MINSEN Testing (Hong Kong) Limited
明晟檢測(香港)有限公司

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Main Laboratory	:	Units C & D, 12/F, Tins' Centre Block II, 3 Hung Cheung Road, Tuen Mun, New Territories, Hong Kong 香港新界屯門洪祥路 3 號田氏中心 2 座 12 樓 C 及 D 室
Branch Laboratory	:	Unit F2, G/F, Tuen Mun Industrial Centre, 2 San Ping Circuit, Tuen Mun, New Territories, Hong Kong 香港新界屯門新平街 2 號屯門工業中心地下 F2 室
ACCREDITED TEST CATEGORIES **認可測試類別**	:	Calibration Services 校正服務 Construction Materials 建築材料

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Calibration Services 校正服務

ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED[@] 特定測試或量度的特性[@]	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Construction materials testing equipment		
- Cement grout flow cone	Verification in accordance with in-house procedure MTTP-CA-11-002 for the performance as specified in: ASTM C939-97 Cl. 8	
	Time of efflux of water from cone: 8.0 s	0.07 s
- Compacting bar	Verification in accordance with in-house procedure MTTP-CA-11-003 for the dimensional and mass requirements as specified in: CS1: 1990 Vol. 1 (AMD 1102) Cl. A9, or CS1: 2010 Vol. 1 Cl. A10	
	Dimensions of ramming face: 25 mm x 25 mm	0.1 mm
	Length: 380 mm	0.2 mm
	Mass: 1.8 kg	10 g
- Concrete test cube mould	Verification in accordance with in-house procedure MTTP-CA-11-001 for the dimensional requirements as specified in CS1: 1990 Vol. 1 (AMD 1102) Cl. A21 <***Excluding***> A21.2(e), or CS1: 2010 Vol. 1 Cl. A25	
	Dimensions: 100 mm or 150 mm	0.05 mm
	Thickness of base plate: minimum 10 mm	0.05 mm
	Flatness: not more than 0.03 mm or 0.06 mm	0.01 mm
	Squareness / Perpendicularity: 0.5 mm	0.02 mm
	Parallelism: 1 mm	0.05 mm

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Construction materials testing equipment (cont'd)		
- Curing tank	On-site verification for the following parameters in accordance with in-house procedure MTTP-CA-11-005	
	Temperature distribution at a range of (27 ± 3) ℃	0.1 K
	Efficiency of circulation	30 s
- Drying oven	On-site verification of temperature and temperature variation in accordance with AS 1289.0 - 1991 c. 4.2.1 (with modification) over the following range :	
	Temperature: 10 ℃ to 150 ℃	1.0 K
	On-site calibration for the following parameter in accordance with in-house procedure MTTP-CA-11-006	
	Evaporation rate: 0 g/hr to 50 g/hr	2.0 g/hr

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Construction materials testing equipment (cont'd)		
- Flow table apparatus for determination of flow of fresh concrete	Verification in accordance with in-house method MTTP-CA-11-009 for the dimensional and mass requirements as specified in CS 1: 2010 Vol. 1 Cl. A15.1, A15.2, A15.3 and A15.5	
	Flow table:	
	Dimensions of metal plate: 700 mm x 700 mm	1 mm
	Thickness: minimum 2 mm	0.3 mm
	Diameter of central circle: 210 mm	0.3 mm
	Fall height: 40 mm	0.3 mm
	Mass: 16 kg	5 g
	Mould:	
	Internal diameter of base: 200 mm	0.3 mm
	Internal diameter of top: 130 mm	0.3 mm
	Height: 200 mm	0.3 mm
	Thickness: minimum 1.5 mm	0.3 mm
	Tamping bar:	
	Dimensions of square section: 40 mm x 40 mm	0.3 mm
	Length of square section: 200 mm	0.3 mm
	Length of circular handle: 120 mm to 150 mm	0.3 mm
	Measuring jigs:	
	Dimensions: 50 mm x 50 mm x 100 mm	0.3 mm
- Rebound hammer	Calibration of rebound value in accordance with in-house procedure MTTP-CA-11-008 using an anvil complying with BS EN 12504-2: 2001 Cl. 4.2	1 rebound count

