SCOPE OF ACCREDITATION TO ISO 17034:2016

DCG PARTNERSHIP I, LTD.
4170A South Main, Pearland, TX 77581
Louis D'Agostaro Phone: (281) 648-1894

REFERENCE MATERIAL PRODUCER

Valid To: December 31, 2020 Certificate Number: 3487.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this Reference Material Producer for the production of certified reference materials and reference materials of the following categories:

Category and Sub-Category of Certified Reference Material[1]	Certified Reference Material	Concentration Range and Relative Percent Uncertainties[2,3]	Analytical Test Method(s)	Measurement Technique (Where Appropriate)
Category A: Chemical Composition, A7 Reference Gases, A7.1 Reference Gas Mixtures				
Natural Gas and Similar Gaseous Mixtures	Argon	Range: (0.01 - 20.0) mol % Uncertainty: ± 1.74 %	GPA 2261, ASTM D1945, ISO 6974	Gravimetric GCxTCD
	Helium	Range: (0.01 - 10.0) mol % Uncertainty: ± 1.74 %		
	Hydrogen	Range: (0.01 - 10.0) mol % Uncertainty: ± 1.74 %		
	Oxygen	Range: (0.01 - 10.0) mol % Uncertainty: ± 1.74 %		
	Nitrogen	Range: (0.01 - 100.0) mol % Uncertainty: ± 1.74 %		
	Carbon Dioxide	Range: (0.01 - 30.0) mol % Uncertainty: ± 1.30 %		
	Methane	Range: (0.01 - 100.0) mol % Uncertainty: ± 0.38 %		
	Ethane	Range: (0.01 - 100.0) mol % Uncertainty: ± 0.87 %		
	Propane	Range: (0.01 - 100.0) mol % Uncertainty: ± 1.27 %		
	Isobutane	Range: (0.01 - 10.0) mol % Uncertainty: ± 2.21 %		
	n-Butane	Range: (0.01 - 10.0) mol % Uncertainty: ± 0.93 %		
	2,2-Dimethylpropane	Range: (0.01 - 4.0) mol % Uncertainty: ± 1.57 %		
	Isopentane	Range: (0.01 - 2.0) mol % Uncertainty: ± 1.59 %		
	n-Pentane	Range: (0.01 - 2.0) mol % Uncertainty: ± 5.29 %		
	Hexanes Plus	Range: (0.01 - 2.0) mol % Uncertainty: ± 13.20 %		

WITHDRAWN

Category and Sub-Category of Certified Reference Material[1]	Certified Reference Material	Concentration Range and Relative Percent Uncertainties[2,3]	Analytical Test Method(s)	Measurement Technique (Where Appropriate)
Natural Gas Liquid and Similar Mixtures	Nitrogen	Range: (0.01 - 5.0) mol % Uncertainty: ± 5.26 %	GPA 2177	Gravimetric GCxTCD
	Carbon Dioxide	Range: (0.01 - 5.0) mol % Uncertainty: ± 4.26 %		
	Methane	Range: (0.01 – 5.0) mol % Uncertainty: ± 2.07 %		
	Ethane	Range: (0.01 - 95.0) mol % Uncertainty: ± 0.61 %		
	Propane	Range: (0.01 - 100.0) mol % Uncertainty: ± 0.48 %		
	Isobutane	Range: (0.01 - 100.0) mol % Uncertainty: ± 5.70 %		
	n-Butane	Range: (0.01 - 100.0) mol % Uncertainty: ± 2.13 %		
	2,2-Dimethylpropane	Range: (0.01 - 100.0) mol % Uncertainty: ± 3.80 %		
	Isopentane	Range: (0.01 – 15.0) mol % Uncertainty: ± 5.44 %		
	n-Pentane	Range: (0.01 – 15.0) mol % Uncertainty: ± 5.70 %		
	Hexanes Plus	Range: (0.01 – 20) mol % Uncertainty: ± 7.56 %		
Natural Gas and Similar Gaseous Mixtures - Extended	Nitrogen	Range: (0.01 - 30.0) mol % Uncertainty: ± 1.74 %	GPA 2286, ISO 6975	Gravimetric GCxTCD GCxFID
	Carbon Dioxide	Range: (0.01 - 100.0) mol % Uncertainty: ± 1.24 %		
	Methane	Range: (0.01 - 30.0) mol % Uncertainty: ± 1.30 %		
	Ethane	Range: (0.01 - 10.0) mol % Uncertainty: ± 0.87 %		
	Propane	Range: (0.01 - 10.0) mol % Uncertainty: ± 1.27 %		
	Isobutane	Range: (0.01 - 4.0) mol % Uncertainty: ± 2.21 %		
	n-Butane	Range: (0.01 - 4.0) mol % Uncertainty: ± 0.93 %		
	2,2-Dimethylpropane	Range: (0.01 - 4.0) mol % Uncertainty: ± 1.57 %		
	Isopentane	Range: (0.01 - 1.5) mol % Uncertainty: ± 1.59 %		
	n-Pentane	Range: (0.01 - 1.5) mol % Uncertainty: ± 5.29 %		
	Hexanes Plus	Range: (0.01 - 1.5) mol % Uncertainty: ± 13.20 %		

