

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-511  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

EMICO TECHNOLOGIES, INC.  
"THREE-WAY CATALYTIC CONVERTER, SERIES 13500"

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

WHEREAS, Emico Technologies, Inc. (Eastern) of 373 Tiffin Street, Barrie, Ontario, Canada L4M 4S4, has applied to the ARB for exemption from the prohibitions in Vehicle Code Sections 27156 and 38391 to market their aftermarket series 13500 three-way catalytic converter (TWC) for the following application, except for vehicles equipped with an OBD II system:

<u>Type</u>	<u>Use</u>	<u>Series No.</u>	<u>Max. Eng. Size</u>	<u>Max. Veh. Test Wt.</u>
TWC	TWC	13500	5.7L (350 CID)	4500 lbs.

WHEREAS, pursuant to the authority vested in the Executive Officer by Health and Safety Code Section 39515 and in the Chief, Mobile Source Operations Division, by Health and Safety Code Section 39516 and Executive Order G-45-9, the ARB finds that the above aftermarket catalytic converter complies with the California Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(h). Emission performance of the catalytic converter was based on durability bench-aging of the catalyst using AlliedSignal Environmental Catalyst's ARL-102 bench-aging cycle, accepted by the ARB for this application to be equivalent to 25,000 miles road aging on the AMA driving cycle (Reference Appendix IV, Title 40, part 86, Code of Federal Regulations (June 28, 1977)).

Whereas, emissions tests conducted at Automotive Testing and Development Services (ATDS), Ontario, California, showed the following conversion efficiencies which meet the minimum requirements for new aftermarket catalytic converters:

<u>Pollution Component</u>	<u>Catalyst Application Type</u>
	<u>TWC</u> (% Conversion)
HC: Min. Requirement	70
Emico's series 13500	84.8
CO: Min. Requirement	70
Emico's series 13500	83.3
NOx: Min. Requirement	60
Emico's series 13500	76.1

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"TWC SERIES 13500"

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IT IS HEREBY RESOLVED that the above catalytic converter is exempt from the prohibitions in Vehicle Code Section 27156 for installation on the approved application vehicles subject to the following conditions:

1. No changes are permitted to the catalytic converter as described in the application for exemption. Any changes to the catalytic converter or any of its components, and other factors addressed in this order must be evaluated and approved by the ARB prior to marketing in California.
2. Marketing of the catalytic converter using any identification other than those shown in the exemption application and in this Executive Order, or marketing of the catalytic converter for an application other than shown in this Executive Order shall be prohibited unless prior approval is obtained from the ARB. Exemption of this product shall not be construed as an exemption to sell, offer for sale, or advertise any components of the catalytic converter as individual devices.
3. Any oral or written references to this Executive Order or its content by Emico Technologies, 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 emission reduction claims for the catalytic converter and is only a finding that the catalytic converter is exempt from the prohibitions of Vehicle Code Section 27156.
4. Emico Technologies, Inc.'s installation instructions for the new catalytic converter must conform to requirements in Paragraphs I and IX of California Evaluation Procedures for New Aftermarket Non-Original Equipment Catalytic Converters.
5. Upon installation, the catalytic converter must carry a manufacturer's warranty for 25,000 miles on the substrate and 50,000 miles or five years on the shell and end pipes.

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Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after a 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.

Executed at El Monte, California, this 6<sup>th</sup> day of December 2000.



R. B. Summerfield, Chief  
Mobile Source Operations Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF EMICO TECHNOLOGIES, INC.'S SERIES 13500 NEW AFTERMARKET  
THREE-WAY CATALYTIC CONVERTER FOR EXEMPTION FROM THE  
PROHIBITIONS IN VEHICLE CODE SECTION 27156, AND TITLE 13,  
CALIFORNIA CODE OF REGULATIONS SECTION 2222(h)

December 2000

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

Emico Technologies, Inc. (Emico) of 373 Tiffin Street, Barrie, Ontario, Canada L4M 4S4, has applied for an exemption of its series 13500 new aftermarket three-way catalytic converter (TWC) from the prohibitions in Vehicle Code Section 27156, in accordance with California regulations for new aftermarket catalytic converters. The two test catalysts were aged using AlliedSignal Environmental Catalyst's (ASEC's) rapid aging cycle ARL-102. The catalyst is a round-shaped, single substrate of a ceramic monolith type. The substrate is coated with platinum and rhodium in a 2:1 ratio. The precious metal loading on the catalyst is 10 grams per cubic foot. The emission tests were conducted on a 1988, 5.7L Chevrolet Pick-up truck at the equivalent test weight of 5975 pounds (lbs.). The new catalytic converter is for installation on vehicles equipped with a three-way catalytic converter (TWC). Based on the loading and aging parameters, the catalyst maximum application limits are 5.7L and 4500 lbs. The corresponding maximum gross vehicle weight rating (GVWR) is 5400 lbs.

Emissions data submitted by the applicant show that the catalytic converter meets the requirements of Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(h) for the stated applications. Based on the above, the staff recommends that the exemption be granted as requested and that Executive Order D-511 be issued.

