

Subject: EPA versus California Requirements & Compliance Procedures:



**Hans Borneby - Engineering Product Manager
for Car Sound/MagnaFlow Performance Exhaust**

Although there are no official "certification" procedures for California or the United States Environmental Protection Agency (EPA), there is a process for each that any manufacturer has to go through to demonstrate compliance with the regulations. Once the compliance demonstration has been successfully completed, California Air Resources Board (CARB) will issue an Executive Order (EO) which "exempts" the converter from being considered a tampering device. The EPA requires only that the compliance demonstration data is submitted but does not issue a certificate or executive order.

Current Pre-OBD II converters

The performance requirements set forth by the EPA are that the test converter subjected to 25,000 miles of driving (aging), converts 70% HC, 70% CO and 30% NOx during emission testing using a standard drive cycle on a dynamometer. CARB requirements are similar but with a higher NOx requirement of 50% for a vehicle equipped with three way catalyst with air injection (TWC+air) and 60% for a TWC vehicle. CARB regulations also mandate a more severe "aging" that is done on an engine dynamometer to simulate the 25,000 miles. Neither EPA or CARB has a requirement for NOx on older vehicles equipped with oxidation catalyst (OC) only

Compliance testing is performed on what are called "worst case" vehicles. These are vehicles with the maximum desired application coverage for the type of converter to be marketed. For example, if a 5.9L vehicle equipped with a three-way catalyst (TWC) and with an equivalent test weight (ETW) of 6000 lbs is tested and meets the regulation requirements, the converter is considered EPA compliant and/or is issued an EO by CARB. These converters can then legally be marketed and installed on any TWC equipped vehicle with an engine displacement below 5.9L and ETW below 6000lbs. Typically, a test program is conducted with 3 separate vehicles equipped with TWC, TWC+air and OC to ensure breadth of coverage.

Future Pre-OBD II converters

The EPA has not announced any proposed changes to the federal requirements but there have been some informal discussions recently. In June of 2008 however, CARB adopted the next generation of their aftermarket converter regulation that significantly raises the performance requirements for Pre-OBD II converters. Effective on January 1st 2009, the new regulations requires the converters meet a much stricter standard and rather than measuring % efficiency as in the past, it requires the measuring of actual emissions in terms of grams of pollutant per mile driven. The standard is the same as these the Original Equipment Manufacturers (OEM) must meet for OBD II equipped vehicles meeting the California Low Emission Vehicle (LEV) standard.

Current OBD II standards

For the EPA, the requirements are essentially the same as for Pre-OBD II from a performance perspective with the exception the converter must be warranted against triggering the vehicles Malfunction Indicator Light (MIL) or check engine light. A converter that meets the pre-OBD II EPA regulations is legal for installation on OBD II equipped vehicles as well.

For CARB, performance standards are identical to those the OEM's must meet but the durability requirements are reduced. If the catalyst used in the OEM certification was aged to 100k miles, the aftermarket catalyst must meet the same emission requirements but only be aged to 50k miles. The emissions are measured in grams/mile and conversion efficiencies are generally much higher to meet the more stringent tail pipe emission standards. Durability requirements are different for light duty truck (LDT) and passenger cars applications. LDT converters must accumulate 33% more "aging" than those for passenger car. Application scope is also much more complex since it is based on the vehicles emission certification level (Tier 1, TLEV, LEV, ULEV etc.), catalyst configuration (single underbody cat, dual inline cat, dual parallel cat etc.) as well as vehicle classification (pass car, LDT, MDT etc.) and must be grouped accordingly prior to testing. The application list also contains the Engine Family Number (EFN) to link the vehicle to the proper converter. Scope of testing is directly proportional to the complexity of the coverage proposed.

Ensuring you a problem-free exhaust future,

Hans