

State Of California

AIR RESOURCES BOARD

Executive Order G-714-ADF06

Certification of Alternative Diesel Fuel Resulting in Emissions Equivalence with Diesel

Renewable Energy Group, Inc. – REG Proprietary Renewable Diesel

Pursuant to Sections 39600, 39601, 43013, 43018, and 43101 of the Health and Safety Code, Air Resources Board (ARB) adopted the Alternative Diesel Fuels regulation (ADF regulation) under Title 13, California Code of Regulations, section 2293, et seq. Effective since January 1, 2016, the ADF regulation establishes a comprehensive, multi-stage process administering the commercialization of Alternative Diesel Fuels (ADF) in California. The ADF regulation governs the introduction and use of innovative alternative diesel fuels in California while preserving or enhancing public health, the environment and the emission benefits of the existing motor vehicle diesel fuel regulations. The ADF regulation includes specific provisions designed to control potential increases in Oxides of Nitrogen (NOx) emissions that could otherwise be caused by the use of biodiesel under certain circumstances. Those provisions include a process for certification of additives or alternative diesel fuel formulations that have been shown to mitigate NOx increases from the use of biodiesel.

Renewable Energy Group, Inc. (REG), has requested approval and certification of a blend of at least 16 percent REG Proprietary Renewable Diesel and no more than 20 percent biodiesel as an emissions equivalent alternative diesel fuel formulation under Appendix 1 of the ADF regulation.

REG submitted an initial test protocol on May 24, 2017. The submission was found complete and approved on October 27, 2017. Testing was conducted by Southwest Research Institute (SwRI®) starting Nov 1, 2017 and the three-day test was completed on November 3, 2017. REG submitted a final report, prepared by SwRI®, on December 8, 2017.

REG's candidate fuel was comprised of 55 percent biodiesel (B100 blendstock) meeting the requirements specified in Table A.8 of the ADF regulation and 45 percent renewable diesel (REG Proprietary Renewable Diesel, R100) meeting the specifications in Table 1 of Attachment 1.

The information contained in Attachment 1 hereto is claimed by REG to be confidential and must not be disclosed except as authorized by Title 17, California Code of Regulations, section 91022.

The candidate fuel was properly tested in accordance with Appendix 1(a)(2)(F) of the ADF regulation. The candidate fuel emissions tests showed a NOx emissions reduction of 3.0 percent and a particulate matter emissions reduction of 55.7 percent compared to

the reference fuel (CARB diesel). The candidate fuel emissions satisfied all of the requirements under Appendix 1(a)(2)(G) of the ADF regulation.

NOW, THEREFORE, (IT IS ORDERED AND RESOLVED) that REG Proprietary Renewable Diesel is approved and certified pursuant to Appendix 1(a)(2)(H) of the ADF regulation for blending with up to B20 as an emissions equivalent alternative diesel fuel formulation.

REG Proprietary Renewable Diesel Concentrations for Biodiesel B20 and Below Blends

REG Proprietary Renewable Diesel must be blended to the specified levels in the table below.

<b>Biodiesel Saturation Level<sup>1</sup></b>	<b>Biodiesel Blend Level</b>	<b>Volume Percent, Min.</b>
Low Saturation	>B5 to <B10	8.2%
	B10 to <B15	12.3%
	B15 to B20	16.4%
High Saturation	B10 to <B15	4.1%
	B15 to B20	8.2%

1 Low Saturation refers to biodiesel blendstock Cetane Number of below 56; High Saturation refers to biodiesel blendstock with Cetane Number of 56 and above. Cetane Number is determined using the applicable test methods in the Alternative Diesel Fuels regulation.

Volume Ratio for Biodiesel Blendstock B100 or B99 and  
REG Proprietary Renewable Diesel

If REG Proprietary Renewable Diesel is to be blended with a biodiesel blendstock, it must be blended at a ratio in the table below.

<b>Biodiesel Saturation Level</b>	<b>Biodiesel Blendstock Volume</b>	<b>REG Proprietary Renewable Diesel Volume, Min.</b>
Low Saturation	1 gallon	0.82 gallons
High Saturation	1 gallon	0.41 gallons

Biodiesel blends B20 and below blended in accordance with the conditions above meet the requirements of the ADF regulation.

This certification of Alternative Diesel Fuel Resulting in Emissions Equivalence with Diesel will remain in effect through December 31, 2022, after which it will be subject to CARB review determine if, based on the prevailing conditions in the on-road and off-road heavy duty diesel markets at that time, this certification continues to achieve emission equivalence with diesel.

CARB reserves the right in the future to review this Executive Order and the certification provided herein to assure that the certified fuel meets the standards and procedures of Title 13, California Code of Regulation, section 2293, et seq.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

Executed at Sacramento, California, this 1<sup>st</sup> day of June, 2018.

  
Floyd V. Vergara, Esq., P.E.  
Chief, Industrial Strategies Division