WITHDRAWN

Category and Sub-Category of Certified Reference Material[1]	Certified Reference Material	Concentration Range and Relative Percent Uncertainties[2,3]	Analytical Test Method(s)	Measurement Technique (Where Appropriate)
Natural Gas Liquid and Similar Mixtures - Extended	Nitrogen	Range: (0.01 - 5.0) mol % Uncertainty: ± 5.26 %	GPA 2186	Gravimetric GCxTCD GCxFID
	Carbon Dioxide	Range: (0.01 - 5.0) mol % Uncertainty: ± 4.26 %		
	Methane	Range: (0.01 – 5.0) mol % Uncertainty: ± 2.07 %		
	Ethane	Range: (0.01 - 95.0) mol % Uncertainty: ± 0.61 %		
	Propane	Range: (0.01 - 100.0) mol % Uncertainty: ± 0.48 %		
	Isobutane	Range: (0.01 - 100.0) mol % Uncertainty: ± 5.70 %		
	n-Butane	Range: (0.01 - 100.0) mol % Uncertainty: ± 2.13 %		
	2,2-Dimethylpropane	Range: (0.01 - 100.0) mol % Uncertainty: ± 3.80 %		
	Isopentane	Range: (0.01 – 15.0) mol % Uncertainty: ± 5.44 %		
	n-Pentane	Range: (0.01 – 15.0) mol % Uncertainty: ± 5.70 %		
	Hexanes Plus	Range: (0.01 - 20) mol % Uncertainty: ± 7.56 %		
Petroleum Naphthas	C1 – C6 Hydrocarbons	Range: (0 – 100) mol % Uncertainty: ± 15.0%	ASTM D5134	Gravimetric GCxFID
Individual Components in Spark Ignition Engine Fuels	C5 – C13 Hydrocarbons	Range: (0 – 100) mol % Uncertainty: ± 20.0%	ASTM D6730	Gravimetric GCxFID
	C1 – C6 Oxygenates	Range: (0 – 100) mol % Uncertainty: ± 20.0%		
Reformed Gas and Similar Gaseous Mixtures	Methane	Range: (0.1 - 100.0) mol % Uncertainty: ± 2.72 %	ASTM D1946 ASTM D7833 UOP 539	Gravimetric GCxTCD GCxFID
	Ethane	Range: (0.1 - 100.0) mol % Uncertainty: ± 2.28 %		
	Ethylene	Range: (0.1 - 30.0) mol % Uncertainty: ± 2.62 %		
	Hydrogen	Range: (0.1 - 100.0) mol % Uncertainty: ± 3.27 %		
	Oxygen	Range: (0.1 - 30.0) mol % Uncertainty: ± 14.42 %		
	Nitrogen	Range: (0.1 - 100.0) mol % Uncertainty: ± 9.91 %		
	Carbon Dioxide	Range: (0.1 - 30.0) mol % Uncertainty: ± 6.29 %		
	Carbon Monoxide	Range: (0.1 - 30.0) mol % Uncertainty: ± 16.40 %		

