

California
Department of Food and Agriculture
Division of Measurement Standards

Alternative Diesel Fuels
Rulemaking
Public Workshop

April 23, 2013

Authority To Regulate

The California Department of Food and Agriculture (CDFA) gets its authority to regulate fuels from the Business and Professions Code (BPC)

CHAPTER 5. Weighing and Measuring Devices
Sections 12500 – 12510

CHAPTER 14. Petroleum and Hydrogen Fuels
Sections 13400 – 13630

CDFA Responsibilities

CDFA maintains and enforces:

- Minimum performance and drivability standards of fuels used in Compression Ignition (CI) Engines
- Quantity Standards for Fuel Dispensers
- Labeling Requirements for Fuel Dispensers

*Environmental and Air Quality requirements are **not** within the scope of CDFA*

Fuel Quality

Terminology

- Diesel fuel: a fuel comprised of hydrocarbon oils that meets ASTM D-975
- Biodiesel: a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats that meets ASTM D6751
- Biomass-Based Diesel: a substitute for diesel fuel, produced from non-petroleum renewable resources and is not biodiesel. Depending on the composition of the fuel, it may or may not meet ASTM D-975

ASTM D975 – 12a

- 3.2.1 *hydrocarbon oil, n*—homogeneous mixture or solution with elemental composition primarily of carbon and hydrogen and also containing sulfur, oxygen or nitrogen from residual impurities and contaminants and excluding added oxygenated materials.
- 7.1 The grades of diesel fuel oils herein specified shall be hydrocarbon oils, except as provided in 7.3, with the addition of chemicals to enhance performance, if required, conforming to the detailed requirements shown in Table 1.
- 7.3.1.2 Diesel fuel oil containing up to 5 volume % biodiesel shall meet the requirements for the appropriate grade No. 1-D or No. 2-D fuel, as listed in Table 1.

CDFA Fuel Quality Specifications

- Diesel Fuel Oil: ASTM D975
 - Hydrocarbon oil with up to 5% biodiesel
 - Biomass-based diesel and biomass-based diesel blends so long as the fuel meets ASTM D975
- Diesel Fuel Oil, Biodiesel Blend B6 to B20: ASTM 7467
 - Any D975 fuel blended with 6 to 20 Volume % biodiesel
- Fuels With No Specifications: Requires CDFA Variance
 - Biodiesel or biodiesel blends over 20%,
 - ANY other fuel not meeting an ASTM or SAE specification must have a developmental engine fuel variance

CDFA Fuel Specification Summary

Fuel Type	CDFA Quality Specification	Retail Sales to the General Public
Diesel	ASTM D975*	Yes
Biodiesel B5	ASTM D975*	Yes
Biodiesel B6 – B20	ASTM D7467*	Yes
Biomass-based Diesel Blends	ASTM D975*	Yes
Biodiesel > B20	CDFA Variance	No
Biomass-based Diesel Blends w/B5 Biodiesel**	ASTM D975*	Yes
Biomass-based Diesel Blends w/B6 – B20 **	ASTM D7467*	Yes
Biomass-based Diesel Blends > B20 **	CDFA Variance	No
Any Biomass-based Diesel that is not a Hydrocarbon Oil	CDFA Variance	No
* Standard Adopted by Reference ** The Biomass-based Diesel is a Hydrocarbon Oil		

Developmental Engine Fuel Variance

- Fuels not meeting any existing standards
- Use in demonstration projects or fleet testing and not sold to the public
- Work toward developing a new ASTM or SAE consensus standard
- Address handling and safety issues

Biodiesel Variance

- Biodiesel Blends greater than 20%
- Allows for wide scale testing on vehicles in fleets and cooperatives
- Goal: provide vehicle performance data that will expand ASTM D7467 to allow higher blend levels

CEC Research Contract High Concentration Biodiesel Blend

CEC Research Contract

High Concentration Biodiesel Blend

- Researching biodiesel fuel blends greater than B20 up to B100
- A series of 10 blends were made for each feed stock: B20, B25, B30, B40, B50, B60, B70, B80, B90 & B100
- Four feed stocks studied: Two types of Yellow Grease, Safflower/Canola & Soy
- Cloud Point
- Cold Filter Plugging Point (CFPP)
- Low Temperature Flow Test (LTFT)

