

Schedule

CAST Laboratories Pte Ltd
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Certificate No. : LA-2003-0290-C

Issue No. : 20

Date : 18 December 2021

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FIELD OF TESTING : Calibration and Measurement

MEASURED QUANTITIES/ INSTRUMENT/ RANGE TO BE CALIBRATED	METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
A. MECHANICAL		
A1. Pressure Measuring Devices (Laboratory & Site)		
a. Gauges		
b. Transducer		
above 16000 to 40000 psi	) BS EN 837-1 & 3: 1998	0.24% of maximum scale value
above 10000 to 16000 psi	) BS 1780: 1985	0.10% of maximum scale value
above 5000 to 10000 psi	) CL / CAL / SOP-03: 2019	0.14% of maximum scale value
above 2000 to 5000 psi	)	0.12% of maximum scale value
above 1000 to 2000 psi	)	0.18% of maximum scale value
above 500 to 1000 psi	)	0.14% of maximum scale value
above 400 to 500 psi	)	0.15% of maximum scale value
above 300 to 400 psi	)	0.20% of maximum scale value
above 200 to 300 psi	)	0.24% of maximum scale value
above 100 to 200 psi	)	0.10% of maximum scale value
0 to 100 psi)	0.13% of maximum scale value
-13 to 0 psi)	0.28% of maximum scale value

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MEASURED QUANTITIES/ INSTRUMENT/ RANGE TO BE CALIBRATED	METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
A2. Force Measuring Devices		
a. Load Cells		
b. Proving Rings		
c. Hydraulic Jacks		
d. Compression Testing Machine		
e. Tension Testing Machine		
f. Universal Testing Machine		
0 to 15 kN	) BS EN ISO 7500-1: 2018	0.021 kN
above 15 to 30 kN	) CL/CAL/SOP-06-R2-SEP2021	0.021 kN
above 30 to 50 kN	)	0.12 kN
above 50 to 100 kN	)	0.15 kN
above 100 to 200 kN	)	0.30 kN
above 200 to 300 kN	)	0.12 kN
above 300 to 400 kN	)	0.12 kN
above 400 to 500 kN	)	0.19 kN
above 500 to 1000 kN	)	0.98 kN
above 1000 to 2000 kN	)	1.7 kN
above 2000 to 3000 kN	)	1.0 kN
A3. Compression Testing Machine)	
a. Platen Self Alignment	) BS EN 12390-4:2019	-
b. Alignment of Machine Components	) CL/CAL/SOP-05-R1-SEP2020	-
c. Restraint on movement of the upper platen)	-
	)	<u>(Note: Stability Check, CMC not applicable)</u>
A4. Concrete Batching Plant		
1 to 5 kg	) CL/CAL/SOP -11: 2014	0.20 %
above 5 to 10 kg	)	0.10 %
above 10 to 50 kg	)	0.060 %
above 50 to 100 kg	)	0.060 %
above 100 to 200 kg	)	0.030 %
above 200 to 500 kg	)	0.040 %
above 500 to 1000 kg	)	0.060 %
above 1000 to 2000 kg)	0.040 %
above 2000 to 3000 kg)	0.040 %
above 3000 to 4000 kg)	0.040 %
above 4000 kg)	0.050 %

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MEASURED QUANTITIES/ INSTRUMENT/ RANGE TO BE CALIBRATED	METHOD	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
A5. Balances and Weighing Scales		
Range for E2 Std Mass	) CAL-S014-R1-Feb 2019	
0.001 to 20 g	)	0.00013 g
>20 to 220 g	)	0.00035 g
)	
Range for F1 Std Mass)	
0.001 to 20 g	)	0.00013 g
>20 to 220 g	)	0.00035 g
>220 to 300 g	)	0.0053 g
>300 to 6000 g	)	0.058 g
>6 to 20 kg	)	0.13 g
>20 to 60 kg	)	3.1 g
B. TEMPERATURE		
Temperature Enclosure (by RTD)		
a. Oven / Incubator	) CL/CAL/SOP-07-R4-	
20°C to 80°C	) SEP2021	1.1 °C
80°C to 150°C	)	1.4 °C
150°C to 200°C	)	3.4 °C
b. Water Bath (by RTD)	) CL/CAL/SOP-08-R2-	
20°C to 100°C	) Oct2020	0.7 °C
C. VIBRATION		
Vibration Monitors		
a. Transverse Axis	) CAL-S015-R2-Oct 2019	
b. Vertical Axis)	
c. Longitudinal Axis)	
25.4mm/sec @ 2Hz		1.2%
25.4mm/sec @ 4Hz		1.2%
25.4mm/sec @ 10Hz		1.2%
25.4mm/sec @ 30Hz		1.2%
25.4mm/sec @ 40Hz		1.2%
25.4mm/sec @ 60Hz		1.2%

* CMC is expressed as an expanded uncertainty estimated at a level of confidence of approximately 95%.

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Approved signatories :

Category A: Mechanical	Category B: Temperature	Category C: Vibration
Mr Chai They Jhan	- For A2 to A5 and B	
Mr Benedict Lim	- For all items	
Mr R. Arunprasath	- For A1 and B	

Note :

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid calibrations. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.