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Construction materials testing equipment (cont'd)		
- Test sieve of perforated plate	Verification in accordance with in-house procedure MTTP-CK-SR11-010A for the dimensional requirements as specified in BS 410: 1986	
	Aperture size: 4 mm to 125 mm	0.04 mm
	Bridge width: 0.9 mm to 20 mm	0.04 mm
	Verification in accordance with in-house procedure MTTP-CK-SR11-010D for the dimensional requirements as specified in BS 410-2: 2000, or ISO 3310-2: 1999	
	Round hole size: 1 mm to 4 mm	5 μm to 40 μm
	Round hole size: 4 mm to 125 mm	0.04 mm
	Square hole size: 4 mm to 125 mm	0.04 mm
	Pitch: 1 mm to 200 mm	0.05 mm
	Plate thickness: 0.5 mm to 4 mm	0.1 mm
- Test sieve of woven wire cloth	Verification in accordance with in-house procedure MTTP-CK-SR11-010B for the dimensional requirements as specified in BS 410: 1986	
	Aperture size: 0.032 mm to 4 mm	4 μm to 40 μm
	Wire diameter: 0.028 mm to 1.5 mm	4 μm to 40 μm
	Verification in accordance with in-house procedure MTTP-CK-SR11-010C for the dimensional requirements as specified in BS 410-1: 2000, or ISO 3310-1:2000	
	Aperture size: 0.02 mm to 125 mm	4 μm to 40 μm
	Wire diameter: 0.015 mm to 10 mm	4 μm to 40 μm

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Construction materials testing equipment (cont'd)		
- Slump cone	Verification in accordance with in-house procedure MTTP-CA-11-004 for the dimensional requirements as specified in CS1: 1990 Vol. 1 (AMD 1102) Cl. A4, or CS1: 2010 Vol. 1 Cl. A5	
	Wall thickness: minimum 1.5 mm	0.05 mm
	Internal diameter of base: 200 mm	0.2 mm
	Internal diameter of top: 100 mm	0.2 mm
	Height: 300 mm	0.2 mm
- Tamping rod	Verification in accordance with in-house procedure MTTP-CA-11-004 for the dimensional requirements as specified in CS1: 1990 Vol. 1 (AMD 1102) Cl. A5, or CS1: 2010 Vol. 1 Cl. A6	
	Diameter: 16 mm	0.1 mm
	Length: 600 mm	0.2 mm
- Vane shear tester	Calibration for torque in accordance with in-house procedure MTTP-CA-11-019 over the following range :	
	1 N·m to 50 N·m	1.5% of reading

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Electricity and magnetism - Time and frequency - Stopwatch	Calibration for time in accordance with in-house procedure MTTP-CA-08-001 over the following range : 1 s to 3600 s	 0.03 s

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Length and related quantities - Angle		
- Angle measuring device	Calibration for angle in accordance with in-house procedure MTTP-CA-01-013 over the following range : 0^o to 360^o	2.7 minute of arc
- Spirit level (cylindrical vial) 30 mm to 500 mm	Calibration for angle of tilt in accordance with BS 3509: 1962: App. A.2C over the following range : 0 mm/m to 25 mm/m	0.004 mm/m to 1.5 mm/m
- Square length of blade up to 500 mm length of stock up to 315 mm	Calibration for deviation from squareness in accordance with in-house procedure MTTP-CA-01-012 over the following range : -20 μm to 20 μm	11 μm

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Length and related quantities (cont'd) - Form		
- Straightedge of rectangular section 300 mm to 600 mm	Calibration for deviation from straightness in accordance with in-house procedure MTTP-CA-01-015 over the following range :	
	-30 µm to 30 µm	1.4 µm to 2 µm
- Surface plate diagonal length 300 mm to 1500 mm	Calibration for deviation from the flatness overall of the working surface in accordance with in-house procedure MTTP-CA-01-016 for the requirements as specified in BS 817: 1988 Cl. 9.2 over the following range :	
	-80 µm to 80 µm	4.2 µm to 6.6 µm
	Calibration for roughness of the working surface in accordance with in-house procedure MTTP-CA-01-016 over the following range :	
	0.1 µm to 5 µm	10 % of reading
	On-site calibration for deviation from the flatness overall of the working surface in accordance with in-house procedure MTTP-CA-01-016 for the requirements as specified in BS 817: 1988 Cl. 9.2 over the following range :	
	-80 µm to 80 µm	4.2 µm to 6.6 µm
	On-site calibration for roughness of the working surface in accordance with in-house procedure MTTP-CA-01-016 over the following range :	
	0.1 µm to 5 µm	10 % of reading

