

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-193-18
Relating to Exemptions Under Section 27156
of the Vehicle Code

CAR SOUND EXHAUST SYSTEM, INC.
"THREE-WAY PLUS OXIDATION CATALYTIC CONVERTER SERIES 97000"

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, Car Sound Exhaust System, Inc. (Car Sound) of 22961 Arroyo Vista, Rancho Santa Margarita, California 92688, has applied to the ARB for exemption from the prohibitions in Vehicle Code Sections 27156 and 38391 to market their aftermarket series 97000 three-way plus oxidation catalytic converter (TWC + OC) for the following application, except vehicles equipped with an on-board diagnostic II system:

Type	Use	Series No.	Max. Eng. Size	Max. Test Veh. Wt.
TWC + OC	OC	97000	5.9L (360 CID)	6,000 lbs.
TWC + OC	TWC	97000	5.9L (360 CID)	6,000 lbs.
TWC + OC	TWC + OC	97000	5.9L (360 CID)	6,000 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 (ASEC) bench-aging cycle ARL-102 (RAT B) for 53 hours, accepted by the ARB, for this application, to be equivalent to 25,000 miles durability mileage accumulation using 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, showed the following conversion efficiencies which meet the minimum requirements for new aftermarket catalytic converters:

Pollution Component	Catalyst Application Type		
	TWC + OC	TWC	OC
HC: Min. Requirement	70%	70%	70%
Car Sound's series 97000	80.1	85.7	78.4
CO: Min. Requirement	70	70	70
Car Sound's series 97000	75.8	82.6	82.6
NOx: Min. Requirement	50	60	-
Car Sound's series 97000	66.6	83.5	-

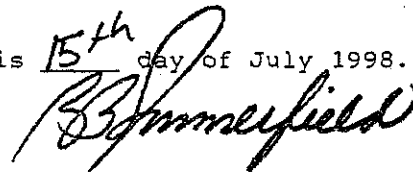
IT IS HEREBY RESOLVED that the above catalytic converter is exempt from the prohibitions in Vehicle Code Section 27156 for installation on the approved application vehicles subject to the following conditions:

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 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 Car Sound Exhaust System, 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. Car Sound Exhaust System, 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.
6. Car Sound Exhaust System, Inc. must conduct testing as outlined in the ARB letter dated June 25, 1998, and the test data must be generated and submitted to the ARB in accordance with the schedule stipulated in Car Sound's letter dated June 26, 1998.

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 15th day of July 1998.



R.B. Summerfield, Chief
Mobile Source Operations Division

State of California
AIR RESOURCES BOARD

EVALUATION OF CAR SOUND EXHAUST SYSTEM, INC.'S SERIES 97000 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)

July 1998

by

Mobile Source Operations Division
Aftermarket Parts Section
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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

Car Sound Exhaust System, Inc. (Car Sound) of 22961 Arroyo Vista, Rancho Santa Margarita, California 92688, has applied for an exemption of their new series 97000 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 Catalyst (ASEC's) bench-aging cycle, ARL-102 (RAT B) for 53 hours. Each converter can contains two substrates of ceramic monolith type. The front and rear substrates are coated with palladium and rhodium in 5:1 ratio. The new catalytic converter may be installed on TWC + OC, TWC, and OC vehicles powered by an engine of 5.9L or less, and having an equivalent test weight of 6,000 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-193-18 be issued.

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EVALUATION OF CAR SOUND EXHAUST SYSTEM, INC.'S SERIES 97000 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

Car Sound Exhaust System, Inc. (Car Sound) of 22961 Arroyo Vista, Rancho Santa Margarita, California 92688, has applied for an exemption from the prohibitions in Vehicle Code Section 27156 for their new series 97000 aftermarket three-way plus oxidation catalytic converter (TWC + OC) in accordance with California regulations on new aftermarket catalytic converters. The ceramic monolith substrates of the new catalyst were manufactured by AlliedSignal Environmental Catalyst (ASEC). The new aftermarket catalyst 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 + OC	TWC + OC	97000	5.9L	6,000 lbs.
TWC + OC	TWC	97000	5.9L	6,000 lbs.
TWC + OC	OC	97000	5.9L	6,000 lbs.

