# **Schedule of Accreditation**

issued by

**United Kingdom Accreditation Service** 

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



0630

Accredited to ISO/IEC 17025:2017

## **The Tintometer Limited**

Issue No: 018 Issue date: 14 March 2023

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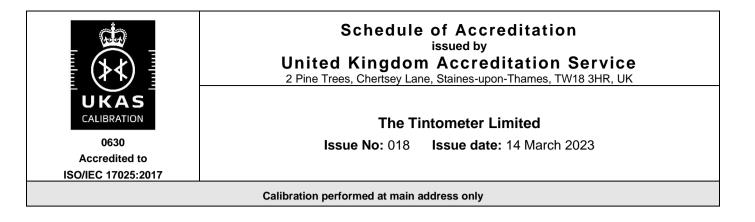
## Calibration performed at the above address only

#### Calibration and Measurement Capability (CMC)

	Calibration and Measure		
Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
SPECTRAL TRANSMITTANCE	Wavelength 380 nm to 780 nm		All calibrations are against reference transmittance standards
	T <= 20% T > 20%	(0.013T + 0.044) % (0.0032T + 0. 24) %	Measured at intervals 1, 2, 5 or 10 nm
Luminous transmittance		0.0030	ASTM D1500
ISO 2049 A.2.2 Daylight Filter	Wavelength 380 nm to 780 nm T <= 20%: T > 20%	(0.013T + 0.044) % (0.0032T + 0.24) %	Compliance derivation in accordance with A.2.2
ABSORBANCE	Wavelength 380 nm to 780 nm	T % uncertainty transformed to absorbance	T % to absorbance = - log <sub>10</sub> (T % / 100)
Glass colour reference materials			
CIE tristimulus values derived from spectral transmittance data	Wavelength 380 nm to 780 nm X Y Z x y z L* a* b*	0.30 0.30 0.30 0.00060 0.00060 0.00080 0.20 0.20 0.20	Mathematical derivation in accordance with CIE Document 15.2 and ASTM E308-08
UCS Judd rgb derived from CIE tristimulus values	Wavelength 380 nm to 780 nm r g b	0.0010 0.0010 0.0010	
ASTM colour Saybolt	0.5 to 8 + 30 to - 16	0.10 1.0	Mathematical derivation in accordance with ASTM D6045
Gardner colour	1 to 18	0.10	Mathematical derivation in accordance with ASTM D6166

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	
Liquid colour reference materials				
CIE tristimulus values	Wavelength 380 nm to 780 nm Y x y	0.35 0.00070 0.00060	Mathematical derivation in accordance with CIE Document 15.2 and ASTM E308-08	
ASTM colour Saybolt	0.5 to 8 + 30 to -16	0.10 1.0	Mathematical derivation in accordance with ASTM D6045	
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	
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:  $Q[a, b] = [a^2 + b^2]^{1/2}$