

## UPDATED INFORMATIVE DIGEST

Sections Affected: Section 1976, Title 13, California Code of Regulations and the incorporated "California Evaporative Emission Standards and Test Procedures for 1978 and Subsequent Model Motor Vehicles."

**Background.** The ARB has administered evaporative emissions standards and test procedures for California motor vehicles since the 1970's. Following a hearing in August 1990, the Board adopted "enhanced test procedures" which were designed to more effectively control evaporative emissions during summer months when high ambient temperatures exacerbate the potential for high evaporative emissions. The enhanced test procedures include a running loss determination, real-world hot soak and diurnal testing conditions, and the same durability requirements for evaporative emission control systems as are applicable to exhaust emission control systems. The standard for the running loss emissions test is 0.05 grams per mile and the standard for the hot soak plus the diurnal emissions test is 2.0 grams per test. The enhanced test procedures are phased-in beginning in the 1995 model year, with full compliance required for the 1998 model year.

On March 24, 1993, the U.S. EPA published enhanced test procedures for the federal evaporative emissions standards, to be phased-in beginning in the 1996 model year, with full compliance required for the 1999 model year. (58 F.R. 16002; 40 C.F.R. §§86.107-96 through 86.143-96.) The federal enhanced test procedures are generally patterned after the California enhanced test procedures with one major difference--the U.S. EPA added a "supplemental procedure," which provides additional assurance of adequate evaporative canister purge during short trips. Despite the prohibition of the use of "defeat devices," the U.S. EPA was concerned that vehicles certified under the ARB procedure may still contain some calibration or mechanism (defeat device) which causes a delay in initial, rapid purge. The U.S. EPA's supplemental test consists of vehicle preconditioning procedures, a standard exhaust test, a moderate-temperature hot soak test, and a two-day diurnal test. The federal procedures also contain various other differences from the ARB procedures, most of which are relatively minor.

**The Regulatory Action.** The ARB has now adopted various amendments to the California enhanced test procedures. The amendments include incorporating the supplemental test procedure, in order to help assure adequate evaporative canister purge. In addition, the amendments further align the ARB's enhanced test procedures with the federal procedures by conforming most of the differences between the two test procedures. Those instances where differences remain are described below. The amendments also make a variety of technical changes to clarify the test procedures and to make them more practical and effective.

The amendments also make the enhanced test procedures applicable to the heavy complete medium-duty vehicle class (8,501 - 14,000 lbs., gross vehicle weight rating (GVWR)). This is the only vehicle class for which the ARB's enhanced test procedures had not previously been adopted. Due to the reduced lead time available to comply with the enhanced test procedures and the unique characteristics of these vehicles, this vehicle class must meet a less stringent hot soak plus diurnal standard of 3.0 grams per test. This

standard is identical to the federal standard. The test requirements and new standard will apply to this vehicle class starting with the 1996 model year, and will be phased-in according to the enhanced test procedures implementation schedule.

Apart from the complete heavy medium-duty class, the one instance where the Board has amended the numerical values of the ARB's existing evaporative emission standards for the hot soak plus the diurnal emissions test involves medium-duty vehicles which have a GVWR of 6,001-8,500 lbs. and fuel tanks equal to or greater than 30 gallons. The standard for the hot soak plus the diurnal emissions test for these vehicles has been changed from 2.0 to 2.5 grams/test, which is consistent with the federal standard. As is the case with the federal regulations, the standards for the supplemental procedure are numerically higher because the sole purpose of the supplemental procedure is to ensure adequate canister purge. The amended evaporative emissions standards are as follows:

Class of Vehicles	3 Day Diurnal + Hot Soak Standard (grams/test)	Supplemental Standard (grams/test)
Passenger Car	2.0	2.5
Light-Duty Trucks	2.0	2.5
Medium-Duty Vehicles (6,000 - 8,500 lbs. GVWR)		
with fuel tanks < 30 gallons	2.0	2.5
with fuel tanks ≥ 30 gallons	2.5	3.0
(8,501 - 14,000 lbs. GVWR)	3.0	3.5
Heavy-Duty Vehicles (over 14,000 lbs. GVWR)	2.0	4.5

These numerical standards are identical to the federal numerical standards, except that heavy-duty vehicles greater than 14,000 pounds GVWR are subject to a less stringent standard under the federal program.

Most of the amendments to the enhanced test procedures will be implemented in the 1996 model year, when the phase-in of the federal regulations begins. Some of the amendments are solely clarifications of the preexisting requirements and apply in the 1995 model year. In addition, manufacturers are allowed the option of implementing any 1996 model-year modifications one year earlier in the 1995 model year, as long as the Executive Officer determines that the effectiveness of the evaporative emission control system will not be diminished. Manufacturers are allowed to carry-over 1995 model-year enhanced certification data as long as the supplemental test data is provided and specified conditions are met.

The numerous instances where amendments to the enhanced test procedures conform the California procedures with the federal procedures reflect the ARB's efforts to avoid conflicts between the two sets of requirements. The ARB procedures are not duplicative because under the federal Clean Air Act California motor vehicles will not have to be separately tested under the federal evaporative emissions standards and test procedures. Under the

amendments, a few differences between the California and federal enhanced test procedures remain. These differences include the following:

- o The ARB's current 105°F testing temperature requirement has not been changed; the federal procedure specifies a maximum temperature of 95°F. The higher ARB test temperature reflects high ambient summer temperatures in California and maintains the stringency of the ARB standards where certification gasoline having a lower Reid vapor pressure (RVP) is used.
- o The California procedures continue to allow the use of a Phase 2 reformulated gasoline certification test fuel with a RVP of 7.0 psi, while the federal RVP requirement for certification test gasoline is 9.0 psi. The use of Phase 2 certification gasoline provides one of the strategies manufacturers will use in meeting the ARB's stringent low-emission vehicle exhaust emission standards.
- o The correction factors for the running loss fuel temperature profile continue to be different for the California and the federal regulations. In addition, the ARB procedures allow manufacturers to conduct the running loss test at a lower initial fuel temperature than 105°F if the manufacturer can demonstrate that the fuel temperature would be less than 105°F on a 105°F ambient temperature day. The federal procedure does not have such an allowance. Similarly, the federal correction factors do not address evaporative control systems which would have in-use fuel temperatures higher than the proscribed running loss test temperatures.
- o The ARB specifications for the cooling fans in the running loss test continue to be more stringent than the federal requirements; fans meeting the California specifications would also meet the federal criteria.
- o As requested by manufacturers, the fuel vapor temperature during the running loss test must match the fuel vapor temperature profile within a tolerance of  $\pm 5^\circ\text{F}$ . The federal regulation does not have any comparable requirement.
- o In the last 120 seconds of the running loss test, the ARB procedures continue to require that the fuel vapor temperature be controlled within  $\pm 3^\circ\text{F}$  of the fuel vapor temperature profile. The federal regulation tightens the fuel liquid temperature tolerance from  $\pm 3^\circ\text{F}$  to  $\pm 2^\circ\text{F}$  during the last 120 seconds rather than controlling the fuel vapor temperature.