

Biodiesel

There is still a lot of talk about biodiesel these days, mainly due to tax and environmental incentives. But what is biodiesel? Is it the same as soy-diesel or is it fuel that has been treated with a soy based additive? Just what do they mean?

Raw soybean or other vegetable oil is **NOT** biodiesel. Fuel grade biodiesel is made from renewable resources that have been processed in strict accordance to ASTM D-6751.

The key word in understanding this standard is the term “transesterification”. The raw vegetable oil or animal fat is reacted with an alcohol and a catalyst such as an acid. This process yields an ester and glycerin. The glycerin is removed and the ester that is left is biodiesel. Pure biodiesel is referred to as B100 (100% pure biodiesel). Additionally, biodiesel that is made from animal fat is called “yellow” biodiesel. The difference between biodiesel that is made from animal fat and from vegetable oil is negligible. In fact there is a greater difference between biodiesel and petroleum diesel than there is between “yellow” and “green” biodiesel. Fuel treatment additives that work in B100 will work equally well in both “yellow” and “green” biodiesel.

B100 is then blended with petroleum diesel in various concentrations. These blended fuels are then denoted as “BXX” with “XX” representing the percentage of biodiesel in the final blend. As an example B5 would mean 5% biodiesel and 95% petroleum diesel.

There are some serious drawbacks to the use and handling of biodiesel. Producers, transporters and bulk handlers alike have difficulties when the thermometer drops. In fact, there are times when the use of heated and insulated trailers is necessary. Oxidative and hydrolytic stability are also problems associated with biodiesel. The shelf life of biodiesel is limited due to the oxidative stability issue. Water also aggravates the oxidation issue plus adds other problems too. Biodiesel is a natural demulsifier. Water that accumulates at the bottom of a tank can lead to hum bug infestation and in cold weather can lead to icing. Either condition can stop dead a piece of equipment.

Primrose Oil Company is and has been aware of the increasing interest in the use of biodiesel. Last year we established that our Premium Diesel Additives No. 4033, No. 4032 or No.2030 effectively lower the cold temperature handling properties of B100. Until then this was completely unheard of. Recently we completed additional testing in which we found significant improvements using these products to improve hydrolytic and oxidative stability of B100.

Attached is the results of an independent laboratory’s cold temperature test data for an untreated sample of B100, a sample of treated B100, an untreated sample of B20, a sample of treated B20 and a sample of the untreated petroleum diesel. (Many competitive products may work in B5 since they are affecting 95% of the fuel but they are NOT affecting the biodiesel.) In addition, the latest test data is reproduced showing improvements in B100 hydrolytic and oxidative stability for your review and evaluation.

Test Results of Primrose PDA's with Biodiesel

SAMPLE TYPE	CLOUD POINT °F	POUR POINT °F
B100 Untreated	32	20
B100 Treated (treated 1:75 equates to 1:1500 in B5 blend)	32	0
Untreated Petroleum Diesel	5	-20
B20 Untreated	20	-15
B20 Treated 1:1200	10	-35

	B100	B100 PLUS
Copper Strip Corrosion	Small Weight Loss Dull Appearance	No Weight Loss Appearance Still Bright
Filterable Contamination	60% Increase	14% Increase
Acid Number ASTM D664 (increase indicates oxidation)	Increase .011 to .015	No Increase
Viscosity ASTM D445, cSt (increase indicates oxidation)	Increase 3.63 to 4.13	Increase 3.71 to 3.79
Insolubles After Test Run	.036 Gram	.023 Gram