



ASTM 6751 - 08 Specifications and Typical Production Quality

PARAMETER	Specification	UNITS	METHOD	Internal Typical		Nova Biosource Fuels Approach
				Lower	Upper	
Calcium & Magnesium	Less than 5	ug/g	EN 14538		1	Distilled Product
Magnesium and calcium are "alkaline metals" utilized as absorbents in the production of biodiesel and should be removed through the biodiesel production process. Residual Alkaline metals can form deposits in fuel injection system components and poison emission control after treatment systems.						
Flash Point (closed cup)	Greater than 130	°C	D 93	170		Distilled Product
The flash point temperature is the minimum temperature at which the fuel will ignite (flash) on application of an ignition source under specified conditions. Flash point varies inversely with the fuel's volatility. Flash point minimum temperatures are required for proper safety and handling of fuels.						
Water & Sediment	Less than 0.05	%(v/v)	D 2709		0.025	Distilled Product
The presence of water and sediment generally indicates poor fuel handling practices. Water and sediment can shorten filter life or plug fuel filters, which can lead to engine fuel starvation. In addition, water can promote fuel corrosion and microbial growth.						
Kinematic Viscosity	1.9 - 6.0	mm2/sec	D 445	3	5	Property of Methyl Ester composition
Kinematic viscosity affects injector lubrication and fuel atomization. Biodiesel fuel blends generally have improved lubricity.						
Sulfated Ash	Less than 0.02	%(w/w)	D 874		0.005	Distilled Product
Ash is a measure of the amount of metal in the fuel. Abrasive solids and biodiesel catalyst materials result in wear of fuel system and internal engine components exposed to fuel after injection. All ash forming compounds can contribute to the accumulation of materials on diesel particulate filters, requiring filter maintenance.						
Sulfur - S 15 Grade	Less than 15	ug/g	D 5453	2	10	Distilled Product
Sulfur is regulated in on-road diesel fuel by the EPA in order to control emissions. This specification for Biodiesel complies with the ultra low sulfur diesel (ULSD) specifications.						
Copper Strip Corrosion	Less than No.3		D 130		1A	Distilled Product
The copper strip corrosion test indicates potential compatibility problems with fuel system components made of copper alloys such as brass and bronze. The limit specified is the same as that for petroleum diesel fuel.						
Cetane Value	Greater than 47		D 613	47	55	Property of Methyl Ester composition
Cetane number is a measure of the fuel's ignition and combustion quality characteristics.						
Cloud Point	REPORT	°C	D 2500	REPORT		Property of Methyl Ester composition
The Cloud Point is the temperature at which a liquid methyl ester becomes cloudy due to formation of crystals and solidification of saturates. With decreasing temperature, more solids form and the material approaches the pour point, the lowest temperature at which the material will pour.						
Carbon Residue	Less than 0.05	%(w/w)	D 4530		0.02	Distilled Product
The Ramsbottom Carbon residue test is intended to provide some indication of the extent of carbon residue that results from the combustion of a fuel. The limit specified is the same as that for petroleum diesel fuel.						
Acid Number	Less than 0.50	mg KOH/g	D 664	0.05	0.20	Distilled Product
Acid number is a measure of acids in the fuel. These acids emanate from two sources: (i) acids utilized in the production of the biodiesel that are not completely removed in the production process; and (ii) degradation by oxidation. For biodiesel blends the acid number will change as a result of the normal oxidation process over time.						
Free Glycerin	Less than 0.020	%(w/w)	D 6584	0.004	0.01	Distilled Product
Glycerin is a coproduct of the production of biodiesel. If glycerin remains in the finished biodiesel, or biodiesel fuel blend, it can result in fuel separation, material incompatibility, engine deposits and engine durability concerns.						
Total Glycerin	Less than 0.240	%(w/w)	D 6584	0.004	0.100	Distilled Product
Total glycerin detects for the residual glycerin, as well as mono-, di-, and tri- glyceride contaminants remaining after the production process.						
Phosphorus Content	Less than 10	ug/g	D 4951		4	Distilled Product
Phosphorus has been shown to damage the ability of after treatment systems to reduce exhaust emissions as intended. The influence of phosphorus is cumulative; therefore, very low levels of contamination over the significant amount of fuel consumed by an engine may lead to unexpected deterioration of the after treatment system.						
Distillation, T90 AE	Less than 360	°C	D 1160		360	Distilled Product
Distillation minima determine if the material has been "doped" with non volatile materials.						
Sodium & Potassium	Less than 5	ug/g	EN 14538		1	Distilled Product
Sodium and potassium are "alkali metals" utilized as catalysts in the production of biodiesel and should be removed through the biodiesel production process. Residual Alkali metals can form deposits in fuel injection system components and poison emission control after treatment systems.						



Oxidation Stability	Greater than 3	Hours	EN 14112	3	Property of Methyl Ester composition
Oxidation Stability affects biodiesel primarily during extended storage. The influence of parameters such as presence of air, heat, light, traces of metal, antioxidants, peroxides as well as nature of the storage container effect the Oxidation Stability.					
Cold Soak Filtration	Less than 200	Sec.	Annex 1	90	175 Distilled Product
Cold Soak: Filtration detects for residual particulate material remaining after the biodiesel is cooled to 4 °C and then filtered. The longer the filtration time, the greater the chance of fuel filters clogging in colder weather. Note: This test is independent of the material feedstock and Cloud Point if under 20 C.					
Workmanship	Less than 2		D 4176 #2	1	Distilled Product
Workmanship is a gross means of determining the quality of biodiesel.					
Other Value-Added Biodiesel Quality Production Capabilities					
Moisture Content	Less than 500	ug/g	D 6304	350	Distilled Product
Moisture Content detects for free and bound water within biodiesel. Water can shorten filter life or plug fuel filters, which can lead to engine fuel starvation. In addition, water can promote fuel corrosion and microbial growth. Moisture is generally and material handling issue, not a production issue.					
Total Contamination	Less than 24	ug/g	D 7331	10	Distilled Product
Total Contamination detects for residual particulate material remaining after the production process. Total Contamination is generally a material handling issue, not a production issue. Total Contamination is presently part of the EN Biodiesel specification with a maximum of 24 ppm.					
APHA Color		APHA Units	AOC5	150	Distilled Product
Similar to Workmanship, but more quantifiable. APHA Color is a gross means of determining Biodiesel consistency.					
Mono-Glycerides	Less than 0.2	%Mass	D6584	0.1	Distilled Product
Mono-glycerides are an impurities present in Biodiesel via the manufacturing process. It has been cited in the field that mono-glycerides promote the separation of themselves and other impurities during storage at either blended material or as B100.					
Solvent Dye Indicator	Less than 11.1	ppm	D6258	11.1	Distilled Product
Off-road diesel typically has a dye added to it in order to distinguish it from on-road diesel, as they are taxed differently. The Solvent Dye Indicator test determines if the color is such that the dye is present. The manufacturing process needs to remove the color-bodies from some feedstock in order that this issue is not confused.					