Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

24452

Accredited to ISO/IEC 17025:2017

H.W. Wallace and Co Limited

Issue No: 002 **Issue date:** 11 September 2023

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Calibration performed at the above address only

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
HARDNESS			
Calibration of Shore Hardness Meters Scale A			BS ISO 48-9:2018
Force	500 to 9000 mN	8.3 mN	By comparison to reference force indicating device
Indenter displacement	0 to 2.5 mm	0.58 µm	By comparison to length standards
Indenter geometry			
Shaft Diameter	1.10 to 1.40 mm	1.7 µm	Indenters measured by optical projection or direct measurement
Angle	34.75 to 35.25º	0.027 °	
Cone Frustum	0.78 to 0.80 mm	3.0 µm	
Pressure Foot			
Outer Diameter	17.50 to 18.50mm	0.03 mm	Pressure foot measured by optical projection or direct measurement
Bore Diameter	2.90 to 3.10mm	3.1 µm	
Mass on Foot	1.000 to 1.1000 kg	0.0074 kg	By comparison to reference force indicating device
Calibration of Shore Hardness Meters Scale D			BS ISO 48-9:2018
Force	4 to 50 N	49 mN	By comparison to reference force indicating device
Indenter displacement	0 to 2.5 mm	0.58 µm	By comparison to length standards
Indenter geometry			
Shaft Diameter	1.10 to 1.40 mm	1.7 µm	Indenters measured by optical projection or direct measurement
Angle	29.75 to 30.25º	0.031 °	
Tip Radius	0.09 to 0.11 mm	0.0029 mm	
Pressure Foot			
Outer Diameter	17.50 to 18.50 mm	0.03 mm	
Bore Diameter	2.90 to 3.10 mm	3.1 µm	
Mass of Foot	5.000 to 5.500 kg	0.0075 kg	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
HARDNESS (continued)			BS ISO 48-9:2018
Calibration of Shore Hardness Meters Scale AM			
Force	300 to 1000 mN	1.10 mN	By comparison to reference force indicating device
Indenter displacement	0 to 1.25 mm	0.58µm	By comparison to length standards
Indenter geometry			
Shaft Diameter	0.76 to 0.82 mm	1.8µm	Indenters measured by optical projection or direct measurement
Angle	29.75 to 30.25 º	0.027 °	
Radius	0.09 to 0.11 mm	0.0029 mm	
Pressure Foot			
Outer Diameter	8.70 to 9.30 mm	0.03mm	Pressure foot measured by optical projection or direct measurement
Bore Diameter	1.16 to 1.22 mm	0.0031mm	
Mass of Foot	250 to 300 g	0.3 g	By comparison to reference force indicating device
Calibration of IRHD Hardness Meters method M			BS ISO 48-9:2018
Force on Pressure Foot	205 to 265 mN	0.3mN	By comparison to reference force indicating device
Contact Force	7.8 to 8.8 mN	0.13mN	
Total Force	152.3 to 154.3 mN	0.13mN	
Indenter displacement	0 to 0.302 mm	0.41µm	By comparison to length standards
Indenter geometry			
Ball diameter	0.390 mm to 0.400 mm	1.8 µm	Indenters measured by optical projection or direct measurement
Pressure Foot			
Outer Diameter	3.20 to 3.50 mm	1.8 µm	Pressure foot measured by optical projection or direct measurement
Bore Diameter	0.85 to 1.15 mm	14 µm	
Calibration of IRHD Hardness Meters method N and H			
Force on Pressure Foot	6.80 to 9.80 N	0.025 N	By comparison to reference force indicating device
Contact Force	0.28 to 0.32 N	0.00013 N	
Total Force	5.67 to 5.73 N	0.0025 N	
Indenter displacement	0 to 1.81 mm	3.4 µm	By comparison to length standards
Indenter geometry			
Ball diameter	0.99 to 2.51 mm	1.8 µm	Indenters measured by optical projection or direct measurement
Pressure Foot			
Outer Diameter	19.00 to 21.00 mm	0.019 mm	Pressure foot measured by optical projection or direct measurement
Bore Diameter	5.00 to 7.00 mm	0.068 mm	

END

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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: $Q[a, b] = [a^2 + b^2]^{1/2}$