

FINAL REGULATION ORDER

AMENDMENTS TO THE REGULATIONS FOR GASOLINE AND DIESEL FUEL TEST METHODS

Note: The preexisting text is set forth below in normal type. The amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions. The symbol “* * * * *” means that intervening text not being amended is not shown. Subsection headings are shown in ***bold italics*** and are to be italicized in Barclays California Code of Regulations.

Amend Sections 2262.9, 2263, and 2282, Title 13, California Code of Regulations (CCR) to read as follows:

**California Code of Regulations, Title 13, Division 3
Chapter 5. Standards for Motor Vehicle Fuels
Article 1. Standards for Gasoline**

Subarticle 2. Standards for Gasoline Sold Beginning March 1, 1996

§ 2262.9. Requirements Regarding Denatured Ethanol Intended For Use as a Blend Component in California Gasoline.

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(b) ***Test Methods.***

- (1) In determining compliance with the denatured ethanol standards in section (a)(1)(A):

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- (B) The aromatic hydrocarbon, benzene and olefins content of denatured ethanol shall be determined by sampling the denaturant and using the methods specified in section 2263 to determine the content of those compounds in the denaturant. The result will then be multiplied by 0.0500, except that where it is demonstrated that the denatured ethanol contains less than 5.00 percent denaturant, the result will be multiplied by the decimal fraction representing the percent denaturant: or

(C) Starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later, the aromatic hydrocarbon and benzene content of denatured ethanol shall be determined by ASTM D7576-10 (2010), which is incorporated herein by reference. Starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later, the olefin content of denatured ethanol shall be determined by ASTM D7347-07e1 (2007), which is incorporated herein by reference.

(D) In the event of any discrepancy between results obtained by using sections 2262.9 (b)(1)(B) and 2262.9 (b)(1)(C), the results obtained by using section 2262.9 (b)(1)(C) shall take precedence.

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Note: Authority cited: Sections 39600, 39601, 43013, 43013.1, 43018 and 43101, Health and Safety Code; and *Western Oil and Gas Ass'n. v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975). Reference: Sections 39000, 39001, 39002, 39003, 39010, 39500, 39515, 39516, 41511, 43000, 43013, 43013.1, 43016, 43018, 43101 and 43830.8, Health and Safety Code; and *Western Oil and Gas Ass'n. v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal.Rptr. 249 (1975).

§ 2263. Sampling Procedures and Test Methods.

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(b) Test Methods.

(1) In determining compliance with the gasoline standards set forth in this subarticle 2, including those in the sections identified in Table 1, the test methods presented in Table 1 shall be used. All identified test methods are incorporated herein by reference.

Table 1

<i>Section</i>	<i>Gasoline Specification</i>	<i>Test Method</i> ^a
* * * * *		
2262	Sulfur Content	ASTM D 2622-94 <u>(1994)</u> ^{c, d} or ASTM D 5453-93 <u>(1993)</u> (Prior to October 10, 2013 or two months from the <u>date of filing of this</u> <u>subsection with the</u> <u>Secretary of State,</u> <u>whichever is later)</u> ASTM D 5453-93 (1993) (Starting October 10, 2013 or two months from the <u>date of filing of this</u> <u>subsection with the</u> <u>Secretary of State,</u> <u>whichever is later)</u>
2262	Benzene Content	ASTM D 5580-00 <u>(2000)</u> ^e (Prior to October 10, 2013 or two months from the <u>date of filing of this</u> <u>subsection with the</u> <u>Secretary of State,</u> <u>whichever is later)</u> ASTM D 5580-02 (2007) (Starting October 10, 2013 or two months from the <u>date of filing of this</u> <u>subsection with the</u> <u>Secretary of State,</u> <u>whichever is later)</u>
2262	Olefin Content	ASTM D 1319-95a <u>(1995)</u> ^f (Through December 31, 2001)

		<p>ASTM D 6550-00 (2000)^{g,h,i} (Starting January 1, 2002 and prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)</p> <p>ASTM D 6550-10 (2010)^{k,l,m} (Starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)</p>
2262	Oxygen Content	<p>ASTM D 4815-04 (2004) (Prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)</p> <p>ASTM D 4815-09 (2009) (Starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)</p>
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2262	Aromatic Hydrocarbon Content	<p>ASTM D 5580-00 (2000)^j (Prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)</p> <p>ASTM D 5580-02 (2007) (Starting October 10, 2013</p>

