Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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0066

Accredited to ISO/IEC 17025:2017

Denison Mayes Group Limited

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98 Church Street
Hunslet
Leeds
West Yorkshire
LS10 2AZ

Contact: Mr R Adkin
Tel: +44 (0)113 270 8011
Fax: +44 (0)113 271 2850
E-Mail: r.adkin@denisonmayesgroup.com
Website: www.denisonmayesgroup.com

Calibration performed by the Organisations at the locations specified below

Locations covered by the organisation and their relevant activities

Site activities performed away from the locations listed above:

Location details	Activity	Location code
Customers' sites or premises The customer's sites or premises must be suitable for the nature of the particular calibrations undertaken and will be subject of contract review arrangements between the laboratory and the customer	Force Hardness Mass	S

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
FORCE				S
UNIVERSAL MATERIAL TESTING MACHINES				
Verification and calibration of the force measuring system by force proving instruments in tension	0.10 kN to 500 kN for Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2018	0.32 %		
	0.05 kN to 4 MN For Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2018	0.38 %		
	0.05 kN to 4 MN to ASTM E4-21	0.38 %		
Verification and calibration of the force measuring system by force proving instruments in compression	0.10 kN to 500 kN for Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2018	0.32 %		
	0.05 kN to 5 MN For Class 1, 2 and 3 machines to BS EN ISO 7500-1:2018	0.38 %		
	0.05 kN to 10 MN for ASTM E4-21	0.38 %		
Verification and calibration of the force measuring system by calibrated masses in tension	0.01 N to 500 N for Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2018	0.10 %		
Verification and calibration of the force measuring system by calibrated masses in compression	0.01 N to 500 N for Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2018	0.10 %		
CONCRETE CUBE TESTING MACHINES				S
Verification and calibration of the force measuring system by force proving instruments in Compression	0.05 kN to 5 MN for Class 1, 2 and 3 machines to BS EN ISO 7500-1:2018 See note 1	0.38 %	Notes 1. Calibration also includes the alignment and restraint of the upper machine platen required by BS EN 12390-4:2019	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
FORCE (continued)				S
Rate of application of force (Load pacer rate)	As BS EN 12390-4:2019 3 kN/min to 1300 kN/min	1.0 %		
Flatness of platens (Machine platens, auxiliary platens and spacing blocks)	As BS EN 12390-4:2019 40 mm to 300 mm	0.010 mm		
CREEP TESTING MACHINES				
Verification and calibration of the force measuring system by force proving instruments in tension	0.1 kN to 100 kN for Class 0.5, 1 and 2 machines to BS EN ISO 7500-2:2006	0.32 %		
Verification and calibration of the force measuring system by calibrated masses in tension	5 N to 100 N for Class 0.5, 1 and 2 machines to BS EN ISO 7500-2:2006	0.10 %		
FORCE MEASURING DEVICES				
Calibration of force measuring devices used in soil testing machines	0.1 kN to 500 kN As BS 1377:Part 1:2016	0.38 %		
IMPACT TESTING MACHINES				
Charpy	Absorbed Energy (joules) 1 J to 600 J BS EN ISO 148-2:2016 ASTM E23-18 but excluding proof test using certified specimens	0.70 J		
Izod	BS 131:Part 4:1972			

