



Certificate of Analysis

(Page 1 of 2)

Product : Biodiesel

Report No : 248679

SGS File No : 218028

LIMS No : 248679 - 792179

Lab No : 90-25-2



<u>METHOD</u>	<u>TEST</u>	<u>RESULT</u>	<u>SPEC</u>
IP 309	Cold Filter Plugging Point	6 °C	
EN ISO 5165:1998	Cetane Number	55.9	51 min
EN ISO 12937:1995	Water Content	200 mg/kg	500 max
EN 12662	Particulate Contaminant by laboratory filtration		
	Total Contamination	13.57 mg/kg	24 max
EN ISO 2160	Copper Corrosion Conditions	3 hr at 122°F	
	Rating	1a	1 max
EN ISO 10370	Carbon Residue MCRT 10% Bottoms		
	Carbon Residue, 10% Bottoms	0.08 m/m%	0.3 max
EN ISO 3104	Kinematic Viscosity, 40°C	4.504 mm ² /s	3.50 min, 5.00 max
EN ISO 20846	Sulfur by UV Fluorescence	9 mg/kg	10 max
EN 14103	Ester Content	98.3 m/m%	96.5 min
EN 14105	Free and Total Glycerine in B100 Biodiesel		
	Free Glycerine	<0.01 % m/m	0.02 max
	Monoglyceride	0.45 % m/m	0.80 max
	Diglyceride	0.10 % m/m	0.20 max
	Triglyceride	0.08 % m/m	0.20 max
	Bound Glycerine	0.14 % m/m	
	Total Glycerine	0.14 % m/m	0.25 max
EN 15751	Oxidation Stability	11.5 Hrs	6 min
EN 14110	Methanol	0.06 % m/m	0.20 max
EN 14103	Polyunsaturated methyl ester	<0.1 % m/m	REPORT!
EN 14103	Linolenic acid methyl ester	<0.1 % m/m	12.0 max
EN 14111	Iodine Value of Drying Oils and Fatty Acids	85 g/100g	120 max

Precision parameters apply in the determination of above test results. Also refer to ASTM D 3244-97/02, IP 367/96 and appendix E of IP standard methods for analysis and testing for utilization of test data to determine conformance with specifications.

© Copyright SGS-OGC 2004

SGS North America Inc.

Oil, Gas & Chemicals Services 1201 W 8th Street Deer Park TX 77536
TEL: (281) 479-7170 FAX: (281) 479-2734

LIMS No : 248679 - 792179

Lab No : 90-25-2

(Cont.)



<u>METHOD</u>	<u>TEST</u>	<u>RESULT</u>	<u>SPEC</u>
EN 14108/14109	Group I metals (Na+K)	0.4 mg/kg	5 max
EN 14538	Group II metals (Ca+Mg)	0.2 mg/kg	
EN 14107	Phosphorus	0.2 mg/kg	10 max
EN ISO 3987	Sulfated Ash	<0.0010 m/m%	0.02 max
EN 14104	Acid Value	0.17 mgKOH/g	0.5 max
EN ISO 3675	Density at 15 C	879.3 kg/m ³	860 min, 900 max
EN ISO 3679	Flash point, closed cup	162 °C	101 min

Supervisor : _____

Lisa N. Rogers

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Precision parameters apply in the determination of above test results. Also refer to ASTM D 3244-97/02, IP 367/96 and appendix E of IP standard methods for analysis and testing for utilization of test data to determine conformance with specifications.