		or two months from the <u>date of filing of this subsection with the Secretary of State, whichever is later)</u>
2262.5(b)	Ethanol Content	ASTM D 4815-04 <u>(2004)</u> (Prior to October 10, 2013 or two months from the <u>date of filing of this subsection with the Secretary of State, whichever is later)</u> ASTM D 4815-09 <u>(2009)</u> (Starting October 10, 2013 or two months from the <u>date of filing of this subsection with the Secretary of State, whichever is later)</u>
2262.6	MTBE Content	ASTM D 4815-04 <u>(2004)</u> (Prior to October 10, 2013 or two months from the <u>date of filing of this subsection with the Secretary of State, whichever is later)</u> ASTM D 7754-11 <u>(2011)</u> (Starting October 10, 2013 or two months from the <u>date of filing of this subsection with the Secretary of State, whichever is later)</u>
2262.6(c)	Oxygen from oxygenates identified in section 2262.6(c)(4)	ASTM D 4815-04 <u>(2004)</u> (Prior to October 10, 2013 or two months from the <u>date of filing of this subsection with the Secretary of State, whichever is later)</u> ASTM D 7754-11 <u>(2011)</u> (Starting October 10, 2013 or two months from the

		<u>date of filing of this subsection with the Secretary of State, whichever is later)</u>
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^a Do not report values below the limit of detection (LOD) specified in the test method. Where a test method does not specify a LOD, do not report values below the lower limit of the scope of the test method.

^b Delete paragraph 4(b) concerning sampling.

^c Make the following modifications to paragraph 9.1:

Low Level Sulfur Calibration Procedure

Reagents Thiophene, at least 99% purity 2-Methylthiophene, at least 98% purity Toluene, reagent grade 2,2,4-Trimethylpentane, reagent grade

Preparation of Stock Standard Weigh standard materials thiophene (~ 0.7290 gm) and 2-methylthiophene (~ 0.7031 gm) separately into a tared volumetric flask and record the individual mass to 0.1 mg. Add "mixed solvent" containing 25% toluene and 75% iso-octane (by volume) into the flask to a net weight of approximately 50 gm and record the weight. This "Stock Standard" contains approximately 10 mg/gm sulfur. The actual sulfur concentration can be calculated as follows:

$$\text{Sulfur from thiophene (gm)} = \text{Weight of thiophene} * 32.06 * \text{purity} / 84.14$$

$$\text{Sulfur from 2-methylthiophene (gm)} = \text{Weight of 2-methylthiophene} * 32.06 * \text{purity} / 98.17$$

$$\text{Sulfur concentration of Stock Standard (gm/gm)} = (\text{sulfur from thiophene} + \text{sulfur from 2-methylthiophene}) / \text{net weight of the stock standard}$$

Multiply the sulfur concentration by 1000 to convert the unit to mg/gm.

Preparation of Calibration Standards Pipet 2.5 ml of the Stock Standard to 250 ml flask and dilute with the "mixed solvent" to the mark. The "Diluted Standard" contains approximately 100 mg/kg sulfur. Prepare 5, 10, 20, 30, 50, 75 ppm calibration standards by pipetting 5, 10, 20, 30, 50, 75 ml of the Diluted Standard into a 100 ml flask, respectively, and diluting with the "mixed solvent" to the mark. The actual concentration of the calibration standard should be determined from the stock standard. The standards with concentration ranging from 5 to 100 ppm and the "mixed solvent" are to be used for calibrating the instrument.

^d Replace ASTM D 2622-94 reproducibility values with the following:

Sulfur Content, ppm

10 to 30

Reproducibility

40.5% x Sulfur Content (ppm)

>30

19.2% x Sulfur Content (ppm)

^e The reproducibility of benzene is as follows:

$$\text{Reproducibility} = 0.1409 (X^{1.133}), \text{ where } X = \text{vol } \%$$

^f Add the following reproducibility statement for oxygenate-containing samples:

	<i>Range</i>	<i>Reproducibility</i>
Olefins	0.3 - 33	$0.819(X)^{0.6}$

X = Volume %

^g Replace ASTM D6550-00 reproducibility equation with the following:

$$\text{Reproducibility} = 0.32 X^{0.5}$$

where X is between 0.3 and 25 mass % olefin

^h The conversion from mass % olefin to volume % olefin is defined as follows:

$$\text{volume } \% \text{ olefin} = 0.857 * \text{mass } \% \text{ olefin}$$

ⁱ Replace the last sentence in ASTM D6550-00 section 1.1 with the following:

The application range is from 0.3 to 25 mass % total olefins.