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
MASS				S
Masses for generating force on tension creep testing machines	100 g to 5 kg 5 kg to 33 kg	0.340 g 2.1 g		
HIP SIMULATORS			In house procedures	S
ISO 14242-1:2014+A1:2018 (section 6 – Apparatus)	Angular displacement (protractor) 0 to 50 degrees of arc	0.25 degrees of arc	A11.16	
	Angular displacement (clinometer) 0 to 60 degrees of arc	0.50 degrees of arc	A11.16	
	Test cycle frequency 0 to 1 Hz	0.0040 Hz	A11.17	
	Linear displacement (see note) 0 to 10 mm	0.025 mm	A11.15 Note: Measurement of linear displacement is not required by the standard but has been included for completeness	
LENGTH				S
Extensometers	As BS EN ISO 9513:2012 for the following classes and gauge lengths: Class 0.2 from 25 mm		.	
	Class 0.5 from 10 mm Up to Class 1 from 5 mm Class 2 from 5 mm			
	As ASTM E83-16 for the following classes and gauge lengths: B-1 from 20 mm B-2 from10 mm C from 5 mm			
	Displacements			
	0.02 mm to 2.5 mm	0.50 um +(0.50 μm per mm)		
	2.5 mm to 100 mm	5.0 μm + (0.25 μm per mm)		
Testing machine cross head and actuator displacement by use of linear encoders	0.01 mm to 50 mm 50 mm to 300 mm 300 mm to 450 mm 450 mm to 500 mm	5.5 um +(700 μm per m) 20 um +(700 μm per m) 25 um +(700 μm per m) 45 um +(700 μm per m)		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS TESTING MACHINES IN SERVICE				S
Direct verification of Rockwell Hardness Testing Machines	Rockwell scales: A, B, C, D, E, F, G, H, K, L,M , N , P ,R ,S ,T , V , W , X & Y	See Note 2	2. The calibration/ verification shall be in accordance with the requirements of BS EN ISO 6508-2:2015 & ASTM E18-20	
	Force	0.24 %		
	Length	0.20 µm		
	Time	0.10 s		
Indirect verification of Rockwell Hardness Testing Machines	Rockwell scales: A, B, C, D, E, F, G, H, K, L,M , N , P ,R ,S ,T , V , W , X & Y	See note 2		
	HRA Scale			
	80 to 85	0.15 HRA		
	70 to 79	0.16 HRA		
	60 to 69	0.28 HRA		
	HRB Scale			
	80	0.42 HRB		
	51 to 79	0.87 HRB		
	10 to 50	1.36 HRB		
	HRC Scale			
	60 to 70	0.31 HRC		
	40 to 59	0.32 HRC		
	20 to 39	0.37 HRC		
	HRD Scale			
	70 to 80	0.17 HRD		
	50 to 69	0.25 HRD		
	40 to 49	0.27 HRD		
	HRE Scale			
	89	0.54 HRE		
	75 to 88	0.54 HRE		
	65 to 87	0.54 HRE		
	HRF Scale			
	87	0.40 HRF		
	70 to 86	0.40 HRF		
	40 to 69	0.54 HRF		
	HRG Scale			
	80	0.30 HRG		
	40 to 79	0.30 HRG		
	10 to 39	0.76 HRG		
	HRH Scale			
	90	0.40 HRH		
	80 to 89	0.40 HRH		
	60 to 79	0.68 HRH		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS TESTING MACHINES IN SERVICE (continued)				S
Indirect verification of Rockwell Hardness Testing Machines (cont'd)	HRK Scale 70 30to69 10to29 HRL Scale 115 90 to 114 HRM Scale 100 70 to 99 HRP Scale 85 40 to 84 HRR Scale 120 100 to 119 HRS Scale 112 110 to 111 HRV Scale 104 80 to 103 HR15N Scale 90to95 80to89 40to79 HR15T Scale 88 to 100 80 to 87 20 to 79 HR15W Scale 89 to 100 80 to 88 HR15X Scale 88 to 100 80 to 87 HR15Y Scale 94 to 100 85 to 93	 0.40 HRK 0.40 HRK 0.64 HRK 0.35 HRL 0.35 HRL 0.56 HRM 0.56 HRM 0.65 HRP 0.91 HRP 0.23 HRR 0.40 HRR 0.19 HRS 0.91 HRS 0.20 HRV 0.61 HRV 0.18 HR15N 0.18 HR15N 0.39 HR15N 0.21 HR15T 0.21 HT15T 0.37 HR15T 0.53 HR15W 0.44 HR15W 0.33 HR15X 0.62 HR15X 0.63 HR15Y 1.30 HR15Y		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS TESTING MACHINES IN SERVICE (continued)				S