WITHDRAWN

Category and Sub-Category of Certified Reference Material[1]	Certified Reference Material	Concentration Range and Relative Percent Uncertainties[2,3]	Analytical Test Method(s)	Measurement Technique (Where Appropriate)
Hydrocarbons in Liquefied Petroleum Gases and Propane/ Propene Mixtures	Methane	Range: (0.01 - 100.0) vol % Uncertainty: ± 2.72 %	ASTM D2163, ISO 7941, IP 405	Gravimetric GCxTCD GCxFID
	Ethane	Range: (0.01 - 100.0) vol % Uncertainty: ± 2.28 %		
	Ethylene	Range: (0.01 - 100.0) vol % Uncertainty: ± 2.62 %		
	Propane	Range: (0.01 - 100.0) vol % Uncertainty: ± 1.64 %		
	Propylene	Range: (0.01 - 100.0) vol % Uncertainty: ± 2.01 %		
	Propadiene	Range: (0.01 - 100.0) vol % Uncertainty: ± 18.65 %		
	Isobutane	Range: (0.01 - 100.0) vol % Uncertainty: ± 1.50 %		
	n-Butane	Range: (0.01 - 100.0) vol % Uncertainty: ± 1.50 %		
	Trans-2-Butene	Range: (0.01 - 100.0) vol % Uncertainty: ± 1.69 %		
	1-Butene	Range: (0.01 - 100.0) vol % Uncertainty: ± 2.50 %		
	Isobutylene	Range: (0.01 - 100.0) vol % Uncertainty: ± 1.50 %		
	Cis-2-Butene	Range: (0.01 - 100.0) vol % Uncertainty: ± 1.78 %		
	Isopentane	Range: (0.01 - 100.0) vol % Uncertainty: ± 3.51 %		
	n-Pentane	Range: (0.01 - 100.0) vol % Uncertainty: ± 4.85 %		

WITHDRAWN

Category and Sub-Category of Certified Reference Material[1]	Certified Reference Material	Concentration Range and Relative Percent Uncertainties[2,3]	Analytical Test Method(s)	Measurement Technique (Where Appropriate)
Sulfur Compounds in Natural Gas and Gaseous Fuels	Hydrogen Sulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %	ASTM D5504, ISO 6326	Gravimetric GCxSCD,UV F
	Carbonyl Sulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Sulfur Dioxide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Methanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Ethanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Dimethyl Sulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Carbon Disulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Methyl Ethyl Sulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	2-Propanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	t-Butanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	1-Propanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Thiophene	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	1,2 Butanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	i-Butanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Diethyl Sulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	n-Butanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	2-Methyl-1-Propanethiol	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80%		
	Dimethyl Disulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Diethyl Disulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80 %		
	Ethyl Methyl Disulfide	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80%		
	Dibenzothiophene	Range: (0.01 - 1000) mg/m^3 Uncertainty: ± 13.80%		

WITHDRAWN

Category and Sub-Category of Certified Reference Material[1]	Certified Reference Material	Concentration Range and Relative Percent Uncertainties[2,3]	Analytical Test Method(s)	Measurement Technique (Where Appropriate)
Sulfur Compounds in Light Petroleum Liquids	Hydrogen Sulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %	ASTM D5623, UOP 791	Gravimetric GCxSCD,UV F
	Carbonyl Sulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Sulfur Dioxide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Methanethiol	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Ethanethiol	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Dimethyl Sulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Carbon Disulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	2-Propanethiol	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	2-Methyl-2-Propanethiol	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	1-Propanethiol	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Ethyl methyl sulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	2-Butanethiol	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Thiophene	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	2-Methyl-1-Propanethiol	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Diethyl Sulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	1-Butanethiol	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Dimethyl Disulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	2-Methylthiophene	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	3-Methylthiophene	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Diethyl Disulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Methylbenzothiophene	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Diphenyl Sulfide	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	3,4 Dibenzothiophene	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Benzothiophene	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		
	Ethylbenzothiophene	Range: (0.1 - 100.0) mg/kg Uncertainty: ± 13.80 %		

