

Product Description – Ultra HF



New Generation Biofuel's **Ultra HF** formulation provides a renewable biofuel with outstanding environmental and performance characteristics. It is formulated to be utilized in a multitude of applications where typically #2 Diesel, distillates, or biodiesel are used and a higher flash point fuel is desired.

Ultra HF is a product created for high flash point applications; it has been formulated to provide several distinct advantages to meet customer needs in certain areas:

- a significantly higher flash point (at least 210 °F)
- a higher energy content than Classic (at least 100,000 btu/gal)
- very high stability in short and long term (oxidation stability of nearly 5 hours)
- exceptional low pour point characteristics for a diesel fuel (typically -15 °C)

Ultra HF products have many features that set us apart from other fuels:

- Demonstrated enhanced environmental performance. Our formulation technology essentially eliminates Sulfur Oxide (SO_x) emissions and can significantly reduce Nitrogen Oxides (NO_x). We have demonstrated >40% NO_x reductions in multiple applications
- Low temperature flow enhancements. Our depressed pour point improves handling and operability in colder conditions, helping minimize or eliminate special handling or the chances of product cavitation or starving fuel feed systems
- Low metals content. Our products are formulated to minimize any metals/salts in our products
- Enhanced lubricity

Our manufacturing process for **Ultra HF**...

- ...is a low energy process so we can provide big energy output with little energy input
- ...does not produce byproducts like other fuel manufacturing processes
- ...allows us to tailor formulations to enhance certain performance characteristics
- ...can utilize various feedstocks to address cost and supply issues

All of these are advantages versus competitive products.

Ultra HF formulations, along with our other biofuel products, are *emulsions*. *Emulsions* are the combination of products that are normally immiscible but, through our formulation expertise and manufacturing capabilities, can be combined into one homogenous and stable product. That allows us to take the strengths of our raw materials and combine them to provide you unique products with unique solutions for the enhanced performance of your application.

Our Product Data Sheet (PDS) provides guidance on the physical characteristics of our products. You will see some of our tests are similar or identical to other fuels you may be familiar with using. Since we are a new product technology, you will also note that we differ in some tests since our emulsion technology is significantly different than other products.

We do not create *glycerin* in our process, so it is not included. Since we are not a distilled petroleum product a typical *distillation curve* is not applicable. We also include data that shows the strength and stability of our products such as *water & sediment* (demonstrates physical stability of the emulsion), *oxidative stability*, and *iodine number*. *Iodine number* demonstrates saturation levels in the products. Values less than 115 are considered stable products for storage and handling purposes.

Please note that variations in performance may be experienced based on the application and operating parameters.

If you have any questions about **Ultra HF** or **New Generation Biofuels**, please contact your sales representative. You can also find additional information on our website: www.newgenerationbiofuels.com

Product Data Sheet

Ultra HF



Test	Units	Test Method	Typical	Minimum	Maximum
Flash Point (closed cup)	°F	D93		210	
	°C	D93		99	
Water and sediment	% volume	D1796 or D2709	0.15		0.5
Kinematic viscosity @ 40°C	cSt	D445	28		
Ash	% mass	D482			0.001
Sulfated ash	% mass	D874			0.001
Sulfur	ppm	D5453	0		1.0
Copper strip corrosion	--	D130	1b		
Pour point	°F	D97	5		
	°C	D97	-15		
Carbon residue (100% sample)	% mass	D4530	0.05		0.1
Total Acid Number	mg KOH/g	D664	0.03		0.05
Oxidation stability	hours	EN 14112		4.7	
Phosphorus content	ppm	D4951 or IAC - 027			1.0
Sodium plus potassium	ppm	EN 14538 or IAC - 027			1.0
Calcium and magnesium	ppm	EN 14538 or IAC - 027			1.0
Iodine Number	--	AOCS Cd 1d-62	86		
Lubricity, @ 25°C - wear scar diameter	mm	D6079	0.10		
Vapor Pressure @100 °F	psi	D323 proc. A	0.6		
Ultimate Analysis (CHONS)	% mass	D5291	C = 63.4 H =12.0 O ≤ 24.5 N < 0.3 S = 0		
Gravity @ 60°F	degrees API	D4052	19		
Specific gravity@60°F/60°F	--	AOCS Cc 10a-25	0.94		
Lead	ppm	IAC - 027 mod. B			0.1
Copper	ppm	IAC - 027 mod. B			0.1
Vanadium		IAC - 027 mod. B			0.1
Gross Heat of Combustion	Btu/lb	D240		12,750	

<p>Chief Executive Officer</p>  <p>Cary J. Claiborne</p>	<p>Chief Technology Officer</p>  <p>Andrea Festuccia</p>	Date 01 December 2009
		Spec/Rev. 6
		Product Data Sheet ULTRA HF