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Revision History

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1.0 SCOPE

This specification covers the requirements for renewable hydrocarbon diesel fuel with biodiesel blend, it shall be suitable for use in diesel engines operating in industrial and heavy mobile (vehicle) service.

2.0 APPLICABLE LAWS and INDUSTRY STANDARDS

Specifications, standards and regulations referenced in this document in effect on the opening of the invitation for bid, form a part of this specification.

2.1 LAWS and REGULATIONS

- 2.1.1 40 CFR Part 79
- 2.1.2 California Code of Regulations (CCR) Title 4, Division 9, Chapter 6, Article 5, Section 4149
- 2.1.3 CCR, Title 13, Division 3, Article 3, Sub Article 2. Specifications for Alternative Diesel Fuels
- 2.1.4 CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 7, Section 95486
- 2.1.5 CCR, Title 13, Division 3, Chapter 5, Article 2, Section 2281, Section 2282
- 2.1.6 CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 7, Sections 95480 through 95490 (collectively referred to as "LCFS") and Sections 95481, 95484(a)
- 2.1.7 California Air Resources Board (ARB) Guidance on Biodiesel Use, dated October 2011 or latest

2.2 INDUSTRY STANDARDS

- 2.2.1 ASTM D6751
- 2.2.2 ASTM D975
- 2.2.3 ASTM D2500
- 2.2.4 ASTM D7371
- 2.2.5 ASTM D4176
- 2.2.6 ASTM D4057

2.3 DEFINITIONS

- 2.3.1 "Renewable hydrocarbon diesel" means a diesel fuel that is produced from nonpetroleum renewable resources but is not a mono-alkyl ester, and which is registered as a motor vehicle fuel or fuel additive under 40 CFR Part 79.
- 2.3.2 Biodiesel means, fuel comprised of mono-alkyl esters of long chain fatty acids derived from nonpetroleum resources, and which is registered as a motor vehicle fuel or fuel additive under 40 CFR Part 79.

3.0 TECHNICAL REQUIREMENTS

- 3.1 The renewable diesel (RD) fuel portion of the blend shall conform to CCR §4149.
- 3.2 Biodiesel portion of Biodiesel Blend stock (B100) shall be Grade 1B S15 and shall meet the requirements of the latest edition of ASTM D6751.
- 3.3 Blended Renewable Diesel shall meet the requirements of CCR, Title 13, Division 3, Chapter 5, Article 3, Sub Article 2. Specifications for Alternative Diesel Fuels.
- 3.4 Maximum carbon intensity (C.I) of delivered fuel shall be as specified in Table 1.

Table 1: Maximum Carbon Intensity of Delivered Fuel

Caltrans District	Counties	C.I. (gCO ₂ e/MJ)
1	Del Norte, Humboldt, Mendocino, Lake	50
2	Siskiyou, Modoc, Trinity, Shasta, Lassen, Tehama, Plumas	50
3	Glenn, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Yolo, Sacramento, Eldorado	50
4	Sonoma, Napa, Marin, San Francisco, Solano, San Mateo, Contra Costa, Alameda, Santa Clara	50
5	Santa Cruz, San Benito, Monterey San Luis Obispo, Santa Barbara	40
6	Madera, Fresno, Kings, Tulare, Kern	40
7	Ventura, Los Angeles	40
8	San Bernardino, Riverside	40
9	Mono, Inyo	
10	San Joaquin, Amador, Alpine, Calaveras, Stanislaus, Tuolumne, Mariposa, Merced	50
11	San Diego, Imperial	40
12	Orange	40

C.I. shall be determined by CCR §95486: Low Carbon Fuel Standard (LCFS).

- 3.5 Renewable diesel shall be isomerized to improve cold flow properties. In addition to isomerization, other industry standard methods are permitted to meet the requirements of Section 3.6.

3.6 Blended Renewable Diesel fuel shall meet the requirements of ASTM D975 Number 2-D S15. In addition, blended renewable diesel fuel shall meet the following properties as shown in Table 2.

Table 2: Blended Renewable Diesel Fuel Requirements

Property	Test Standard	Limits	9108-4151
Cloud Point	ASTM D2500/D5773	Max	-11°C (12.2°F)
Fatty Acid Methyl Ester (Biodiesel)	ASTM D7371	Min	4% volume
Fatty Acid Methyl Ester (Biodiesel)	ASTM D7371	Max	5% volume
Cold Soak Filter Blocking Tendency	CAN-CGSB 3.0 Number 142.0-2014 (modified*)	Max	1.2
Oxidative Stability	EN15751	Min	6 hours
Appearance	ASTM D4176		Clear & Bright

Modification is to use neat sample instead of diluted sample.

