



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

PARAGON LABORATORIES, INC.
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CHEMICAL

Valid To: March 31, 2019

Certificate Number: 2705.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on liquid and gaseous petroleum products, fuels and fuel additives (oil, diesel, gasoline, biodiesel, ethanol and oxygenates), and chemical products:

<u>Test Technology / Subdiscipline / Description</u>	<u>Test Method</u>	<u>Procedure</u>
<u>Calculation</u>		
Calculated Cetane Index by 4-Variable Equation	ASTM D4737	A0037
Calculated Cetane Index of Distillate Fuels	ASTM D976	A0036
Calculated Driveability Index	ASTM D4814	A0050
Calculated Physical Properties of LPG	ASTM D2598	A0294
Estimated Heat of Combustion	ASTM D3338	A0220
Estimated Hydrogen Content	ASTM D3343	A0088
<u>Centrifugation</u>		
Water and Sediment in Fuel Oils	ASTM D1796	A0019
Water and Sediment in Middle Distillate Fuels	ASTM D2709	A0085
<u>Chromatography</u>		
Gas – Flame Ionization Detection (GC / FID)		
Assay of N-Methyl-2-pyrrolidone (NMP)	Paragon	A0259
Determination of Oxygenates & Alcohols by GC	ASTM D4815	A0073
Dimethylhexadiene (DMHD) in Gasoline	Paragon	A0227
Ethanol Content of Denatured Ethanol & Blends	ASTM D5501	A0074
Hydrocarbons in Liquefied Petroleum Gases (LPG)	ASTM D2163	A0292
Gas – Thermal Conductivity Detection (GC / TCD)		
Benzene and Toluene in Gasoline	ASTM D3606	A0270
Carbon and Hydrogen in Petroleum Products	ASTM D5291D	A0018
Total Oxygen in Petroleum Products	ASTM D5622A	A0215

<u>Test Technology / Subdiscipline / Description</u>	<u>Test Method</u>	<u>Procedure</u>
Ion – Conductivity Detection (IC)		
Amines in N-Methyl-2-pyrrolidone (NMP)	Paragon	A0250
Petrochemical Industry Amines/Cations	Paragon	A0289
Sulfate and Inorganic Chloride		
Aqueous Injection	ASTM D7328	A0128
Sample Preparation	ASTM D7328	A0205
Liquid - Packed Column		
Hydrocarbon Types by FIA	ASTM D1319	A0068
<u>Gravimetry</u>		
Ash from Petroleum Products	ASTM D482	A0011
Gum Content in Fuels	ASTM D381	A0065
Oxygen Stability of Distillate Fuel Oil	ASTM D2274	A0076
Particulate Contamination in Aviation Fuels	ASTM D5452	A0077
Particulate Contamination in Middle Distillates	ASTM D6217	A0237
Particulate Contamination in Biodiesels	ASTM D7321	A0223
Ramsbottom Carbon Residue (10% & 100%)	ASTM D524	A0034
Sulfated Ash from Petroleum Products	ASTM D874	A0030
<u>Oxidation / Corrosion</u>		
Corrosiveness to Copper	ASTM D130	A0046
Corrosiveness to Iron	ASTM D665 Mod.	A0216
Corrosiveness to Iron	NACE TM0172	A0216
Corrosiveness to Silver	ASTM D7671	A0276
Oxidation Stability of Gasoline	ASTM D525	A0075
<u>Spectroscopy</u>		
Flame Atomic Absorption (FLAAS)		
Copper (Cu) in Petroleum Products	ASTM D1688 Mod.	A0230
Lead in Gasoline by AAS	ASTM D3237	A0054
Manganese in Gasoline by AAS	ASTM D3831	A0055
ICP-OES		
Aluminum and Silicon in Petroleum Products	ASTM D5185 Mod.	A0273
Ca, K, Mg, & Na in Biodiesels	EN 14538	A0257
Phosphorus (P) in Biodiesel Blend Stock	ASTM D4951	A0258
Photomultiplier		
Total Sulfur by Ultraviolet Fluorescence	ASTM D5453	A0212
Trace Nitrogen in Petroleum Products	ASTM D4629	A0212
Volatile Sulfur in Liquefied Petroleum Gases	ASTM D6667	A0291
UV / Visible		
Phosphorus in Gasoline	ASTM D3231	A0083



<u>Test Technology / Subdiscipline / Description</u>	<u>Test Method</u>	<u>Procedure</u>
<u>Titrimetric</u>		
Manual		
Acidity as Acetic Acid	ASTM D1613	A0025
Peroxide Number of Distillate Fuels	ASTM D3703	A0078
Potentiometric		
Acid Number of Petroleum Products	ASTM D664	A0028
Water in Liquid Petroleum Products	ASTM E203	A0022
<u>Physical Properties</u>		
Combustion Characteristics		
Heat of Combustion of Fuels	ASTM D240	A0024
Cetane Number of Diesel Fuels	ASTM D613	A0038
Research Octane Number	ASTM D2699	A0072
Motor Octane Number	ASTM D2700	A0071
Conductivity		
Electrical Conductivity (1000 to 20,000,000 $\mu\text{S/m}$)	ASTM D1125 Mod.	A0221
Electrical Conductivity (1 to 2,000,000 pS/m)	ASTM D2624	A0045
Oxidation Stability of Biodiesels	EN 15751	A0272
Density		
Density and Relative Density of Liquids	ASTM D4052	A0013
Distillation		
Distillation of Petroleum Products	ASTM D86	A0049
Flash Point		
Flash Point by Pensky-Martens Closed Cup	ASTM D93	A0282
Lubricity		
Lubricity of Diesel Fuels by HFRR - Camera	ASTM D6079	A0269
Particulate Distribution		
Sizing and Counting Particles in Fuels - Incorporating ISO 4406 & ISO 11171	ASTM D7619	A0293
pH		
pH of Ethanol & Blends	ASTM D6423	A0080
Thermal Characteristics		
Cloud Point of Petroleum Oils	ASTM D2500	A0041
Cold Filter Plugging Point (CFPP)	ASTM D6371	A0042
Pour Point of Petroleum Products	ASTM D97	A0020



<u>Test Technology / Subdiscipline / Description</u>	<u>Test Method</u>	<u>Procedure</u>
<u>Physical Properties</u>		
Vapor Pressure		
Vapor Pressure of Petroleum Products	ASTM D5191	A0094
Viscosity		
Kinematic Viscosity of Liquids	ASTM D445	A0017
Visual Appearance		
Acidity of Hydrocarbon Liquids	ASTM D1093	A0026
Color by Visual Description	Paragon	A0214
Luminosity of Petroleum Products	Paragon	A0226





Accredited Laboratory

A2LA has accredited

PARAGON LABORATORIES, INC.

Livonia, MI

for technical competence in the field of

Chemical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 10th day of May 2017.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 2705.01
Valid to March 31, 2019

For the tests to which this accreditation applies, please refer to the laboratory's Chemical Scope of Accreditation.