WITHDRAWN

Category and Sub-Category of Certified Reference Material[1]	Concentration Range and Relative Percent Uncertainties[2,3]	Analytical Test Method(s)	Measurement Technique (Where Appropriate)
Category A: Chemical Composition ***A3: Organic Reference Materials*** ***A3.5 Petroleum products***			
Total Sulfur in Light Hydrocarbons, Diesel Engine Fuel, and Related Chemicals	Range: (0.1 – 10 000) mg/kg Uncertainty: ± 10.03 %	ASTM D5453, ISO 20846, IP 490, IMPCA-11	Gravimetric UVF
Total Sulfur in Aromatic Hydrocarbons and Related Chemicals	Range: (0.1 – 15) mg/kg Uncertainty: ± 8.80 %	ASTM D7183, UOP 987	Gravimetric UVF
Trace Nitrogen in Liquid Petroleum Hydrocarbons	Range: (0.3 – 100) mg/kg Uncertainty: ± 5.0 %	ASTM D4629, ASTM D6069, ASTM D7184, IP 379	Gravimetric Chemiluminescence
Total Nitrogen in Petroleum and Related Petroleum Products	Range: (1.0 – 500) ng/µL Uncertainty: ± 5.0 %	ASTM D5762	Gravimetric Chemiluminescence
Total Chloride in Aromatic Hydrocarbons and Related Chemicals	Range: (1.0 – 25) mg/kg Uncertainty: ± 5.0 %	ASTM D5808, UOP 779	Gravimetric Microcoulometry
Test Method A – Total Acid Number in Mineral Oil and Related Petroleum Products	Range: (0.1 – 150) mg/g KOH Uncertainty: ± 7.5 %	ASTM D664, ISO 6619, IP 177	Gravimetric Potentiometric Titration
Category C: Physical Properties ***C6 Reference Materials for Physiochemical Properties***			
Procedure A – Flash Point of Petroleum Products and Liquid Fuels	Range: (40 – 150) °C Uncertainty: ± 4.02 %	ASTM D93, ISO 2719, IP 34	Gravimetric Pensky-Martens Closed Cup
Pour Point of Petroleum Products and Liquid Fuels	Range: (-50 – 10) °C Uncertainty: ± 14.23%	ASTM D6749, ISO 3016, IP 15	Gravimetric Pour Point Apparatus
Cloud Point of Petroleum Products and Liquid Fuels	Range: (-30 – 5) °C Uncertainty: ± 6.28 %	ASTM D7683, ISO 3015, IP 219	Gravimetric Cloud Point Apparatus
Density, Relative Density, and API Gravity of Petroleum distillates and Related Petroleum Products	Range: (0.6 – 1.2) g/mL Uncertainty: ± 4.0 %	ASTM D4052, ISO 12185, IP 365, IMPCA-8	Gravimetric Digital Density Meter

WITHDRAWN

Category and Sub-Category of Certified Reference Material[1]	Concentration Range and Relative Percent Uncertainties[2,3]	Analytical Test Method(s)	Measurement Technique (Where Appropriate)
Cold Filter Plugging Point of Diesel, Heating Fuels, and Related Distillate Fuels	Range: (-45 – -16) °C Uncertainty: ± 6.5 %	ASTM D6371, EN 116, IP 309	Gravimetric Automated Cold Filter Plugging Point Apparatus
Vapor Pressure of Petroleum Products and Liquid Fuels	Range: (7 – 130) kPa Uncertainty: ± 5.0 %	ASTM D5191, ASTM D5188, ASTM D6378, EN 13016-1, ISO 3007, IP 69, IP 394, IP 481	Gravimetric Vapor Pressure Apparatus
Freezing Point of Aviation Fuels	Range: (-60 – -42) °C Uncertainty: ± 4.06 %	ASTM D5972, IP 16, IP 435	Gravimetric Automatic Phase Transition Method
Heat of Combustion of Liquid Hydrocarbon Fuels and Related Petroleum Products	Range: (18 – 165) MJ/kg Uncertainty: ± 4.71 %	ASTM D240, IP 12	Gravimetric Bomb Calorimetry
Water Content in Petroleum Products, Lubricating Oils, and Additives	Range: (100 – 1000) mg/kg Uncertainty: ± 9.23 %	ASTM D6304	Gravimetric Coulometric Karl Fischer Titration
Boiling Range Distribution of Petroleum Fractions	Range: (0 – 538) °C Uncertainty: ± 5.0 %	ASTM D2887, IP 406	Gravimetric GCxFID

WITHDRAWN

[1] This reference material producer is approved to produce Certified Reference Materials (CRM) for all items listed on the scope of accreditation.

[2] The listed uncertainty represents expanded uncertainties expressed at approximately the 95 % level of confidence, using a coverage factor of k = 2.

[3] Uncertainties for the certified values are available on the Reference Material Producer's issued certificates.

Accredited Reference Material Producer

A2LA has accredited

DCG PARTNERSHIP 1, LTD.

Pearland, TX

WITHDRAWN

This accreditation covers the specific materials listed on the agreed upon Scope of Accreditation. This producer meets the requirements of ISO 17034:2016 *General Requirements for the Competence of Reference Material Producers*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system.

Presented this 12th day of September 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3487.02
Valid to December 31, 2020
Revised November 19, 2020

For reference materials to which this accreditation applies, please refer to the reference material producer's Scope of Accreditation.