

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-190-1  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

TESTED PRODUCTS, INC.  
"USED AFTERMARKET CATALYTIC CONVERTERS"

WHEREAS, Vehicle Code Section 27156 and Title 13 California Code of Regulations (hereafter "CCR") Section 2222(i), authorize the California Air Resources Board (ARB) and its Executive Officer to exempt used aftermarket catalytic converters from the prohibitions in Vehicle Code Sections 27156 and 38391.

WHEREAS, Tested Products, Inc. of 24540 Capitol, Redford Township, Michigan 48239, has applied to the ARB for exemption from the prohibitions in Vehicle Code Sections 27156 and 38391 to market used original manufacturer (OEM) two-way or oxidation converters (OC), three-way converters (TWC), three-way plus oxidation converters (TWC + OC), and precatalysts in California. Tested Products, Inc. shall salvage, recondition (as necessary), and test the converters for installation on vehicles identical to the certification vehicles.

WHEREAS, pursuant to the authority vested in the Executive Officer by Health and Safety Code Section 39515 and in the Chief, Mobile Source Division by Health and Safety Code Section 39516 and Executive Order G-45-5, the ARB finds that the Tested Products, Inc. used catalytic converters comply with the California Vehicle Code Sections 27156 and 38391, and Title 13, California Code of Regulations, Section 2222(i).

IT IS HEREBY RESOLVED that Tested Products, Inc. used catalytic converters are exempt from the prohibitions in Vehicle Code Sections 27156 and 38391 for installation on applicable vehicles subject to the following conditions:

1. Used catalytic converters marketed in California must attain the minimum conversion efficiencies shown below within the specified time after the exhaust is switched to pass through the catalytic converter:

<u>Converter Type</u>	<u>Minimum Conversion Efficiency</u>			<u>Time</u>
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	
OC	70%	70%	-	60 sec
TWC	70%	70%	60%	60 sec
TWC + OC	70%	70%	50%	60 sec
Precatalysts	40%	40%	-	60 sec

2. No changes are permitted to the catalytic converters as described in the application for exemption. Any changes to the catalytic converters or any of their components, applicable model year, or other factors addressed in this order must be evaluated and approved by the ARB prior to marketing in California.
3. Marketing of the converters using identifications other than those shown in the exemption application or marketing of the catalytic converters for vehicle applications other than those identical to the certification vehicles shall be prohibited unless prior approval is obtained from the ARB. Exemption of these products shall not be

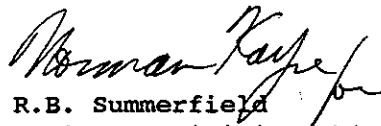
construed as an exemption to sell, offer for sale, or advertise any components of the catalytic converters as individual devices.

4. Any oral or written references to this Executive Order or its content by Tested Products, Inc., its principals, agents, employees, distributors, dealers, or other representatives must include the disclaimer that the Executive Order or the exemption it provides is not an endorsement or approval of any emissions reduction claims for the catalytic converters and is only a finding that the catalytic converters are exempt from the prohibitions of Vehicle Code Sections 27156 and 38391.
5. Tested Products, Inc. must submit their quality audit data or quality control procedures, as well as production quantity data for each converter type produced, to the ARB for review on a semi-annual basis no later than August 15 and February 15 for each production year. For the first calendar year following the exemption of their used catalytic converters, the production audit testing shall demonstrate correlation between conversion efficiencies of two TWC and two TWC + OC determined using the procedures established by Tested Products, Inc. and the cold-start CVS-75 Federal Test Procedure. The test parameters shall be specified by the ARB and will be sent to Tested Products, Inc. not less than 30 days before the end of the reporting period. Failure to establish correlation between the conversion efficiency obtained using the CVS-75 and the conversion efficiency obtained using the procedures developed by Tested Products, Inc. may cause the ARB to require Tested Products, Inc. to review and modify its procedures.
6. Tested Products will be required to adopt a new bench test procedures should the ARB develop a bench test procedures for screening OEM catalytic converters which are more stringent than those used by Tested Products, in the future.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after ten day written notice of intention to revoke it, during which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request, and the order may not be revoked until a determination is made, after the hearing, that grounds for revocation exist.

Executive Order D-190-1 dated May 19, 1989, is hereby superseded and of no further force and effect.

Executed at El Monte, California, this 20<sup>th</sup> day of December, 1994.

  
R.B. Summerfield  
Assistant Division Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF TESTED PRODUCTS, INC. SALVAGED OR USED ORIGINAL EQUIPMENT  
CATALYTIC CONVERTERS FOR EXEMPTION FROM THE PROHIBITIONS IN VEHICLE  
CODE SECTION 27156 AND TITLE 13, CALIFORNIA CODE OF  
REGULATIONS, SECTION 2222(i)

December, 1994

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by

Mobile Source Division

9528 Telstar Avenue  
El Monte, CA 91731-2990

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

## SUMMARY

Tested Products, Inc. (Tested Products) of 24540 Capitol, Redford Township, Michigan 48239, has applied for an exemption to salvage and test used original equipment manufacturer (OEM) catalytic converters for sale in California under California regulations on used aftermarket catalytic converters. Tested Products has developed a bench test for screening used catalytic converters, which is a modification of the EPA approved light-off and stabilized efficiency test. The test set-up will bench test two-way, three-way, and three-way plus oxidation used OEM converters. Tested Products also proposed to use the EPA approved light-off and stabilized efficiency test to screen precatalysts.