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Length and related quantities (cont'd) - Form (cont'd) - Surface texture sample	Calibration for roughness (R_a) in accordance with in-house procedure MTTP-CA-11-014 over the following range : 0.1 μm to 5.0 μm	 8 % of reading

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Length and related quantities (cont'd) - Length		
- Calibration foil	Calibration for thickness in accordance with in-house procedure MTTP-CA-11-015 over the following range :	
	10 µm to 1500 µm	4.1 µm
- Coating thickness gauge	Calibration for thickness using calibration foils in accordance with in-house method MTTP-CA-11-016 over the following range:	
	10 µm to 1500 µm	4.5 µm
- Dial gauge	Calibration for length in accordance with BS 907: 1965 App. B3 over the following ranges :	
	0 mm to 25 mm	5 µm
	0 mm to 50 mm	10 µm
	Calibration for length in accordance with AS 2103: 1978 App. A5 over the following ranges :	
	0 mm to 25 mm	5 µm
	0 mm to 50 mm	10 µm
	Calibration for length in accordance with GEOSPEC 3: 2001 Cl. A.3.4 over the following ranges :	
	0 mm to 25 mm	5 µm
	0 mm to 50 mm	10 µm

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Length and related quantities (cont'd)		
- Length (cont'd)		
- Engineer's steel measuring rule	Calibration for length in accordance with in-house procedure MTTP-CA-01-003 over the following range :	
	0 mm to 1 m	0.15 mm
- Extensometer		
- Grade C with gauge length from 100 mm to 600 mm - Grade D with gauge length from 50 mm to 600 mm - Grade E or F with gauge length from 25 mm to 600 mm	On-site calibration for displacement using calibration rig and verification of grade in accordance with BS 3846: 1970 (excluding determination of calibration factor) over the following range :	
	0.003 µm to 25 mm	1.2 µm to 24 µm
- Class 1 or Class 2 with gauge length from 25 mm to 600 mm	On-site calibration for displacement using calibration rig and verification of class in accordance with BS EN 10002-4: 1995; or BS EN ISO 9513: 2002; or BS EN ISO 9513: 2012 over the following range :	
	0.003 µm to 25 mm	1.2 µm to 24 µm

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Length and related quantities (cont'd)		
- Length (cont'd)		
- External micrometer	Calibration for travel length in accordance with BS 870: 1950 App. A over the following ranges :	
	0 mm to 25 mm	2 µm
	above 25 mm to 50 mm	2 µm
	above 50 mm to 75 mm	2 µm
	above 75 mm to 100 mm	2 µm
- Feeler gauge	Calibration for thickness of blade in accordance with in-house procedure MTTP-CA-01-007 for the requirements as specified in BS 957: Part 2: 1969 Cl. 6 over the following range :	
	0.03 mm to 1.00 mm	4 µm
-Displacement transducer and digimatic gauge	Calibration for length in accordance with in-house procedure MTTP-CA-01-009 over the following ranges :	
	0 mm to 25 mm	3 µm
	above 25 mm to 50 mm	4.2 µm
	above 50 mm to 100 mm	7.4 µm
	Calibration for length in accordance with GEOSPEC 3: 2001 Cl. A.3.4 over the following ranges :	
	0 mm to 25 mm	3 µm
	above 25 mm to 50 mm	4.2 µm
	above 50 mm to 100 mm	7.4 µm
- Measuring microscope	On-site calibration for length in accordance with in-house procedure MTTP-CA-01-010 over the following ranges :	
	travel distance of x-y measuring stage: 120 mm x 120 mm	3.1 µm