^j The reproducibility of total aromatic hydrocarbon is as follows:

$$\text{Reproducibility} = 1.4 \text{ volume}\%$$

^k Replace ASTM D6550-10 reproducibility equation with the following:

$$\text{Reproducibility} = 0.32 X^{0.5}$$

where X is between 0.3 and 25 mass % olefin

^l The conversion from mass % olefin to volume % olefin is defined as follows:

$$\text{volume } \% \text{ olefin} = 0.857 * \text{mass } \% \text{ olefin}$$

^m Replace the last sentence in ASTM D6550-10 section 1.1 with the following:

The application range is from 0.3 to 25 mass % total olefins.

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Note: Authority cited: Sections 39600, 39601, 43013, 43013.1, 43018 and 43101, Health and Safety Code; and *Western Oil and Gas Ass'n. v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal. Rptr. 249 (1975). Reference: Sections 39000, 39001, 39002, 39003, 39010, 39500, 39515, 39516, 41511, 43000, 43013, 43013.1, 43016, 43018 and 43101, Health and Safety Code; and *Western Oil and Gas Ass'n. v. Orange County Air Pollution Control District*, 14 Cal.3d 411, 121 Cal. Rptr. 249 (1975).

**California Code of Regulations, Title 13, Division 3
Chapter 5. Standards for Motor Vehicle Fuels
Article 2. Standards for Diesel Fuel**

§ 2282. Aromatic Hydrocarbon Content of Diesel Fuel.

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- (c) **Test Method.** Compliance with the aromatic hydrocarbon content limitations specified in this section 2282 shall be determined by ASTM Test Method D5186-96 (1996), which is incorporated herein by reference, prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later. Starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later, compliance shall be determined by ASTM D5186-03(2009), which is incorporated herein by reference. The following correlation equation shall be used to convert the SFC results in mass percent to volume percent:;

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- (g) **Certified Diesel Fuel Formulations Resulting in Equivalent Emissions Reductions.**

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- (2) **The candidate fuel.**

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- (B) The following characteristics of the candidate fuel shall be determined as the average of three tests conducted in accordance with the referenced test method (the ASTM methods are incorporated herein by reference):

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2. Total aromatic hydrocarbon content, by ASTM D5186-96 (1996) (prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later) and by ASTM D5186-03(2009) (starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later);
3. Polycyclic aromatic hydrocarbon content, by ASTM D5186-96 (1996) (prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later) and by ASTM D5186-03(2009) (starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later);

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(3) **The reference fuel.**

(A) The reference fuel used in the comparative testing described in subsection (g)(4) shall be produced from straight-run California diesel fuel by a Hydrodearomatization process and shall have the characteristics set forth below under "General Reference Fuel Specifications" (the listed ASTM methods are incorporated herein by reference):

Reference Fuel Specifications

<i>Property</i>	<i>ASTM Test Method</i>	<i>General Reference Fuel Specifications</i>	<i>Small Refiner Reference Fuel Specifications</i>
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Aromatic Hydrocarbon Content, Vol. %	D5186-96 <u>(prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)</u>	10% max.	20% max.
	D5186-03(2009) <u>(starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)</u>	10% max.	20% max.

Polycyclic Aromatic Hydrocarbon content, Wt. %	D5186-96 (prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)	1.4% max.	4% max.
	D5186-03(2009) (starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)	1.4% max.	4% max.

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(h) **Designated Equivalent Limits.**

(1) **Designated equivalent limits.** The designated equivalent limits under this section 2282 are set forth in the following table. Compliance with the limits for the properties shall be determined by the specified ASTM methods, which are incorporated herein by reference.

<i>Property</i>	<i>Equivalent Limit</i>	<i>Test Method</i>
Aromatic Hydrocarbon Content (% by wt.)	≤ 21.0	ASTM D5186-96 (1996) (prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later) ASTM D5186-03(2009) (starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)
PAH Content (% by wt.)	≤ 3.5	ASTM D5186-96 (1996) (prior to October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later) ASTM D5186-03(2009) (starting October 10, 2013 or two months from the date of filing of this subsection with the Secretary of State, whichever is later)
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Note: Authority cited: Sections 39600, 39601, 43013, 43018 and 43101, Health and Safety Code; and *Western Oil and Gas Ass'n. v. Orange County Air Pollution Control District*, 14 Cal. 3d 411, 121 Cal. Rptr. 249 (1975). Reference: Sections 39000, 39001, 39002, 39003, 39010, 39500, 39515, 39516, 41511, 43000, 43013, 43016, 43018 and 43101, Health and Safety Code; and *Western Oil and Gas Ass'n. v. Orange County Air Pollution Control District*, 14 Cal. 3d 411, 121 Cal. Rptr. 249 (1975).