CEC Research Contract

High Concentration Biodiesel Blend

Applicable ASTM Tests:

- All blends in each series were successfully tested using the following test methods:
 - Cloud Point - D2500
 - CFPP - D6371
 - LTFT - D4539 (Testing in progress; two B100 blends tested)
 - Water and Sediment – D2709
 - FTIR – D7371 (Testing in progress)
 - Flash Point – D93

CEC Research Contract

High Concentration Biodiesel Blend

Non-applicable ASTM Tests:

- Atmospheric Distillation
 - D86, may be performed on all blends up to B30
 - Blends greater than B30 cannot be properly distilled atmospherically due to thermal decomposition of the biodiesel component at or near final boiling point
- Vacuum Distillation
 - D1160, may be performed on all B100 feed stocks.
 - Blends less than B100 do not distill properly due to excessive boiling of the Diesel #2 component causing excessive boiling and spill-over at or near the initial boiling point

Fuel Quantity

Fuel Quantity Requirements

- Fuel dispensers must be California Type Evaluation Program (CTEP) or National Type Evaluation Program (NTEP) approved for the fuel blend being used
- CTEP and NTEP approvals demonstrate compliance with applicable California dispenser measurement and operability requirements, in particular, accuracy and reliable commercial use

Fuel Labeling

Fuel Dispenser Labeling Requirements

CDFA has adopted and enforces the fuel dispenser labeling requirements found in 16 CFR PART 306--Automotive Fuel Ratings, Certification and Posting of the Federal Trade Commission

Biomass-based Diesel and Biodiesel Fuel Dispenser Labeling

The Energy Independence and Security Act of 2007 States: Each retail diesel fuel pump shall be labeled in a manner that informs consumers of the percent of biomass-based diesel or biodiesel that is contained in the biomass-based diesel blend or biodiesel blend that is offered for sale, as determined by the Federal Trade Commission.

FTC 16 CFR 306 Labeling Requirements

Fuel type	Blends of 5 percent or less	Blends of more than 5 but not more than 20 percent			Blends of more than 20 percent			Pure (100%) Biodiesel or Biomass-Based diesel		
		Header	Text	Color	Header	Text	Color	Header	Text	Color
Biodiesel	No label required	Either "B-XX Biodiesel Blend" or "Biodiesel Blend"	contains biomass-based diesel or biodiesel in quantities between 5 percent and 20 percent	Blue	B-XX Biodiesel Blend	contains more than 20 percent biomass-based diesel or biodiesel	Blue	B-100 Biodiesel	contains 100 percent biodiesel	Blue
Biomass-Based Diesel	No label required	Either "XX% Biomass-Based Diesel Blend" or "Biomass-Based Diesel Blend"	contains biomass-based diesel or biodiesel in quantities between 5 percent and 20 percent	Orange	XX% Biomass-Based Diesel Blend	contains more than 20 percent biomass-based diesel or biodiesel	Orange	100% Biomass-Based Diesel	contains 100 percent biomass-based diesel	Orange

Examples of FTC Biodiesel and Biomass-Based Diesel Labels

70% Biodiesel Blend

contains more than 20 percent biomass-based diesel or biodiesel

Biodiesel Blend

contains biomass-based diesel or biodiesel in quantities between 5 percent and 20 percent

B-100 Biodiesel

contains 100 percent biodiesel

65% Biomass-Based Diesel

contains more than 20 percent biomass-based diesel or biodiesel

Biomass-Based Diesel Blend

contains biomass-based diesel or biodiesel in quantities between 5 percent and 20 percent

100% Biomass-Based Diesel

contains 100 percent biomass-based diesel

CDFA's Role Within ASTM

- CDFA is an active participant with ASTM committees responsible for specifications and test methods for liquid and gaseous fuels
- ASTM process involves close coordination with OEMs, fuel producers, suppliers, and government regulators
- ASTM fuel specifications focus on vehicle performance and drivability standards
- OEM's design vehicle to use ASTM fuel

ASTM developmental work for ADF

- Specification for Dimethyl Ether a biomass-based diesel fuel not meeting ASTM 975
- Specification for CNG and LNG for use as a motor vehicle fuel
- Emulsified Diesel Fuel
- Biodiesel Blends greater than 20%

Questions?

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