Indirect verification of Rockwell Hardness Testing Machines (cont'd)	HR30N Scale 77 to 85 60 to 76 40 to 59 HR30T Scale 57 to 85 50 to 56 20 to 49 HR30W Scale 65 to 100 40 to 64 HR30X Scale 79 to 100 60 to 78 HR30Y Scale 88 to 100 60 to 87 HR45N Scale 67 to 75 50 to 66 10 to 49 HR45T Scale 50 to 75 40 to 49 10 to 39 HR45W Scale 49 to 100 10 to 47 HR45X Scale 69 to 100 40 to 68 HR45Y Scale 82 to 100 60 to 81	 0.27 HR30N 0.27 HR30N 0.55 HR30N 0.39 HR30T 0.66 HR30T 0.90 HR30T 0.76 HR30W 0.90 HR30W 0.15 HR30X 0.99 HR30X 0.37 HR30Y 0.82 HR30Y 0.18 HR45N 0.21 HR45N 0.43 HR45N 0.40 HR45T 0.40 HR45T 0.73 HR45T 0.12 HR45W 0.29 HR45W 0.34 HR45X 0.81 HR45X 0.29 HR45Y 0.94 HR45Y		
Direct verification of Brinell Hardness Testing Machines	Brinell scales: HB 10/3000 to HB1/1 Force Time Length	See note 3 0.24 % 0.10 s 6 μm	3. The calibration/ verification shall be in accordance with the requirements of BS EN ISO 6506-2:2018 and ASTM E10-18.	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS TESTING MACHINES IN SERVICE (continued)				S
Indirect verification of Brinell Hardness Testing Machines and Indentation Measuring Devices including Portable Brinell Hardness Testers (King or Brinell type)	Scale 10/3000 600HBW to 140 HBW	See Note 3 9.4 HBW to 2.0 HBW		
	Scale 10/1500 299 HBW to 55 HBW	4.1 HBW to 1.2 HBW		
	Scale 10/1000 169 HBW to 55 HBW	2.6 HBW to 0.75 HBW		
	Scale 10/500 100 HBW to 35 HBW	1.3 HBW to 0.45 HBW		
	Scale 5/750 600 HBW to 140 HBW	7.8 HBW to 1.9 HBW		
	Scale 5/250 169 HBW to 55 HBW	2.2 HBW to 1.75 HBW		
	Scale 2.5/187.5 600 HBW to 140 HBW	8.2 HBW to 1.95 HBW		
	Scale 1/30 600 HBW to 140 HBW	11.6 HBW to 2.6 HBW		
	Scale 1/5 110 HBW to 35 HBW	2.1 HBW to 0.63 HBW		
Direct verification of Vickers Hardness Testing Machines & indentation measuring devices	Vickers scales: HV 100 to HV 0.1	See note 4	4. The verification shall be in accordance with the requirements of BS EN ISO 6507-2:2018 and ASTM E92-17.	
	Force	0.24 %		
	Time	0.10 s		
	Length	0.5 µm		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS TESTING MACHINES IN SERVICE (continued)				S
Indirect verification of Vickers Hardness Testing Machines	Vickers scales: HV 100 200 HV 100 400 HV 100 700 HV 50 200 HV 50 400 HV 50 700 HV 30 200 HV 30 400 HV 30 700 HV 20 200 HV 20 400 HV 20 700 HV 10 200 HV 10 400 HV 10 700 HV5 200 HV5 400 HV5 700 HV3 200 HV3 400 HV3 700 HV1 200 HV1 400 HV1 700 HV 0.5 200 HV 0.5 400 HV 0.5 700 HV 0.3 200 HV 0.3 400 HV 0.3 700 HV 0.2 200 HV 0.2 400 HV 0.2 700 HV 0.1 200 HV 0.1 400	See note 4 1.2 HV 3.4 HV 4.1 HV 1.9 HV 3.5 HV 6.3 HV 2.0 HV 4.4 HV 9.3 HV 2.5 HV 6.2 HV 11.0 HV 3.1 HV 7.7 HV 14.9 HV 3.9 HV 11.0 HV 19.7 HV 6.9 HV 16.3 HV 31.0 HV 8.7 HV 21.4 HV 44.0 HV 5.0 HV 15.0 HV 17.0 HV 6.0 HV 16.0 HV 19.0 HV 7.0 HV 17.0 HV 20.0 HV 10.0 HV 30.0 HV		
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: $Q[a, b] = [a^2 + b^2]^{1/2}$