Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

UKAS CALIBRATION **0649** **Accredited to ISO/IEC 17025:2017**	**Paragon Scientific Ltd** **Issue No:** 056 **Issue date:** 16 March 2026	
	6 Prenton Way **North Cheshire Trading Estate** **Prenton** **Wirral** **CH43 3DU**	**Contact: Rachael Stevens** **Tel: +44 (0)151 649 9955** **E-Mail: paragon.sales@lgcgroup.com** **Website: www.lgcstandards.com/Paragon_Scientific**
Calibration performed at the above address only		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	**Activity**	**Location code**
Address 6 Prenton Way North Cheshire Trading Estate Prenton Wirral CH43 3DU **Local contact** Dr J Roberts	Calibration: Optical Viscosity Density Flash point Acid Number Base Number Sulfur Content pH Measurement Colour Iodine Ester Linolenic	Prenton

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Issue No: 056 **Issue date:** 16 March 2026

Calibration performed at main address only

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
OPTICAL				Prenton
Refractive Index				
Calibration liquids	1.33 to 1.65	0.00007	Measurement at 15 °C, 20 °C, 25 °C and 30 °C Using a refractometer.	
VISCOSITY				
Capillary Viscometer Calibration				
Viscosity Constant •C•	•C• (mm^2s^{-1})s^{-1}			
Master viscometers – Ubbelohde	0.001 0.002 0.005 0.013 0.03 0.08 0.2 0.5 1.2 3 8.8 22 58	0.050 % 0.060 % 0.080 % 0.11 % 0.13 % 0.15 % 0.17 % 0.19 % 0.21 % 0.23 % 0.25 % 0.27 % 0.29 %	Calibrated to ASTM 2162	
Viscosity Measurement				
Kinematic and Dynamic Viscosity 15 °C to 100 °C	mm^2s^{-1} 0.3 to 3 3 to 7.4 7.4 to 10 10 to 30 30 to 72 72 to 180 180 to 520 520 to 1000 1000 to 2700 2700 to 8000 8000 to 13000 13000 to 65000 65000 to 174000	Kinematic / Dynamic 0.080 % / 0.080 % 0.080 % / 0.080 % 0.10 % / 0.10 % 0.13 % / 0.13 % 0.15 % / 0.15 % 0.17 % / 0.17 % 0.19 % / 0.19 % 0.21 % / 0.21 % 0.23 % / 0.23 % 0.25 % / 0.25 % 0.27 % / 0.27 % 0.29 % / 0.29 % 0.30 % / 0.30 %	Viscosity reference standards calibrated to ASTM D2162 Viscosity values at intermediate temperatures can be determined in accordance with ASTM D341 Viscosity index can be calculated in accordance with ASTM D2270	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)		Remarks	Location Code
VISCOSITY (continued) Viscosity Measurement (continued)					Prenton
Kinematic and Dynamic Viscosity 20 °C to 100 °C	mm^2s^{-1} 0.3 to 3 3 to 10 10 to 50 50 to 100 100 to 500 500 to 1000 1000 to 5000 5000 to 10000 10000 to 125 000	Kinematic 0.29 % 0.30 % 0.32 % 0.33 % 0.35 % 0.36 % 0.37 % 0.38 % 0.40 %	Dynamic 0.29 % 0.30 % 0.32 % 0.33 % 0.35 % 0.36 % 0.37 % 0.38 % 0.40 %	Viscosity reference standards calibrated to ASTM D445 Viscosity values at intermediate temperatures can be determined in accordance with ASTM D341 Viscosity index can be calculated in accordance with ASTM D2270	
Kinematic and Dynamic Viscosity 20 °C to -40 °C	mm^2s^{-1} 0.6 to 2 2 to 8 8 to 200 200 to 400 400 to 800 800 to 2000 2000 to 4000 4000 to 8000 8000 to 40000 40000 to 200 000	Kinematic 0.38 % 0.39 % 0.40 % 0.41 % 0.42 % 0.43 % 0.46 % 0.47 % 0.49 % 0.59 %	Dynamic 0.38 % 0.39 % 0.40 % 0.41 % 0.42 % 0.43 % 0.46 % 0.47 % 0.49 % 0.59 %	Viscosity reference standards calibrated to ASTM D445 For use with, but not limited to low temperature viscosity and ASTM D5293 Viscosity values at intermediate temperatures can be determined in accordance with ASTM D341	
Kinematic and Dynamic Viscosity 100 °C to 150 °C	mm^2s^{-1} 0.3 to 4 4 to 8 8 to 80 80 to 200 200 to 400 400 to 1000	Kinematic 0.32 % 0.33 % 0.34 % 0.35 % 0.36 % 0.37 %	Dynamic 0.32 % 0.33 % 0.34 % 0.35 % 0.36 % 0.37 %	Viscosity reference standards calibrated to ASTM D445 Viscosity values at intermediate temperatures can be determined in accordance with ASTM D341	
