


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 <p>UKAS CALIBRATION 0659</p> <p>Accredited to ISO/IEC 17025:2005</p>	<p>Starna Scientific Ltd</p> <p>Issue No: 013 Issue date: 26 May 2017</p>	
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<p>Calibration performed at the above address only</p>		

DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ($k = 2$)	Remarks
OPTICAL DENSITY (ABSORBANCE)			
Sealed liquid cells containing nicotinic acid solution prepared from AR grade material	Absorbance in the range 0.050 A to 1.090 A, dependent on concentration and wavelength <i>At 213 and 261 nm:</i> Solution concentration 6 mg/l 12 mg/l 18 mg/l 24 mg/l	0.0037 A 0.0037 A 0.0037 A 0.0037 A	
Sealed liquid cells containing potassium dichromate solution prepared from NIST SRM 935a	Absorbance in the range 0.096 A to 3.552 A, dependent on concentration and wavelength <i>At 235 nm, 257 nm, 313 nm and 350 nm:</i> Solution concentration 20 mg/l 40 mg/l 60 mg/l 80 mg/l 100 mg/l 120 mg/l 140 mg/l 160 mg/l 180 mg/l 200 mg/l 220 mg/l 240 mg/l	0.0037 A 0.0045 A 0.0049 A 0.0058 A 0.0068 A 0.0084 A 0.0091 A 0.0098 A 0.011 A 0.012 A 0.013 A 0.013 A	
Sealed liquid cell containing potassium dichromate solution prepared from NIST SRM 935a	Absorbance value in the range 0.948 A to 0.960 A <i>At 430 nm:</i> Solution concentration 600 mg/l	0.0043 A	



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OPTICAL DENSITY (ABSORBANCE) (cont'd)			
Sealed liquid cells containing DNACON 260/280®	At 260 nm, 280 nm and 330 nm: Absorbance value in the range 0.0 A to 1.0 A	0.0043 A	
Sealed liquid cells containing Toluene/Hexane	At peak/trough values in the range 265 nm to 270 nm: Absorbance values in the range 0.1 A to 0.5 A	0.0049 A	
Neutral density glass filters	At 440 nm, 465 nm, 546.1 nm, 590 nm and 635 nm: Nominal transmittance, T		
	92 % (0.063 A)	0.0027 A	
	79 % (0.100 A)	0.0027 A	
	73 % (0.137 A)	0.0027 A	
	60 % (0.222 A)	0.0027 A	
	56.5 % (0.148 A)	0.0027 A	
	50 % (0.301 A)	0.0027 A	
	40 % (0.398 A)	0.0027 A	
	30 % (0.523 A)	0.0027 A	
	25 % (0.602 A)	0.0027 A	
	20 % (0.699 A)	0.0027 A	
	10 % (1.000 A)	0.0027 A	
	6 % (1.222 A)	0.0052 A	
	3 % (1.523 A)	0.0052 A	
	1.5 % (1.824 A)	0.0052 A	
	1.0 % (2.000 A)	0.0059 A	
	0.3 % (2.523 A)	0.011 A	
	0.1 % (3.000 A)	0.019 A	
Neutral density glass filters	At 1100 nm, 1700 nm, 2210 nm, 2500 nm and 2850 nm: Nominal transmittance, T		
	61% to 19 % (0.215 A to 0.721 A)	0.0035 A	
	5.7 % (1.244 A)	0.0046 A	
	2.9 % (1.538 A)	0.0072 A	
	1.5 % (1.824 A)	0.011 A	
Neutral density Metal-on-Quartz filters	Nominal transmittance, T (250 to 635 nm)		
	90 % (0.03 A)	0.0020 A	
	60 % (0.22 A)	0.0025 A	
	50 % (0.30 A)	0.0025 A	
	30 % (0.523 A)	0.0040 A	
	10 % (1.000 A)	0.0045 A	
	3.0 % (1.523 A)	0.0058 A	
	1.0 % (2.000 A)	0.0059 A	



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WAVELENGTH			
Sealed liquid cells containing "Rare Earth" (RE) solution. Multiple peak wavelengths reported.	200 nm to 300 nm	0.18 nm	
Sealed liquid cells containing Rare Earth solution. Multiple peak wavelengths reported.	240 nm to 870 nm	0.11 nm	
Rare Earth glass filters. Multiple peak wavelengths reported.	240 nm to 880 nm	0.10 nm	
Sealed vapour cell containing benzene. Multiple peak wavelengths reported.	250 nm to 270 nm	0.10 nm	
Sealed liquid cells containing TS5 Organic matrix solution. Multiple peak wavelengths reported.	990 nm to 2540 nm	0.44 nm	
Sealed liquid cells containing inorganic "cut-off" solutions with reference transition wavelengths. Transition wavelength at 1.0 T% reported.	190 nm to 385 nm	0.10 nm	
Glass "cut-off" filters with reference transition wavelengths. Transition wavelength at 1.0 T% reported.	275 nm to 700 nm	0.10 nm	
Wavenumber, ν for QA checks on mid-IR spectrophotometers	<i>Nominal Values:</i> 539.85 cm ⁻¹ 841.78 cm ⁻¹ 906.62 cm ⁻¹ 1028.27 cm ⁻¹ 1069.19 cm ⁻¹ 1154.60 cm ⁻¹ 1582.98 cm ⁻¹ 1601.20 cm ⁻¹ 1942.95 cm ⁻¹ 2849.21 cm ⁻¹ 3001.07 cm ⁻¹ 3025.61 cm ⁻¹ 3059.76 cm ⁻¹ 3081.98 cm ⁻¹	1.42 cm ⁻¹ 0.72 cm ⁻¹ 0.22 cm ⁻¹ 0.18cm ⁻¹ 0.52 cm ⁻¹ 0.12 cm ⁻¹ 0.07 cm ⁻¹ 0.11 cm ⁻¹ 0.66 cm ⁻¹ 0.30 cm ⁻¹ 0.12 cm ⁻¹ 0.32 cm ⁻¹ 0.17 cm ⁻¹ 0.14 cm ⁻¹	Calibrated Artefact: Matt polystyrene film



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Flexible scope

The laboratory is accredited to ISO/IEC17025:2005 for calibration activities in accordance with the details listed in this schedule. This may also include calibrations on the same or similar products against standards, laboratory developed procedures or customer-specified methods, that are not specifically listed in this Schedule, providing that:

- (1) The method, procedure or standard does not introduce new principles of measurement.
- (2) The method, procedure or standard does not require measurements to be made outside the parametric boundaries defined in this Schedule.

Information about flexible scopes of accreditation is available in UKAS document LAB39 and EA document EA-2/05.

END