Car Sound intends to market the new TWC + OC as a replacement for catalytic converters on applicable vehicles whose manufacturers' warranty has expired and the need for replacement of the original equipment manufacturer (OEM) catalytic converter has been established and documented. Excluded from the application are those vehicles equipped with an On-Board Diagnostic System II (OBD-II).

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-193-18 be issued, permitting the advertisement, sale, and installation of the new aftermarket catalyst on applicable vehicles.

IV. DEVICE DESCRIPTION

Car Sound's new aftermarket TWC + OC is designed to use oval ceramic monolith substrates. The front and rear substrates are coated with palladium and rhodium in 5:1 ratio. Each substrate measures 4.75 inches along the major axis, 3.15 inches along the minor axis, and 1.93 inches in length, and has a volume of 24.6 cubic inches. Alumina coating was used as the washcoat for the catalyst. The substrates are contained in outer 409 stainless steel shell with Fiberfrax XPE paper

or intumescent mat, to prevent vibration and exhaust by-pass. The shell is sealed by seam weld, and bushings are attached by arc welding. Aluminized soft steel heat shield is spot-welded to the upper and bottom sides of the converter to protect vehicle underbody from excessive heat, and prevent materials on the ground from direct contact with the catalyst shell. The catalyst may be sold as a unit with installation instructions or may be used in customized direct fit exhaust application. It is also 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

Car Sound submitted data from testing conducted by Automotive Testing and Development Services (ATDS), Ontario, California. The test catalysts were aged by AlliedSignal Environmental Catalyst using their ARL-102 ("RAT B") bench-aging cycle for 53 hours. The test catalysts were shipped directly to ATDS where the emissions tests were conducted for three-way plus oxidation (TWC + OC) application using a 1989 Dodge B250 Cargo Van 5.9L at the equivalent test weight (ETW) of 6,000 lbs. Three-way (TWC) application tests were conducted on a 1994 Dodge Ram 2500 Pickup Truck 5.9L at its certification ETW of 7,500 lbs. The oxidation catalyst application tests were conducted on a 1988 Dodge B350 Van 5.9L at the ETW of 6,000 lbs. Although Car Sound elected to conduct the TWC application test at the ETW of 7,500 lbs., they were informed, prior to start of testing that the TWC application will still be limited to 5.9L/6,000 lbs., the limits to which the catalyst was aged. The test vehicles for TWC + OC and OC applications were ballasted in order to achieve the required ETW of 6,000 pounds. The test catalysts were labeled as 94AA4 and 94AA5. Testing consisted of two cold-start CVS-75 with a simulator ("dummy" catalyst), followed by two cold-start CVS-75 for each of the test catalysts. The test results for the catalyst are shown below:

ATDS, Ontario, California

		<u>TWC + OC</u>			
		<u>Simulator</u>	<u>Cat 94AA4</u>	<u>Cat 94AA5</u>	<u>Conv. Eff.</u>
		<u>Average</u>	<u>Average</u>	<u>Average</u>	<u>Average</u>
HC	(g/mi)	2.758	0.546	0.548	80.1%
CO	(g/mi)	36.022	8.816	8.588	75.8%
NOx	(g/mi)	2.884	1.012	0.910	66.6%
		<u>TWC</u>			
HC	(g/mi)	2.324	0.332	0.332	85.7%
CO	(g/mi)	26.474	5.151	4.029	82.6%
NOx	(g/mi)	6.308	1.182	0.894	83.5%
		<u>OC</u>			
HC	(g/mi)	3.028	0.636	0.671	78.4%
CO	(g/mi)	27.020	4.292	5.068	82.6%

The above catalyst duplicates Car Sound's series 94000 TWC + OC, which was manufactured and bench-aged by Johnson Matthey. However, series 97000 is manufactured with only one half the loading of platinum on series 94000. Although the above test results show that series 97000 meet the minimum requirements of the California regulations on new aftermarket catalytic converters, the ARB wants to further investigate whether the performance of the catalyst was solely influenced by the washcoat technology used by AlliedSignal. For this reason, the ARB has requested Car Sound to conduct further testing in order to determine the role of the bench-aging cycle. Due to time constraints, the ARB was unable to conduct confirmatory testing on the new series 97000 TWC + OC.