



Date: 21-Apr-2017

Certificate of Analysis: NN17-00044.001

PROTON POWER INC
487 SAM RAYBURN PARKWAY
Lenoir City
TN
UNITED STATES
37771

The results shown in this test report specifically refer to the sample(s) tested as received unless otherwise stated. All tests have been performed using the latest revision of the methods indicated, unless specifically marked otherwise on the report. Precision parameters apply in the determination of the below results. Users of the data shown on this report should refer to the latest published revisions of ASTM D3244; IP 367 and ISO 4259 and when utilising the test data to determine conformance with any specification or process requirement. With respect to the UOP methods listed in the report below the user is referred to the method and the statement within it specifying that the precision statements were determined using UOP Method 999. This Test Report is issued under the Company's General Conditions of Service (copy available upon request or on the company website at www.sgs.com). Attention is drawn to the limitations of liability, indemnification and jurisdictional issues defined therein. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

Please note in the below test report that the scope of the method UOP 938 limits the range of the lower detectable limit as follows: "lower limit of quantitation is 0.3 ng/mL (m/v-ppb)". Additionally, the precision of the method is not fully established; specifically, no reproducibility has yet been published.

CLIENT ORDER NUMBER :	4128102	SGS ORDER NO.:	4128102
LOCATION :	Proton Power, Lenoir City, TN	PRODUCT DESCRIPTION :	Diesel - Synthetic diesel
SAMPLE SOURCE :	Supplied by Client		
SAMPLE TYPE :	As Submitted	SAMPLED BY :	Client
SAMPLED :	29-May-2017	RECEIVED	04-Apr-2017
ANALYSED :	05-Apr-2017 - 14-Apr-2017	COMPLETED :	14-Apr-2017

The laboratory analysis for the Sub-Contract Laboratory tests are provided by:
S1 - Subcontracted to another SGS Laboratory - Deer Park S28 - Subcontracted to another SGS Laboratory - Carteret

PROPERTY	METHOD	RESULT UNITS	MIN	MAX
Flash Point by PMCC - Composite	ASTM D93 (Procedure A)	167 °F	126	--
Sediment and Water	ASTM D2709	<0.01 % (v/v)	--	0.05
Distillation of Petroleum Products at Atmospheric Pressure	ASTM D86-12			
Initial boiling point (IBP)		330.7 °F	--	--
10% Recovered at		523.5 °F	--	--
50% Recovered at		557.9 °F	--	--
90% Recovered at		574.6 °F	540	640
Final boiling point (FBP)		600.7 °F	--	--
% Residue		1.3 % (v/v)	--	--
% Recovery		97.5 % (v/v)	--	--
% Loss		1.2 % (v/v)	--	--
Kinematic Viscosity at 40 °C (104 °F)	ASTM D445	3.132 cSt	1.9	4.1
Sample Weight	ASTM D482	106.982 g	--	--
Ash	ASTM D482	<0.001 % (m/m)	--	0.01
Sulfur Content	ASTM D5453	2.4 ppm (m/m)	--	15
Pressure Vessel used	ASTM D130	No ---	--	--
Copper Strip corrosion (3h / 122°F)	ASTM D130	1a Rating	--	3
Cloud Point	ASTM D2500	-11 °C	--	--
Cloud Point	ASTM D2500	12 °F	--	--
Ramsbottom Carbon Residue on 10%	ASTM D524	0.05 % (m/m)	--	0.35
Distillation Residue				
Conductivity	ASTM D2624	[1] pS/m	25	--

[] - Out of Specification

AUTHORISED SIGNATORY

Paul Clapham
Lab Manager

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SGS North America Inc.

Oil, Gas & Chemicals Services 12650 McManus Blvd, Suite 103, Newport News, VA, 23602, U.S.A. Tel: +1-(757)-874-9430 Fax: +1-(757)-874-9439



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PROPERTY	METHOD	RESULT UNITS	MIN	MAX	
Observed Temperature	ASTM D2624	25.0 °C	--	--	
Cetane Index	ASTM D976	78.0 Rating	40	--	
S28 - Major Axis Diameter	ASTM D6079	400 µm	--	--	
S28 - Minor Axis Diameter	ASTM D6079	330 µm	--	--	
S28 - Fuel Temperature	ASTM D6079	60.0 °C	--	--	
S28 - Wear Scar Description	ASTM D6079	normal --- appearance	--	--	
S28 - Lubricity, corrected diameter (ws 1.4) at 60°C §	ASTM D6079	364 µm	--	520	
S28 - Cetane Number	ASTM D613	79.0 Rating	40	--	
Elements by ICP in Middle Distillate Fuels	ASTM D7111				
Aluminium		0.00 mg/kg	--	--	#
Barium		0.00 mg/kg	--	--	#
Calcium		0.80 mg/kg	--	--	
Chromium		0.20 mg/kg	--	--	
Cobalt		0.00 mg/kg	--	--	#
Copper		0.00 mg/kg	--	--	#
Iron		0.10 mg/kg	--	--	
Lead		0.00 mg/kg	--	--	#
Magnesium		0.20 mg/kg	--	--	
Manganese		0.00 mg/kg	--	--	#
Nickel		0.40 mg/kg	--	--	
Phosphorus		0.00 mg/kg	--	--	#
Potassium		0.00 mg/kg	--	--	#
Sodium		0.00 mg/kg	--	--	#
Silicon		0.00 mg/kg	--	--	#
Silver		0.20 mg/kg	--	--	
Tin		0.00 mg/kg	--	--	#
Titanium		0.00 mg/kg	--	--	#
Vanadium		0.00 mg/kg	--	--	#
Beryllium §		0.00 mg/kg	--	--	#
Antimony §		0.30 mg/kg	--	--	

§ - Analyte not in published method scope

- Result is outside of test method limits and/or analytical range used in method precision study

This document is only valid in its entirety and your attention is drawn to the Terms and Conditions on Page 1 of this report

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Paul Clapham
Lab Manager

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PROPERTY	METHOD	RESULT UNITS	MIN	MAX	
Boron §		0.00 mg/kg	--	--	#
Cadmium §		0.40 mg/kg	--	--	
S1 - Ni, V and Fe in Crude Oils & Residual Fuels by ICP	ASTM D5708 (Method A)				
Arsenic §		<1.00 mg/kg	--	--	
Molybdebum §		<1.00 mg/kg	--	--	
Zinc §		<1.00 mg/kg	--	--	
S1 - Mercury (Hg)	UOP 938	<0.000300 ppm (m/m)	--	--	
** End of Analytical Results **					

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