTE: This is a new document proposed for adoption by the Air Resources Board. On January 7, 1988, the Board approved modifications to the regulations as originally made available for public comment October 16, 1987. The modifications to the originally proposed text are shown below in underline and strikeout.

State of California  
AIR RESOURCES BOARD

California Evaluation Procedures for New Aftermarket  
Non-Original Equipment Catalytic Converters

1. Applicability

California Vehicle Code Sections 27156 and 38391 prohibit the sale or offer for sale, advertisement, or installation of any device which alters or modifies the original design or performance of any required motor vehicle pollution control device or system unless the device has been exempted by the California Air Resources Board (ARB) in accordance with Vehicle Code Section 27156 or 38395. Exemptions for new aftermarket non-original equipment catalytic converters as replacements for Original Equipment Manufacturers' (OEM) oxidation, three-way or three-way plus-oxidation (dual bed) catalytic converters shall be granted pursuant to these procedures and criteria. Catalytic converters which are considered to be replacement parts, i.e., new OEM converters and other converters meeting the criteria set forth in Section 1900(h)(13), Title 13, California Administrative Code (CAC) do not require exemptions under Vehicle Code Sections 27156 and 38395.

Aftermarket non-original equipment ("non-OEM") catalytic converters which are exempted pursuant to these procedures shall not be installed on any vehicle less than 5 years old and with less than 50,000 miles unless the converter is missing or the Smog Check program has determined the existing converter is tampered and needs replacement. An exempt aftermarket non-OEM catalytic converter shall not be used on vehicles where the converter is covered under warranty or the vehicle is being recalled. An exempt aftermarket non-OEM converter can replace a catalytic converter of the same type. An exempt aftermarket non-OEM oxidation catalytic converter can only replace an oxidation catalytic converter; however, an oxidation catalytic converter can be replaced by an exempt aftermarket non-OEM three-way catalytic converter, or an aftermarket non-OEM three-way catalytic converter which complies with the U.S. Environmental Protection Agency Interim enforcement policy for new aftermarket catalytic converters (published at 51 Federal Register (FR) 28114 (August 5, 1986), and 51 FR 28132 (August 5, 1986)).

## 11. Test Procedures

A vehicle application catalog shall be developed by the manufacturer to identify the specific vehicle applications by model year and engine displacement for each converter model. No change shall be made to the application catalog without prior approval pursuant to these procedures. Aftermarket non-OEM catalytic converters shall be identified as either oxidation, single-bed three-way, or dual-bed (with air injection). Each type (model) catalytic converter shall be evaluated independently. Two "worst case" vehicles from the application catalog of each type (model) new aftermarket non-OEM catalytic converter will be selected and tested for emissions and durability.

The "worst case" vehicles in each application category shall be determined based upon engine displacement and vehicle test weight which produce the greatest stress on emission related components. Unless otherwise indicated by information supplied by the converter manufacturer, the largest engine displacement within the highest test weight class shall be chosen. Vehicles selected for testing shall be approved as "worst case" vehicles by the ARB prior to emission testing and mileage accumulation.

### Mileage Accumulation

Durability mileage accumulation shall be conducted on each test vehicle for 25,000 miles using the AMA durability driving schedule (Reference Appendix IV, Title 40, Part 86, Code of Federal Regulations (June 28, 1977)) or an equivalent driving schedule. If intermediate mileage emissions testing is performed, the test results shall be submitted to the ARB. Non-AMA driving cycles and alternate durability demonstrations, such as bench tests, may be used if approved by the ARB as providing an equivalent demonstration of converter durability as a 25,000-mile AMA driving cycle. Different vehicles may be used for mileage accumulation and testing if they are equal with respect to "worst case" emission-related parameters (i.e., "slave" vehicle(s) may be used for emissions testing). Mileage accumulation and slave vehicles must be emissions stabilized prior to any mileage accumulation or emission testing. If a vehicle has accumulated 4000 miles, it is assumed to be stabilized. Engine reconditioning is permitted prior to mileage accumulation and emission testing. Each test vehicle shall be equipped with the test catalyst. The test converters shall be installed according to the manufacturer instructions submitted to the ARB. Commercially available unleaded fuels and oils of the grade and quality specified by the vehicle manufacturer(s) in the owner's manual(s) shall be used.

During mileage accumulation and emission testing, the vehicles shall be set to the vehicle manufacturer specifications. Scheduled maintenance of the engine, emission control system and fuel system of each test vehicle shall be conducted according to the maintenance allowed in the ARB's new vehicle certification procedures for the applicable model year. Records of all vehicle and engine maintenance shall be maintained and submitted with the test results. Unscheduled maintenance must have prior approval by the Air Resources Board. Unscheduled maintenance shall be approved if the ARB determines the maintenance will not affect the vehicle's emissions. No maintenance of the catalytic converter during the test period shall be permitted.

