

UPDATED INFORMATIVE DIGEST

PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE REGULATIONS FOR GASOLINE AND DIESEL FUEL TEST METHODS

Sections Affected: Proposed amendments to California Code of Regulations, title 13, sections 2262.9, 2263, and 2282.

Background:

ARB regulates the physical and chemical properties of California reformulated gasoline (CARFG) and California diesel fuel (CDF) in order to reduce harmful vehicle emissions. The regulations specify a test method to verify that regulated properties are within specifications. These test methods are updated when better methods become available or when newer versions of existing methods offer improvements in accuracy, precision, or ease of use.

ARB adopted Phase 3 CARFG regulations in December, 1999, taking effect in December, 2003. The primary change implemented in Phase 3 was the prohibition of methyl *tert*-butyl ether (MTBE) and most other oxygenates, with ethanol currently the only permitted oxygenate unless a multimedia evaluation allows for an alternative. Specifications for maximum allowable levels of MTBE and other prohibited oxygenates were added, along with specifications for denatured ethanol intended for blending with California Reformulated Gasoline Blendstock for Oxygenate Blending (CARBOB).

The test method currently specified for measuring MTBE and other prohibited oxygenates is not capable of measuring these compounds at the levels specified in the regulations, and therefore neither ARB nor stakeholders have the means to determine whether a gasoline meets these regulatory requirements.

The specifications for denatured ethanol adopted in the Phase 3 CARFG regulations include limits on the allowable concentrations of benzene, total aromatic hydrocarbons, and olefins. These classes of compounds do not exist naturally in ethanol. Their presence is due to the addition of the denaturant, which is typically gasoline, and is added to discourage human ingestion of the ethanol. Since no test methods for measuring these compounds in denatured ethanol existed at the time, the regulations state that compliance is to be determined by analyzing the denaturant before it is blended into the pure ethanol. The vast majority of denatured ethanol used in California is produced outside the state, and as a result, ARB cannot adequately enforce these denatured ethanol specifications. Additionally, stakeholders such as terminal operators and fuel blenders have no way to check whether the denatured ethanol they use meets the state's requirements.

Description of Regulatory Action:

At the Board's January 25, 2013 public hearing for the proposed amendments, the Board adopted the amended regulations, summarized below, as they were noticed on December 5, 2012 in the California Notice Register and as set forth in the Staff Report: Initial Statement of Reasons released on December 5, 2012.

Test method ASTM D7754-11 was adopted, replacing ASTM D4815-04, for measuring MTBE and other prohibited oxygenates in gasoline. This amendment, which specifies a test method with a significantly improved limit of quantification, facilitates the determination of low levels of MTBE and other prohibited oxygenates.

Test method ASTM D7347-07e1 was adopted, as an alternative to the test method specified in section 2263 and multiplying that result with an appropriate dilution factor, for measuring olefins in denatured ethanol. Test method D7576-10 was adopted, as an alternative to the test methods specified in section 2263 and multiplying those results with an appropriate dilution factor, for measuring benzene and total aromatic hydrocarbons in denatured ethanol. These amendments allow the direct testing of denatured ethanol; eliminate the additional uncertainties and errors associated with analysis of the denaturant, such as the uncertainty of the concentrations of benzene, aromatic hydrocarbons, and olefins in the pure ethanol, error in the actual dilution, and uncertainty in contamination during the blending, storage, and transportation of the denatured ethanol; and allow ARB and gasoline blenders to check the denatured ethanol for compliance with these specifications. The existing procedure of indirectly measuring these compounds in the denaturant and applying a dilution factor to determine the concentration in the denatured ethanol is retained; however, in the event of a discrepancy between the direct testing of the denatured ethanol and the indirect testing of the denaturant, the results of testing the denatured ethanol shall take precedence.

Test method ASTM D2622-94 for measuring sulfur in gasoline was removed from the regulations due to its low sensitivity. Existing test method ASTM D5453-93 for measuring sulfur in gasoline was retained. These amendments facilitate enforcement of the regulation by eliminating the less sensitive and specifying the more sensitive test method, will prevent potential confusion concerning applicability of ASTM D2622-94, and will facilitate ARB and stakeholders in quantifying the amount of sulfur in California gasoline blends.

The following test methods were updated to their most recent published versions:

- ASTM D6550-10, replacing ASTM D6550-00, for olefins in gasoline. This amendment will eliminate the need for the analyst to rely on two different documents - the previous ASTM method and the CaRFG regulations - since the updated test procedure includes additional California-specific information relating to the calculation of reproducibility, conversion from mass percent to volume percent olefin, and the range of applicability.

- ASTM D4815-09, replacing ASTM D4815-04, for permitted oxygenates in gasoline. This amendment will allow ARB and stakeholders to effectively determine whether a sample of gasoline meets the current regulatory requirements, since the updated test method has an improved limit of quantification.
- ASTM D5580-02 (2007), replacing ASTM D5580-00, for benzene and total aromatic hydrocarbons in gasoline. This amendment will eliminate the need for the analyst to rely on two different documents - the previous ASTM method and the CaRFG regulations - since the updated test procedure includes the corrected formulas to determine reproducibility of benzene and total aromatic hydrocarbons.
- ASTM D5186-03(2009), replacing ASTM D5186-96, for aromatic hydrocarbons and polycyclic aromatic hydrocarbons in diesel fuel. This amendment will save time for the analyst, since it eliminates the requirement to run multiple quality control samples each day.

After the Board hearing, text was added to section 2262.9 to clarify that to determine compliance with the denatured ethanol specifications, affected stakeholders could use either the new test methods (ASTM D7576-10 for aromatic hydrocarbons and benzene and ASTM D7347-07e1 for olefins) for the direct measurements of these compounds in denatured ethanol or the existing test procedures for measuring these compounds in the denaturant and applying a dilution factor to determine the concentration in the denatured ethanol. Additionally, an effective date of October 10, 2013 or two months from the date of filing with the Secretary of State (whichever is later) was added to every test method changed or added. These changes are described in the Final Statement of Reasons.