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Length and related quantities (cont'd) - Length (cont'd)		
- Measuring tape	Calibration for length in accordance with in-house procedure MTTP-CA-01-004 over the following range :	
	0 mm to 200 m	0.2 mm to 8 mm
- Steel measuring tape	Calibration for length in accordance with in-house method MTTP-CA-01-004 over the following range :	
	0 mm to 200 m	0.2 mm to 8 mm
- Thickness gauge	Calibration for length in accordance with in-house method MTTP-CA-01-011 over the following range :	
	0 mm to 10 mm	4 μm
- Calliper	Calibration for length in accordance with BS 887: 1982 App. B over the following ranges :	
	0 mm to 300 mm above 300 mm to 600 mm	20 μm 30 μm
- Height gauge	Calibration for length in accordance with BS 1643: 1983 App. A2 over the following ranges :	
	0 mm to 100 mm above 100 mm to 300 mm above 300 mm to 450 mm	25 μm 35 μm 40 μm
- Water lever meter (Dipmeter)	Calibration for length in accordance with in-house method MTTP-CA-01-004 over the following range :	
	0 mm to 200 m	0.48 mm to 19.2 mm

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Mass and related quantities - Force - Force testing machine - Compression testing machine	On-site calibration for compressive force using true force method and Grade 1.0 load cells and verification for grade in accordance with BS 1610: Part 1: 1992 over the following ranges :	
	0.2 kN to 1 kN	0.32 % of reading
	above 1 kN to 3000 kN	0.23 % of reading
	On-site calibration for compressive force using true force method or indicated force method and Class 1 load cells and verification for class in accordance with BS EN ISO 7500-1: 2004, or BS EN ISO 7500-1: 2015, or BS EN ISO 7500-1: 2018 over the following ranges :	
	0.2 kN to 1 kN	0.32 % of reading
	above 1 kN to 3000 kN	0.23 % of reading

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Mass and related quantities (cont'd) - Force (cont'd) - Force testing machine (cont'd) - Compression testing machine (cont'd)	On-site calibration for compressive force using Class 1.0 load cells and verification for class in accordance with BS EN 12390-4: 2000 Annex B; or CS1: 2010 Vol. 2 App. D over the following ranges :	
	0.2 kN to 1 kN	0.32 % of reading
	above 1 kN to 3000 kN	0.23 % of reading
	On-site verification by performing strain gauged column and proving test (stability test) in accordance with BS 1881: Part 115: 1986 (AMD 6536) App. A; or BS EN 12390-4: 2000 Annex A; or CS1: 1990 Vol.2 App. D; or CS1: 2010 Vol.2 App. D over the following range :	
	200 kN to 2000 kN	0.035 strain ratio

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ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED@ 特定測試或量度的特性@	CALIBRATION AND MEASUREMENT CAPABILITY (CMC)* 校準和測量能力*
Mass and related quantities (cont'd) - Force (cont'd) - Force testing machine (cont'd) - Uniaxial testing machine in compression mode	On-site calibration for compressive force using true force method and Grade 1.0 load cells and verification for grade in accordance with BS 1610: Part 1: 1985, or BS 1610: Part 1: 1992 over the following ranges :	
	0.2 kN to 1 kN	0.32 % of reading
	above 1 kN to 3000 kN	0.23 % of reading

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Mass and related quantities (cont'd) - Force (cont'd) - Force testing machine (cont'd) - Uniaxial testing machine in compression mode (cont'd)	On-site calibration for compressive force using true force method or indicated force method and Class 1 load cells and verification for class in accordance with BS EN ISO 7500-1: 2004, or BS EN ISO 7500-1: 2015, or BS EN ISO 7500-1: 2018 over the following ranges :	
	0.2 kN to 1 kN	0.32 % of reading
	above 1 kN to 3000 kN	0.23 % of reading

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Mass and related quantities (cont'd) - Force (cont'd) - Force testing machine (cont'd) - Uniaxial testing machine in tension mode	On-site calibration for tensile force using true force method and Grade 1.0 load cells and verification for grade in accordance with BS 1610: Part 1: 1985 over the following range :	
	0.2 kN to 2000 kN	0.32 % of reading
	On-site calibration for tensile force using true force method or indicated force method and Class 1 load cells and verification for class in accordance with BS EN ISO 7500-1: 2004, or BS EN ISO 7500-1: 2015, or BS EN ISO 7500-1: 2018 over the following range :	
	0.2 kN to 2000 kN	0.32 % of reading

