

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-188-3  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

TRI-D INDUSTRIES, INC.  
"THREE-WAY PLUS OXIDATION CATALYTIC CONVERTER"

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, Tri-D Industries, Inc. (Tri-D) of 820 East Fifth Street, Port Clinton, Ohio 43452, has applied to the ARB for exemption from the prohibitions in Vehicle Code Sections 27156 to market their aftermarket three-way plus oxidation catalytic converter (TWC + OC) for the following application:

| <u>Type</u> | <u>Use</u> | <u>Series No.</u>               | <u>Max. Eng. Size</u> | <u>Max. Test Veh. Wt.</u> |
|-------------|------------|---------------------------------|-----------------------|---------------------------|
| TWC + OC    | TWC + OC   | TD4400 (Round)<br>TD6100 (Oval) | 5.0L (300 CID)        | 4,500 lbs.                |

Charlie Brown Catalytic Converter Company of 6704 East Upper Road, Somerville, Alabama 35670, will also can and market the catalyst using part number series BC RR4000 and BC 4000 for the round and oval configurations respectively, under contract with Tri-D Industries, Inc.

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-45-9, 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 using AlliedSignal Environmental Catalysts' bench-aging procedure ARL-102 in lieu of mileage accumulation of 25,000 miles using the AMA durability driving schedule (Reference Appendix IV, Title 40, part 86, Code of Federal Regulations (June 28, 1977)).

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.

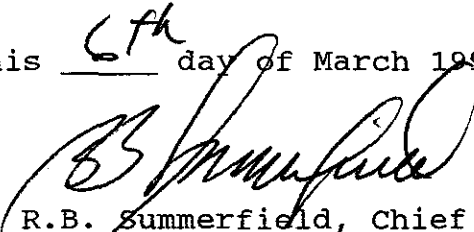
TRI-D INDUSTRIES, INC.  
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2. Marketing of the catalytic converter using identifications other than those shown in the exemption application, and in this Executive Order, or marketing of the catalytic converter for application other than the ones shown 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 Tri-D Industries, 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 converter and is only a finding that the catalytic converter is exempt from the prohibitions of Vehicle Code Section 27156.
4. Tri-D Industries, Inc. 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 substrates and 50,000 miles or five years on the shell and end pipes.

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.

Executed at El Monte, California, this 6<sup>th</sup> day of March 1997.

  
R.B. Summerfield, Chief  
Mobile Source Operations Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF TRI-D INDUSTRIES, INC.'s NEW AFTERMARKET THREE-WAY  
PLUS OXIDATION CATALYTIC CONVERTER FOR EXEMPTION FROM THE  
PROHIBITIONS IN VEHICLE CODE SECTION 27156, AND TITLE  
13, CALIFORNIA CODE OF REGULATIONS, SECTION 2222(h)

March 1997

EVALUATION OF TRI-D INDUSTRIES, INC.'s NEW AFTERMARKET THREE-WAY  
PLUS OXIDATION CATALYTIC CONVERTER FOR EXEMPTION FROM THE  
PROHIBITIONS IN VEHICLE CODE SECTION 27156, AND TITLE  
13, CALIFORNIA CODE OF REGULATIONS, SECTION 2222(h)

by

Mobile Source Division

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(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

Tri-D Industries, Inc. (Tri-D) of 820 East Fifth Street, Port Clinton, Ohio 43452, has applied for an exemption of their new aftermarket three-way plus oxidation catalytic converter (TWC + OC) from the prohibitions in Vehicle Code Sections 27156, in accordance with California regulations on new aftermarket catalytic converters. The two test catalysts were aged using AlliedSignal Environmental Catalysts' (ASEC's) bench-aging procedure ARL-102. The Air Resources Board (ARB) accepted the ARL-102 bench-aging procedure because it is the same as RAT "B" bench-aging procedure which is used by General Motor Corporation (GM) to certify new vehicles in California. The bench-aging was conducted by ASEC who is also the catalyst supplier. The substrates are of ceramic monolith type. The front substrate contains palladium and rhodium, and the rear substrate contains palladium. The new converter may be installed TWC + OC vehicles powered by an engine of 5.0L or less, and having an equivalent test weight of 4,500 lbs. or less.

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 application. Based on the above, the staff recommends that the exemption be granted as requested and that Executive Order D-188-3 be issued.