Certificate of Analysis

(Page 1 of 3)

Product : Biodiesel

Report No : 248680
SGS File No : 218028

LIMS No : 248680 - 792182

Lab No : 90-25-2



<u>METHOD</u>	<u>TEST</u>	<u>RESULT</u>	<u>SPEC</u>
ASTM D 130	Copper Corrosion Conditions Rating	3 hr at 122°F 1a	3 max
ASTM D 664 MOD	Total Acid Number	0.17 mgKOH/g	0.50 max
ASTM D 93a	Flashpoint Pensky-Martens closed cup	160 °C	93 min
ASTM D 2500	Cloud Point	13 °C	report
ASTM D 5453	Total Sulfur by UV Fluorescence	0.0006 Wt-%	0.0015 max
ASTM D 445	Kinematic Viscosity, 40°C Kinematic Viscosity, 40°C	4.504 mm ² /s	1.9 min, 6.0 max
ASTM D 874	Ash, Sulfated	<0.001 Wt-%	0.020 max
ASTM D 613	Cetane Number	55.9	47 min
ASTM D 4530	Micro-Carbon Residue	0.04 m/m%	0.050 max
Visual	Workmanship	Clear/Bright	H ₂ O, sed,
ASTM D 6584	Free and Total Glycerine in B-100 Biodiesel		
	Free Glycerine	<0.005 Wt-%	0.020 max
	Monoglyceride	0.446 Wt-%	
	Diglyceride	0.099 Wt-%	
	Triglyceride	0.083 Wt-%	
	Bound Glycerine	0.139 Wt-%	
	Total Glycerine	0.139 Wt-%	0.240 max
ASTM D 4951	Phosphorus	<0.001 Wt-%	0.001 max
ASTM D 1160	Distillation of Petroleum Products at Reduced Pressure		
	Distilled @	9.5 mm Hg	
	IBP (corrected to 760 mm Hg)	343 °C	
	5% (corrected to 760 mm Hg)	343 °C	
	10% (corrected to 760 mm Hg)	345 °C	
	20% (corrected to 760 mm Hg)	346 °C	

Precision parameters apply in the determination of above test results. Also refer to ASTM D 3244-97/02, IP 367/96 and appendix E of IP standard methods for analysis and testing for utilization of test data to determine conformance with specifications.

© Copyright SGS-OGC 2004

LIMS No : 248680 - 792182

Lab No : 90-25-2

(Cont.)



<u>METHOD</u>	<u>TEST</u>	<u>RESULT</u>	<u>SPEC</u>
	30% (corrected to 760 mm Hg)	347 °C	
	40% (corrected to 760 mm Hg)	348 °C	
	50% (corrected to 760 mm Hg)	350 °C	
	60% (corrected to 760 mm Hg)	351 °C	
	70% (corrected to 760 mm Hg)	352 °C	
	80% (corrected to 760 mm Hg)	354 °C	
	90% (corrected to 760 mm Hg)	356 °C	360 max
	End Point (corrected to 760 mm Hg)	356 °C	
	Hg)		
	Recovery	90.7 Vol-%	
	Density @ 140°F	0.8493 g/ml	
D-2709	Water and Sediment	0 vol. %	0.050 max
EN 15751	Oxidation Stability	11.5 Hrs	3 hrs min
EN 14110	Methanol	0.06 % m/m	0.2 max
EN 14538	Group II metals (Ca+Mg)	0.2 mg/kg	5 max
EN 14538	Calcium	0.2 mg/kg	
EN 14538	Magnesium	<0.1 mg/kg	
ASTM D 6751ann	Cold Soak Filtration (0.7 um, after 16hrs @ 40F)		
	Vacuum after 1 minute	24 Inch Hg	
	Time for filtration	155 seconds	360 max
	Volume filtered after 720 seconds	300 ml	
EN 14538	Group I metals (Na+K)	0.4 mg/kg	5 max
EN 14538	Sodium	0.3 mg/kg	
EN 14538	Potassium	0.1 mg/kg	

Supervisor : 

Lisa N. Rogers

Precision parameters apply in the determination of above test results. Also refer to ASTM D 3244-97/02, IP 367/96 and appendix E of IP standard methods for analysis and testing for utilization of test data to determine conformance with specifications.



Certificate of Analysis

(Page 3 of 3)

This document is issued by the Company under its General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Precision parameters apply in the determination of above test results. Also refer to ASTM D 3244-97/02, IP 367/96 and appendix E of IP standard methods for analysis and testing for utilization of test data to determine conformance with specifications.

© Copyright SGS-OGC 2004