



Solutions

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Biodiesel Fuel Testing

Biodiesel is the name of a clean burning alternative fuel, produced from domestic, renewable resources. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with little or no modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.



Biodiesel is one of the fastest growing markets in Canada and the United States, and Maxxam is well positioned to be part of this growth. As Canada's largest testing laboratory, Maxxam is the only privately held lab accredited by the Standards Council of Canada (SCC), to ISO 17025 guidelines, with the ability to analyze biodiesel.

Maxxam Capabilities

Maxxam began preparing for the analysis of biodiesel in 2002 by expanding our current diesel fuel testing scope. We have invested in the latest technology available and we are able to complete all of the tests required by the ASTM D6751-06a specification.

Maxxam Advantage

- Extensive experience in fuels testing and an industry leader in the testing of biodiesel
- Voting members of the Canadian General Standards Board Mid-Distillate Committee, which oversees the biodiesel specifications in Canada
- Voting members of ASTM D02 Subcommittee E (Diesel Fuels) which drafted and approved D6751-06a
- Ongoing investments to remain current with changing industry issues by attending and participating in various symposiums and workshops in Canada and the USA on biodiesel
- Participation in the testing round robins to further develop the test methods specifically suited to biodiesel
- Participation in the ASTM Inter laboratory Cross Check Program and International Quality Assurance Exchange Program for biodiesel

Please turn over for:

ASTM D6751-06a Testing Requirements, Explanations of Testing, How to Contact Us

ASTM D6751-06a testing requirements and reasons for each test.

Parameter	Test Method	Indicator of	Possible Field Problems
Acid Number	D664	Unreacted acids, oxidized fuel	Corrosion, plugged filters
Calcium & Magnesium	UOP 389	Processing problems	Filter plugging and engine deposits
Carbon Residue	D4530	Carbon deposition, adulteration	Excessive smoking Increased particulates
Cetane Number	D613	Ignition quality	Poor engine performance Engine knock
Cloud Point	D2500	Crystal formation	Fuel filter plugging Lack of cold weather operability
Copper Strip Corrosion	D130	Unreacted acids	Corrosion of copper, brass and bronze Fuel system parts
Distillation Temperature	D1160	Impurities or adulteration	Poor engine performance
Flash Point	D93	Unreacted alcohol	Fire risk during handling and storage
Free Glycerin/ Total Glycerin	D6584	Unreacted or partially reacted oil or fat	Injector deposits, plugged filters
Kinematic Viscosity, 40°C	D445	Adulterants, oxidation	Poor engine performance Plugged fuel filters or fuel system
Phosphorus Content	D4951	Contaminated feedstock	Damaged or mal-functioning catalytic converters
Sodium & Potassium	UOP 391	Processing problems	Filter plugging and engine deposits
Sulfated Ash	D874	Presence of abrasive solids Unremoved catalyst	Injector, fuel pump, piston and ring wear Filter plugging, engine deposits
Sulfur	D5453	High sulfur feedstock, adulterant	Engine wear, increased emissions
Water and Sediment	D2709	Workmanship/over all production quality	Poor engine performance Fuel filter plugging

Explanations of Testing

Acid Number - Measures the amount of unreacted acids remaining in the finished fuel, and is also an indicator of oxidized fuel.

Calcium & Magnesium - May be present in biodiesel as abrasive solids or soluble soaps. Abrasive solids may contribute to engine wear and deposits. Soluble soaps may contribute to engine deposits.

Carbon Residue - Measures the carbon depositing tendencies of the fuel.

Cetane Number - Is a measure of the ignition quality of the fuel and influences white smoke and combustion roughness.

Cloud Point - Is an indicator of the fuels ability to flow at cold temperatures.

Copper Strip Corrosion - Is a measure of possible corrosion problems with copper and brass or bronze parts of the fuel system.

Distillation - Is an indicator of the purity of the finished fuel. Adulteration of the fuel with higher boiling components affects engine performance.

Flash Point - The flash point for biodiesel is used to determine the level of unreacted alcohol remaining in the finished fuel. Flash point measurement is critical to safe handling and storage of this fuel.

Total Glycerin/Free Glycerin - Is used to determine the level of glycerin in the fuel and includes the free glycerin and the glycerin portion of any unreacted or partially reacted oil or fat. High levels of free glycerin can cause injector deposits, as well as clogged fuelling systems, and result in a buildup of free glycerin in the bottom of storage and fuelling systems.

Viscosity - The viscosity affects the engine's fuels system's ability to move the fuel through the fuel pump and injectors.

Phosphorus - High levels of phosphorus in the fuel can affect the functionality of the catalytic converters.

Sodium & Potassium - May be present in biodiesel as abrasive solids or soluble soaps. Abrasive solids may contribute to engine wear and deposits. Soluble soaps may contribute to engine deposits.

Ash - Ash forming materials (abrasive solids and unremoved catalysts) can contribute to injector, fuel pump, piston and ring wear, and also to engine deposits. Soluble metallic soaps have little effect on wear but may contribute to filter plugging and engine deposits.

Sulfur - The sulfur content of the fuel affects the amount of engine wear and deposits. Fuel sulfur can also affect emissions control systems performance.

Water and Sediment - Is a measure of the workmanship of the fuel manufacturer. The biodiesel fuel shall be visually free of undissolved water, sediment, and suspended matter.

For more information about biodiesel fuel testing, please contact us by calling **1-800-386-7247**.

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