Kinematic and Dynamic Viscosity 20 °C to 150 °C	mm^2s^{-1} 2 to 8 8 to 80 80 to 400 400 to 800 800 to 4000 4000 to 8000 8000 to 125 000	Kinematic 0.40 % 0.41 % 0.42 % 0.43 % 0.44 % 0.45 % 0.46 %	Dynamic 0.40 % 0.41 % 0.42 % 0.43 % 0.44 % 0.45 % 0.46 %	Viscosity Silicon oil reference standards calibrated to ASTM D445	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DENSITY				Prenton
Liquids -40 °C to 150 °C	0.60 g/ml to 1.65 g/ml	0.012 %	Calibrated to ASTM D1480	
15 °C, 20 °C & 25 °C	0.60 g/ml to 1.65 g/ml	0.027 %	Calibrated to ASTM D4052	
Density in Air at 20 °C of Ethanol Water Mixtures	0.8857 kg/m^3 to 0.9912 kg/m^3	0.01 %	Calibrated to ASTM D1480 (modified) Corresponding to 70% to 5% Ethanol by Volume taken as the % alcohol by volume corresponding to that density in air from the Official Laboratory Alcohol Table (RDC80/264/04), Issued under the authority of the UK HM Customs & Excise.	
FLASH POINT				
Pensky-Martens Closed Cup Flash Point	40 °C to 370 °C	0.50 °C	Flash point standards calibrated to ASTM D93 Procedures A & B	
Cleveland Open Cup Flash Point	79 °C to 400 °C	1.5 °C	Flash point standards calibrated to ASTM D92	
Total Acid Number (TAN)	0.1 to 150 mg KOH/g	1.1%	Calibrated to ASTM D664 in a matrix of Base Oil	
Total Base Number (TBN)	1 to 300 mg KOH/g	1.3%	Calibrated to ASTM D2896 in a matrix of Base Oil	
Sulfur content	<0.1 ug/g m/m to 5.00% m/m	1.0%	Calibration by inhouse method based on ASTM D2622 mass by mass (m/m)	
pH MEASURMENT				
pH of Buffer Solutions	4 pH to 10 pH units at temperatures of 20 °C and 25 °C.	0.01 pH to 0.02 pH units	Calibration procedure based on ASTM E70	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HYDROCARBON BLENDING				
Smoke Point Reference Fuel Blends	2,2,4-Trimethylpentane/Toluene mixtures from 60 % to 100 % v/v 2,2,4-trimethylpentane	0.01% Relative	Equivalent to a smoke point of 14.7 mm to 42.8 mm as per ASTM D1322 and IP 598	
ELECTRICAL CONDUCTIVITY				
Electrical Conductivity of Aqueous solutions	2 µS/cm to 500,000 µS/cm	7.5% to 0.3% relative		
COLOUR				
CIE tristimulus values	Wavelength 360 nm to 830 nm Y x y	 0.2 0.00050 0.00060	Mathematical derivation in accordance with ASTM E308	
ASTM colour	<0.5 to 8	0.10	Mathematical derivation in accordance with ASTM D6045	
Saybolt colour	-16 to +30	1.0		
Gardner colour	1 to 18	0.10	Mathematical derivation in accordance with ASTM D6166	
Platinum-Cobalt colour	0 to 500	1.0	Mathematical derivation based on CIE tristimulus values	
VAPOUR PRESSURE				
Total vapour pressure	7 kPa to 130 kPa	0.5 kPa	Calibration by inhouse method based on ASTM D5191	
Dry vapour equivalent	7 kPa to 130 kPa	0.5 kPa		
Iodine value	0 to 200 g per 100 g of material	5.7 %	Calibration by inhouse method based on BS EN 14111 and BS EN ISO 3961	
Ester content in FAME	90% m/m to 100% m/m	0.61 %	Calibration by inhouse method based on BS EN 14103	
Linolenic acid methyl ester content in FAME	1% m/m to 15% m/m	1.8 %	Calibration by inhouse method based on BS EN 14103)	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code

Flexible Scope

The laboratory is accredited to ISO/IEC17025:2017 for calibration activities in accordance with the standards highlighted in the schedule. This may also include new versions of existing accredited standard test methods to be introduced in accordance with documented in-house procedure QA018, providing that:

(1) The method or standard does not introduce new principles of measurement.

(2) The method or standard does not require measurements to be made outside the parametric boundaries defined within the standard specifications already accredited and detailed within this Schedule of Accreditation.

Information about flexible scopes of accreditation is available in UKAS document GEN 4 and EA document EA-2/15.

END

Appendix - Calibration and Measurement Capabilities

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand.
Thus, for example, a measurement uncertainty of 1.5 % means $1.5 \times 0.01 \times q$, where q is the quantity value.

The notation Q[a, b] stands for the root-sum-square of the terms between brackets: $Q[a, b] = [a^2 + b^2]^{1/2}$