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Mass and related quantities (cont'd) - Force (cont'd) - Impact testing machine	On-site indirect verification in accordance with BS EN 10045-2: 1993 Cl. 6, or BS EN ISO 148-2: 2016 Cl.7 over the following three absorbed energy levels : 1 J to 40 J above 40 to 150 J above 150 to 250 J	 1.6 J 4.2 J 10 J

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Mass and related quantities (cont'd) - Force (cont'd) - Load cell or other force transducer (in compression mode)	Calibration for compressive forces in accordance with in-house procedure MTTP-CA-03(2)-008 over the following ranges : 0.1 kN to 100 kN above 100 kN to 3000 kN On-site calibration for compressive forces in accordance with in-house procedure MTTP-CA-03(2)-008 over the following ranges : 0.1 kN to 100 kN above 100 kN to 3000 kN Calibration for compressive force in accordance with GEOSPEC 3: 2001 Cl. A.3.1 over the following range : 0.1 kN to 100 kN On-site calibration for compressive force in accordance with GEOSPEC 3: 2001 Cl. A.3.1 over the following range : 0.1 kN to 100 kN	 0.15 % to 0.33 % of reading 0.5 % of reading 0.15 % to 0.33 % of reading 0.5 % of reading 0.15 % to 0.33 % of reading 0.15 % to 0.33 % of reading
- Load cell or other force transducer (in tension mode)	Calibration for tensile forces in accordance with in-house procedure MTTP-CA-03(2)-008 over the following range : 0.1 kN to 100 kN On-site calibration for tensile forces in accordance with in-house procedure MTTP-CA-03(2)-008 over the following range : 0.1 kN to 100 kN	 0.15 % to 0.33 % of reading 0.15 % to 0.33 % of reading

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Mass and related quantities (cont'd) - Force (cont'd)		
- Proving ring	Calibration for compressive force in accordance with in-house procedure MTTP-CA-03(2)-008A over the following range :	
	0.1 kN to 100 kN	0.25 % to 0.4 % of reading
	Calibration for compressive force in accordance with GEOSPEC 3: 2001 Cl. A.3.1 over the following range :	
	0.1 kN to 100 kN	0.25 % to 0.4 % of reading
- Push-pull gauge (in compression and tension mode)	Calibration for compressive and tensile forces using standard weights in accordance with in-house procedure MTTP-CA-03(2)-009 over the following ranges :	
	0.01 kgf to 0.5 kgf above 0.5 kgf to 5 kgf	0.001 kgf 0.2 % of reading

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Mass and related quantities (cont'd) - Hardness - Hardness sample	Calibration for hardness in accordance with BS EN ISO 6508-1: 2005 cl. 7 over the following ranges : Rockwell Scale 20 HRB to 100 HRB 20 HRC to 70 HRC Calibration for hardness in accordance with BS EN ISO 6507-1: 2005 cl. 7 over the range : Vickers Scale 210 HV30 to 730 HV30 Calibration for hardness in accordance with BS EN ISO 6506-1: 2005 cl. 7 over the range : Brinell Scale 200 HBW to 400 HBW	 2.5 HRB 1.9 HRC 3.7 % of reading 3.1 % of reading

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Mass and related quantities (cont'd) - Hardness (cont'd) - Hardness testing machine	On-site indirect verification of testing machine for Rockwell hardness scale in accordance with BS EN ISO 6508-2: 2005 Cl. 5 over the following ranges :	
	20 HRB to 100 HRB	1.8 HRB
	20 HRC to 70 HRC	1.4 HRC
	On-site indirect verification of testing machine for Vickers hardness scale in accordance with BS EN ISO 6507-2: 2005 Cl. 5 over the following range :	
	210 HV30 to 730 HV30	2.8 % of reading
	On-site indirect verification of testing machine for Brinell hardness scale in accordance with BS EN ISO 6506-2: 2005 Cl. 5 over the following range :	
	200 HBW to 400 HBW	2.7 % of reading