### Emissions Testing

Emissions testing performed pursuant to these test procedures shall be conducted by an independent test laboratory. For purposes of this requirement an independent test laboratory is one that is not owned or operated by the manufacturer of the catalytic converter for which an exemption is sought. The baseline emissions of the test vehicles with the OEM converter shall be determined prior to mileage accumulation. If the exhaust emission values are determined as atypical, the test vehicle will not be accepted. The emission values will be considered atypical if they are greater than 15% of the emission values determined by the ARB in-use vehicle data bank based upon the test vehicle model year and mileage.

After the mileage accumulation (25,000 miles), two CVS-75 emission tests shall be performed on each test vehicle with the test converter installed. If the pair of test results are within 10% for HC and CO and 15% for NOx, they shall be averaged to obtain with-converter (w/c) emissions. If the data do not meet the above consistency requirements, a third test may be run. The results of the third test may be averaged with either of the first two tests if the pair meet the required consistency standards. If the third test does not result in a consistent pair, the converter design shall not be accepted. If the w/c emission values are determined atypical, as above, the test data will not be accepted.

After the 25,000 mile point tests, the catalyst shall be removed and replaced with an exhaust pipe or a dummy catalyst which simulates the vehicle's exhaust backpressure characteristics under normal road load conditions during a CVS-75 test cycle. Two additional CVS-75 emission tests shall be performed on each vehicle with the catalyst removed. The consistency requirements established for w/c emissions shall be used to obtain the without-catalyst (wo/c) emission values.

Submissions

The converter manufacturer shall submit the application catalog, the mileage accumulation procedures and test procedures, as well as data from all emissions testing for each converter model.

III. Performance Standards

The catalyst efficiency shall be determined using the averaged 25,000 mile test data in the following formula:

CVS-75 efficiency =

$$\frac{(\text{wo/c CVS-75 emissions} - \text{w/c CVS-75 emissions}) \times 100\%}{(\text{wo/c CVS-75 emissions})}$$

In order to be an acceptable converter model, the catalyst efficiency determined above must be greater than or equal to the values shown in the following table for each converter tested.

<u>Catalyst Type</u>	<u>Required Efficiency</u>		
	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Oxidation	70%	70%	-
Single-bed three-way	70%	70%	60%
Dual-bed	70%	70%	60% <u>50%</u>

IV. Confirmatory Testing

The ARB may perform confirmatory tests to verify any submitted test data. Manufacturers must retain their test catalytic converters and vehicles for thirty (30) calendar days after the complete test information is received by the ARB. If required, confirmatory tests shall be requested by the ARB within this 30 day period. If the results of the ARB confirmatory tests show that the catalytic converter does not meet any conversion efficiency standard, the catalytic converter design will not be accepted.

V. Warranty and Safety Statement

The converter manufacturer shall warrant that its catalyst is free from defects in materials and workmanship which cause such catalysts to fail to conform with the emission reduction requirements specified in paragraph III for a period of 25,000 miles from the date of installation. To ensure the external durability of aftermarket converters, manufacturers shall warrant their external shell, including end pipes, to last for five years or 50,000 miles from the date of installation, whichever occurs first. The warranty shall cover the full replacement cost including parts and labor. The converter manufacturer shall provide with each converter a statement that the converter has been designed and manufactured to meet the warranty requirements. In addition, manufacturers shall provide a written statement that their catalytic converters will not in their operation, function, or malfunction result in any unsafe condition endangering the motor vehicle, its occupants or persons or property in close proximity to the vehicle. A sample of the manufacturers' warranty and safety statements shall be submitted to the ARB for review in accordance with the requirements of this paragraph.

VI. Label Requirement

The manufacturer shall label each catalytic converter with a permanent, non-destructible label or stamp identifying the manufacturer, the model, and the month and year of manufacture. The label or stamp shall be easily visible after installation of the converter according to the manufacturer's instructions. The label information shall be in the following format:

CA/XX/YYYY/ZZZ

CA - designates a California approved converter.  
XX - is the manufacturer code issued by the ARB.  
YYYY - is a numerical designation of the vehicle application(s) (supplied by the manufacturer).  
ZZZZ - is the month and year of the manufacture (i.e., - "0186" represents January, 1986).

Each converter manufacturer shall submit a sample of their label or stamp to the ARB for review.

## VII. Required Information

In addition to the information and data required in Paragraphs II, V and VI, the following information shall be supplied to the ARB for each model converter for which certification is being requested.