- 3.7 The blended diesel fuel shall meet the requirements of CCR §2281 (sulfur content) and §2282 (aromatic hydrocarbon). Alternative diesel formulations must be certified by CARB. Evidence of such fact shall be available to the California State Department of General Services, Procurement Division, in the form of a letter certifying such compliance and signed by a responsible official of the company proposing to supply this fuel to the state.
- 3.8 The blended renewable diesel fuel shall meet the requirements of LCFS, per CCR, Sections 95480 through 95490, applies to any transportation fuel, as defined in section 95481, that is sold, supplied, or offered for sale in California, and to any person who, as a “regulated party” defined in section 95481 and specified in section 95484(a), is responsible for a transportation fuel in calendar year. LCFS regulation became effective on January 12, 2010.
 Note: State is end user and will not assume the role as a “Regulated Party”.
- 3.9 Red dyes (if utilized) mixed into fuel for identification must meet current requirements of the U.S Environmental Protection Agency or Internal Revenue Services as applicable.
- 3.10 Biodiesel and biodiesel blend stock shall also comply with California Air Resources Board (ARB) Guidance on Biodiesel Use, dated October 2011 or latest.

4.0 STORAGE LIFE

Fuel shall not deteriorate at a rate faster than industry average in ordinary storage and shall not form excessive gum, resin, or deposits.

5.0 QUALITY ASSURANCE PROVISIONS

5.1 The state, at its discretion, may take the samples of the delivered fuel at the time of delivery prior to transferring of fuel to the storage tank. Samples may be tested for quality of the fuel as per applicable test standards as specified in this specification. State of California reserves the right to reject noncompliant fuel.

If the test analysis of sampled fuel shows that the fuel does not comply with this specification, the supplier shall be responsible for all costs related to the test analysis, removal, and disposal of non-compliant fuel from State sites. It is expressly understood that existing fuel contained in department (agency) tank that is contaminated by fuel does not comply with these specifications shall also be replaced.

5.2 Upon request from the state, supplier shall provide test data showing compliance to the requirements of Section 3.0.

5.3 Supplier shall ensure that all trucks, railcars, and vessels used to transport fuel shall be drained, cleaned, and inspected prior to loading if the previous load contained other petroleum products that would contaminate the renewable diesel fuel.

5.4 The finished blended renewable diesel fuel shall be visually free of un-dissolved water, sediment, and suspended matter.

5.5 The producer of the biodiesel shall be certified to BQ-9000 through National Biodiesel Board (NBB) or at a minimum shall have an internal quality control system with the following elements (these Quality Control requirements shall also apply to renewable diesel producers):

5.5.1 Document Control

Producer of biodiesel or renewable diesel shall Maintain a document control system. Only approved processing and operating procedure to be used in production. All document changes must be approved by the quality control manager (or similar authority) before they are released to production.

5.5.2 Lot Traceability

All delivered lots to customer shall be traceable to its source and its feed stock.

5.5.3 Sampling

Production lot shall be sampled per ASTM D4057. A portion of the sample shall be kept for a minimum of 60 days.

- 5.5.4 Testing
All production lot shall be tested to ensure that product meets or exceeds the bid specifications.
- 5.5.5 Storage
If the producer's fuel storage tank has no activity for thirty days, a sample shall be taken to test for water, sediment and oxidation stability ensuring that the fuel still meets the bid specifications.
- 5.5.6 Test Laboratory
On-site or third part test laboratory shall be used for Testing purposes. The test laboratory shall adhere to good laboratory practice (e.g. use of regularly calibrated equipment, record keeping, and qualified staff for testing etc.). The test laboratory shall execute a documented program to verify their test results by sending out duplicate test samples to an independent laboratory. Such verifications shall be performed at a minimum of every four months.
- 5.5.7 Certificate of Analysis (COA)
COA shall be generated for each production lot. The COA shall provide test results for properties specified in invitation for bid (IFB) and the product specification. Lot numbers and test dates shall be identified on COA.
- 5.5.8 Internal Audit
Producer of biodiesel and renewable diesel shall have and internal audit system 9108-4151 to ensure that employees follow procedures and processes. Internal audit shall be done at least once a year. At a minimum, the audit shall focus on the accuracy of processing procedures, non-conforming reports, and corrective actions.
- 5.5.9 Non-Conforming Product
Producer of biodiesel or renewable diesel shall have procedures for the disposition of non-conforming lots to ensure that customer does not receive non-conforming products. Producer shall perform root cause analysis on non-conforming product and apply corrective actions through careful monitoring.
- 5.6 Supplier shall provide Material Safety Data Sheet (MSDS) for renewable diesel fuel and all other chemicals intentionally added into diesel fuel including additives. MSDS shall accompany with first delivery at each location, and upon request from the State.
- 5.7 At the time of delivery, blended renewable diesel fuel shall comply with all Federal, State laws and regulations applicable to renewable diesel.