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EVALUATION OF TRI-D INDUSTRIES, INC.'s NEW AFTERMARKET THREE-WAY PLUS OXIDATION CATALYTIC CONVERTER FOR EXEMPTION FROM THE PROHIBITIONS IN VEHICLE CODE SECTION 27156, AND TITLE 13, CALIFORNIA CODE OF REGULATIONS, SECTION 2222(h)

I. INTRODUCTION

Tri-D Industries, Inc. (Tri-D) of 820 East Fifth Street, Port Clinton, Ohio 43452, has applied for an exemption from the prohibitions in Vehicle Code Sections 27156 for their new aftermarket three-way plus oxidation catalytic converter (TWC + OC) in accordance with California regulations on new aftermarket catalytic converters. The ceramic monolith substrate of the new catalyst was manufactured and bench-aged by AlliedSignal Environmental Catalysts (ASEC) using their ARL-102 bench-aging procedure. The new aftermarket catalyst is intended for the following vehicle application:

| <u>Series Number</u> |             | <u>Max. Eng.</u> | <u>Max. Veh.</u> |
|----------------------|-------------|------------------|------------------|
| <u>Round</u>         | <u>Oval</u> | <u>Size</u>      | <u>Test Wt.</u>  |
| TD4400               | TD6100      | 5.0L             | 4,500 lbs.       |

Tri-D intends to market the new TWC + OC as a replacement for applicable vehicles whose manufacturers' warranty has expired and the need for replacement of the original equipment manufacturer (OEM) catalyst has been established and documented.

II. CONCLUSION

The applicant has submitted all the required information, and based on the applicant's submitted exhaust emissions test data, the staff concludes that the new aftermarket catalyst 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-188-3 be issued, permitting the advertisement, sale, and installation of the new aftermarket catalyst on applicable vehicles.

IV. DEVICE DESCRIPTION

Tri-D's new aftermarket TWC + OC is designed to use round and oval ceramic monolith substrates. The front or reduction substrate is coated with palladium and rhodium, and the rear or oxidation substrate is coated with palladium. Each substrate of the oval catalyst has a volume of 25.55 cubic inches. Each substrate of the round catalyst has a volume of 26.33 cubic inches. The substrates are contained in outer 409 stainless steel shell by wrapping them with Vermiculit Wrap manufactured by Carborundum, to prevent vibration and exhaust by-pass. The shell is finally sealed by seam weld. Aluminized heat shield is spot-welded to the upper side of the converter to protect vehicle underbody from excessive heat. The catalyst may be sold as a unit with installation instructions or may be used in customized direct fit exhaust. It is also sold with a warranty for 25,000 miles on the substrate, and five years or 50,000 miles on the container or shell, and the end pipes.

V. DEVICE EVALUATION

Tri-D submitted data from testing conducted by Roush Laboratories (Roush) in Garden Grove, California. AlliedSignal Environmental Catalysts bench-aged the two test catalysts using their bench-aging procedure ARL-102. AlliedSignal bench-aging procedure ARL-102 is similar to "RAT B" used by General Motors Company to certify new California vehicles. The catalysts were shipped directly to Roush upon completion of aging. Emissions tests were conducted on the following test vehicle approved by the ARB:

| <u>Application</u> | <u>Emission Test Vehicle</u> | <u>Engine Size</u> | <u>ETW</u> |
|--------------------|------------------------------|--------------------|------------|
| TWC + OC           | 1984 Buick Park Ave          | 5.0L               | 4,500 lbs. |

Two test catalysts labeled TDO3 and TDR7 were tested. Testing consisted of two cold-start CVS-75 with a simulator ("dummy"



catalyst), followed by three cold-start CVS-75 for each of the test catalysts. Two of the three tests which conformed to required test-to-test variability were selected for calculation of the catalyst conversion efficiencies. Due to time constraint, ARB did not conduct confirmatory tests on the new aftermarket catalyst. The test results for the catalyst are shown below:

Roush Laboratories, Garden Grove, California

|            | <u>Simulator</u> | <u>Cat. TDO3</u> | <u>Cat. TDR7</u> | <u>Avg. Conv. Eff.</u> |
|------------|------------------|------------------|------------------|------------------------|
| HC (g/mi)  | 2.396            | 0.575            | 0.576            | 76.0%                  |
| CO (g/mi)  | 31.496           | 7.219            | 5.908            | 79.1%                  |
| NOx (g/mi) | 4.720            | 1.927            | 1.919            | 59.2%                  |

The above test results meet the minimum requirements of the California regulations on new aftermarket catalytic converters.