- 1) Catalyst supplier and address.
- 2) General type: oxidation, single-bed three-way, dual-bed.
- 3) Number of each type of catalyst used per can.
- 4) Substrate - give configuration construction technique (e.g., extruded, laid-up, formed, Dravo disk, etc.), composition, supplier and address, composition of active constituents in substrate. For monolithic substrates, give number of cells per square inch of frontal area with the design tolerances, and nominal cell wall thickness. For pelleted substrates, give pellet shape and dimensions, pellet bulk density, specify (if applicable) the use of more than one type of pellet (e.g., Rh or Pt/Pd), the geometrical distribution of pellets, and the mean impregnation depth of active materials with the production tolerances.
- 5) Washcoat - give composition of active constituents, and total active material loading in washcoat.
- 6) Active material - give composition of active constituents, loading of each active material including design tolerances, total active material loading including design tolerances.
- 7) Container - dimensions, volume, materials used, technique of containment and restraint, method of constructing container, canner (if different from catalyst supplier), and insulation and shielding (converter and/or vehicle).
- 8) Physical description - dimensions (e.g., length, width, height, etc.), weight, volume including design tolerances, active surface area (BET), and total active surface area including design tolerances.

## VIII. Approval

If, after a review of the submitted information and confirmatory test data, if required, the ARB determines that a specific model complies with all the requirements in these procedures for new aftermarket non-OEM catalytic converters, the ARB will issue the applicant an Executive Order exempting that model from the prohibitions of Vehicle Code Sections 27156 and 38391. The converter model may then be marketed in California for those vehicles listed in the manufacturer's application catalog approved by the ARB. The applicant shall not use the Executive Order as an endorsement or approval by the Air Resources Board.

## IX. Installation Requirements

Exemptions shall be applicable only for installations which comply with the following requirements. The converter shall:

- 1) Be installed only in situations listed in paragraph I;
- 2) Be installed in the same location as the original equipment catalytic converter;
- 3) Be the proper catalytic converter for the vehicle as determined and specified by the manufacturer's application catalog submitted to the ARB;
- 4) Be installed such that any existing air injection components on the vehicle are properly connected to the catalytic converter and functioning;
- 5) Be installed with all other required catalytic converters if more than one converter was installed originally by the vehicle manufacturer or if more than one converter was specified by the converter manufacturer.
- 6) Be accompanied by the warranty and safety statements.

## IX. Production Audit Testing

At a minimum, one out of every 5,000 production converters shall be emission tested following an accumulation of 500 miles of appropriate vehicle operation over the AMA driving schedule or its equivalent. The emission data must be evaluated as shown in Paragraph III and must be in compliance with the conversion efficiency standards shown in Paragraph III. If the first selected production converter fails to meet the efficiency standards, the manufacturer may submit a test plan to further evaluate the failed converter model based upon a statistical analysis or the manufacturer may submit a plan of action to correct the problem. The test plan or plan of

action shall be submitted to the ARB within 30 days after failure of a converter model, and shall be approved by the Executive Officer prior to implementation. All quality audit data, as well as production quantity data for each converter model, must be submitted to the ARB for review on a semi-annual basis. Reports should be sent to the Chief, Mobile Source Division, Air Resources Board, 9528 Telstar Avenue, El Monte, CA 91731, no later than August 15 and February 15 for each production year.

As an alternative to the mileage accumulation and emissions testing, manufacturers may submit their quality control procedures and the quality control procedures of their major suppliers. If the manufacturer can demonstrate that these quality control procedures will produce converters which are consistent in quality with the converters used for evaluation of that converter model, the mileage accumulation and emissions testing, as specified above, will not be required. Manufacturers shall have their quality control procedures approved by the Executive Officer prior to production. The Executive Officer shall approve or disapprove a manufacturer's quality control procedures within 30 days of the submission of the procedures and the document(s) containing the demonstration described above. Any changes to the quality control procedures shall be reported to the ARB and approved by the Executive Officer prior to their implementation.

The ARB reserves the right to inspect facilities and records and may also randomly select and test production units for enforcement purposes. Failure to meet the stated production audit requirements may result in violations of Vehicle Code Section 27156 or 38391 and subject the manufacturer to recalls pursuant to this paragraph and Section 2225, Title 13, CAC, and other penalties as provided by law, including those provided in Business and Professions Code Sections 17200 and 17500.

State of California

MEMORANDUM

To : Gordon Van Vleck  
Secretary  
Resources Agency

Date : August 24, 1988

Subject : Filing of Notice of  
Decisions of the Air  
Resources Board

  
Cary Allison  
Board Secretary

From : Air Resources Board

Pursuant to Title 17, Section 60007 (b), and in compliance with Air Resources Board certification under Section 21080.5 of the Public Resources Code, the Air Resources Board hereby forwards for posting the attached notice of decisions and response to environmental comments raised during the comment period.

ATTACHMENTS

87-30  
87-62  
87-82  
87-83  
87-90  
87-91  
87-92  
87-95  
88-9  
88-41