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EVALUATION OF EMICO TECHNOLOGIES, INC.'S SERIES 13500 NEW AFTERMARKET  
THREE-WAY CATALYTIC CONVERTER FOR EXEMPTION FROM THE  
PROHIBITIONS IN VEHICLE CODE SECTION 27156, AND TITLE 13,  
CALIFORNIA CODE OF REGULATIONS SECTION 2222(h)

I. INTRODUCTION

Emico Technologies, Inc. (Emico) of 373 Tiffin Street, Barrie, Canada L4M 4S4, has applied for an exemption from the prohibitions in Vehicle Code Section 27156 for its series 13500 new aftermarket three-way catalytic converter (TWC) in accordance with California regulations for new aftermarket catalytic converters. The new aftermarket catalytic converter is intended for the following vehicle application:

<u>Converter Type</u>	<u>Converter Use</u>	<u>PN/Series</u>	<u>Max. Eng.Size</u>	<u>Max.Veh.Test Wt.</u>
TWC	TWC	13500	5.7L	4500 lbs.

The maximum Gross Vehicle Weight (GVW) for the catalytic converter application is 5,400 lbs.

Emico intends to market the new TWC as a replacement for catalytic converters on applicable vehicles whose manufacturer's warranty has expired and the need for replacement of the original equipment manufacturer (OEM) catalytic converter has been established and documented. The catalytic converter is not for installation on vehicles equipped with an On-Board Diagnostic II (OBD-II) system.

II. CONCLUSION

The applicant has submitted all the required information, and based on the exhaust emissions test data, the staff concludes that the new aftermarket catalytic converter meets the criteria set forth in Vehicle Code Section 27156, and Title 13, California Code of Regulations, Section 2222(h) for the stated application.

### III. RECOMMENDATION

Staff recommends that the exemption be granted as requested and that Executive Order No. D-511 be issued, permitting the advertisement, sale, and installation of the new aftermarket catalytic converter on applicable vehicles.

### IV. DEVICE DESCRIPTION

Emico's new aftermarket TWC is designed to use a single round-shaped ceramic monolith substrate. The substrate is coated with platinum and rhodium in a 2:1 ratio. The precious metal loading of the catalyst is 10 grams per cubic foot. The dimensions for the substrate are 3.66 diameter and 5.00 inches long. The volume of the substrate is 52.58 cubic inches. The substrate is contained in an outer 409 stainless steel shell with compressed interam or expanding mat, to prevent vibration and exhaust by-pass. The shell halves are sealed by seam weld, and the end pipes are attached to the shell by arc welding. An aluminized heat shield is spot-welded to the upper side of the converter to protect the vehicle from excessive heat. The catalytic converter may be sold as a unit with installation instructions or may be used in customized direct fit exhaust applications. It is sold with a warranty for 25,000 miles on the substrates, and five years or 50,000 miles on the container or shell, and the end pipes.

### V. DEVICE EVALUATION

Emico submitted emissions data from testing conducted by Automotive Testing and Development Services (ATDS) laboratory in Ontario, California. Catalyst bench-aging was conducted by ASEC using its ARL-102 rapid-aging cycle. The aging cycle and duration were accepted by the ARB to be equivalent to driving a 5.7L/4,500 lbs. vehicle for 25,000 miles on the road using the AMA driving cycle. Emissions tests were conducted on a 5.7L 1988



Chevrolet Pickup Truck with an equivalent test weight of 5975 lbs. However, since the catalyst loading and aging parameters were based on 5.7L and 4,500 lbs. equivalent test weight, the catalyst application cannot exceed these limits. Emico requested to be allowed to use the 1988 Chevrolet pickup truck because it was available, and was more cost effective than procuring a vehicle with the exact test parameters.

The evaluation of Emico's new aftermarket catalytic converter is solely based on the bench-aging conducted by ASEC and the emission tests conducted at ATDS. The limits of application of the new series 13500 TWC are 5.7L/4,500 lbs. and the corresponding maximum gross vehicle weight (GVW) is 5,400 lbs. The two test catalysts were labeled ET-4 and ET-5, respectively. Testing consisted of two cold-start CVS-75 tests with a simulator ("dummy" catalyst), followed by two cold-start CVS-75 tests for each of the test catalysts. The average of the two test results for each test catalyst was used to calculate the conversion efficiency. The overall conversion efficiency for the catalyst model is the average conversion efficiency of the two test catalysts. The test results for the catalyst are shown below:

Automotive Testing and Development Services, Ontario, California

TWC

	<u>Simulator</u> <u>Average</u>	<u>Catalyst ET-4</u> <u>Average</u>	<u>Catalyst ET-5</u> <u>Average</u>	<u>Conv. Eff.</u> <u>Average</u>
HC (g/mi)	2.974	0.442	0.447	84.8%
CO (g/mi)	22.357	4.140	3.344	83.3%
NOx (g/mi)	1.769	0.421	0.423	76.1%

The above conversion efficiencies meet the minimum requirements of the California regulations for new aftermarket catalytic converters. The ARB did not conduct confirmatory testing on the catalyst.