Tested Products proposes to screen the used OEM converters for the minimum conversion efficiencies of 70 percent for HC and CO, and NOx efficiencies of 60 percent for three-way and 50 percent for three-way plus oxidation converters, which are the same conversion efficiencies established for new aftermarket non-OEM converters. At the present time, the Air Resources Board (ARB) has not adopted a test procedure for recycling used OEM three-way type converters. However, the staff believes that there is a significant need to allow the sale of recycled three-way converters in California, and that the test procedure proposed by Tested Products is more stringent than that currently accepted by the EPA. Based on the conversion efficiencies of several used converters tested by the applicant, the ARB is also allowing Tested Products to market used precatalysts that show a minimum conversion efficiency of 40 percent for HC and CO. As part of their production audit testing, Tested Products will test some used OEM converters, with known conversion efficiencies, using cold-start CVS-75, for the purpose of correlating their bench test efficiency with the efficiency obtained from the cold-start CVS-75.

Information submitted by Tested Products show that they meet the requirements of Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(i) to advertise and market used OEM catalytic converters in California. Staff recommends that the exemption be granted as requested and that Executive Order D-190-1 be issued.

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I. INTRODUCTION

Tested Products, Inc. (Tested Products) of 24540 Capitol, Redford Township, Michigan 48239, has applied for an exemption to salvage and test used original equipment manufacturer (OEM) catalytic converters for sale in California under California regulations on used aftermarket catalytic converters. Tested Products has developed a bench test for screening two-way converter (OC), three-way converter (TWC), and three-way plus oxidation converter (TWC + OC). Their test procedure is a modification of the EPA approved light-off and stabilized efficiency tests to enable Tested Products to determine the conversion efficiency for NOx as well as HC and CO. Tested Products also proposes to use the unmodified EPA approved General Motor's (GM's) "Cell 102" test procedures to screen precatalysts.

II. CONCLUSION

The applicant has submitted all the required information, and based on the submitted catalyst test data, the staff concludes that Tested Products laboratory has demonstrated that their procedures are adequate for determination of the conversion efficiency of used OC, TWC, TWC + OC, and precatalysts in accordance with Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(i).

III. RECOMMENDATION

Staff recommends that the exemption be granted as requested and that Executive Order No. D-190-1 be issued, permitting the advertisement, sale and installation of the used OEM catalytic converters tested by Tested Products.

IV. PROCEDURE DESCRIPTION

Tested Products first conducted the converter bench conversion efficiency test in accordance with procedures described in Federal Registrar Vol.51, No.150, dated August 5, 1986. The following were the test equipment and parameters:

Test Engine - 350 CID (5.7L) GM V-8 2 bbl carbureted engine

Engine speed - 1800 +/- 20 RPM

Engine load - 31 ft-lb (10.6 hp)

Converter inlet CO - 2% +/- 0.05%

Converter inlet temperature - 730 +/- 30 degrees F

Air Injection Pump - 20 CID (maximum)

Air Injection Drive Ratio - 1.5:1 (maximum)

Location of converter - 2 feet (min) from merging point of the two  
exhaust banks

Converter pre-test temperature - 100 degrees F

Exhaust Gas Analyzers for HC, CO, and NOx

Computer for data reduction

Since the above test parameters cannot generate NOx, some adjustments to the existing test procedure were necessary to evaluate the NOx efficiency of a catalytic converter. In order to generate enough NOx in the exhaust for conversion efficiency measurement, Tested Products leaned the inlet CO from 2% +/- 0.05% to 1.8%. The converter inlet temperature was increased to 830 +/- 30 degrees F by increasing the load on the dynamometer. Air injection was not used except when testing three-way plus oxidation converters when air was introduced between the reducing and oxidizing substrates for oxidation reaction. All other parameters remained unchanged. The set-up allowed Tested Products to measure the conversion efficiencies of all three



pollutants simultaneously. Tested Products submitted data from tests conducted with 10 used OEM three-way converters and 10 used OEM three-way plus oxidation converters using the modified procedures described above. Using the EPA approved light-off and stabilized test procedures for oxidation converter Tested Products also screen 10 precatalysts. The conversion efficiencies of all catalysts tested were determined within 60 seconds after the exhaust gas was switched to pass through the catalytic converter. Based on these test data, staff recommends that the ARB allow the sale and installation of used OEM three-way, three-way plus oxidation, and precatalysts which attain the following conversion efficiencies within 60 seconds after the exhaust is switched to pass through the precatalyst.

Conversion Efficiencies

<u>Converter Type</u>	<u>HC</u>	<u>CO</u>	<u>NOx</u>
TWC + OC	70%	70%	50%
TWC	70%	70%	60%
Precatalyst	40%	40%	-

As part of their production audit testing Tested Products shall conduct cold-start CVS-75 conversion efficiency tests on two three-way converters and two three-way plus oxidation converters in order to correlate the efficiencies obtained using their procedures with the cold-start CVS-75 conversion efficiencies. The tests would be conducted within the next two production audit reporting periods following the exemption of Tested Products's used OEM catalytic converters. The cold-start CVS-75 tests are to be conducted at an independent laboratory. All used catalytic converters sold in California by Tested Products must be tested using the procedures described above, and must attain the required conversion efficiencies.