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Mass and related quantities (cont'd) - Pressure - Pressure gauge	Calibration for pressure using oil as pressure medium in accordance with in-house procedure MTTP-CA-03(3)-002 over the following range :	
	20 kPa to 40 kPa	3 % of reading
	above 40 kPa to 100 kPa	1.5 % of reading
	above 100 kPa to 200 kPa	0.8 % of reading
	above 200 kPa to 70000 kPa	0.16 % of reading
	On-site calibration for pressure using oil as pressure medium in accordance with in-house procedure MTTP-CA-03(3)-002 over the following range :	
	20 kPa to 40 kPa	3 % of reading
	above 40 kPa to 100 kPa	1.5 % of reading
	above 100 kPa to 200 kPa	0.8 % of reading
	above 200 kPa to 70000 kPa	0.16 % of reading
	Calibration for pressure using water as pressure medium in accordance with in-house procedure MTTP-CA-03(3)-002 over the following range :	
	20 kPa to 40 kPa	3 % of reading
	above 40 kPa to 100 kPa	1.5 % of reading
	above 100 kPa to 200 kPa	0.8 % of reading
	above 200 kPa to 1000 kPa	0.16 % of reading
	On-site calibration for pressure using water as pressure medium in accordance with in-house procedure MTTP-CA-03(3)-002 over the following range :	
	20 kPa to 40 kPa	3 % of reading
	above 40 kPa to 100 kPa	1.5 % of reading
	above 100 kPa to 200 kPa	0.8 % of reading
	above 200 kPa to 1000 kPa	0.16 % of reading

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Mass and related quantities (cont'd) - Pressure (cont'd) - Pressure gauge (cont'd)	Calibration for pressure using water as pressure medium in accordance with GEOSPEC 3: 2001 Cl. A.3.2, over the following range :	
	20 kPa to 40 kPa	3 % of reading
	above 40 kPa to 100 kPa	1.5 % of reading
	above 100 kPa to 200 kPa	0.8 % of reading
	above 200 kPa to 1000 kPa	0.16 % of reading
	On-site calibration for pressure using water as pressure medium in accordance with GEOSPEC 3: 2001 Cl. A.3.2, over the following range :	
	20 kPa to 40 kPa	3 % of reading
	above 40 kPa to 100 kPa	1.5 % of reading
	above 100 kPa to 200 kPa	0.8 % of reading
	above 200 kPa to 1000 kPa	0.16 % of reading
	Calibration for gauge pressure using gas as pressure medium in accordance with in-house procedure MTTP-CA-03(3)-002 over the following range :	
	5 kPa to 20 kPa	3 % of reading
	above 20 kPa to 40 kPa	1 % of reading
	above 40 kPa to 6000 kPa	0.16 % of reading
	On-site calibration for gauge pressure using gas as pressure medium in accordance with in-house procedure MTTP-CA-03(3)-002 over the following range :	
	5 kPa to 20 kPa	3 % of reading
	above 20 kPa to 40 kPa	1 % of reading
	above 40 kPa to 6000 kPa	0.16 % of reading

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Mass and related quantities (cont'd)		
- Pressure (cont'd)		
- Vacuum gauge	Calibration for pressure using gas as pressure medium in accordance with in-house procedure MTTP-CA-03(3)-002 over the following range :	
	-5 kPa to -20 kPa	3 % of reading
	above -20 kPa to -40 kPa	1 % of reading
	above -40 kPa to -100 kPa	0.16 % of reading
- Torque		
- Torque wrench	Calibration for torque in accordance with in-house procedure MTTP-CA-11-013 over the following ranges :	
	10 N·m to 150 N·m	1.5 % of reading
	above 150 N·m to 1000 N·m	1 % of reading

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Mass and related quantities (cont'd) - Mass - Electronic balance	Calibration for mass using following OIML Class standard weights (1) E1 weights from 1 mg to 500 g (2) F1 weights from 1 g to 20 kg (3) M1 weights from 1 kg to 50 kg in accordance with in-house procedure MTTP-CA-03(1)-001 over the following ranges :	
	1 mg to 220 g	0.02 mg to 0.24 mg
	above 220 g to 1000 g	0.24 mg to 2 mg
	above 1 kg to 10 kg	2 mg to 24 mg
	above 10 kg to 25 kg	24 mg to 50 mg
	above 25 kg to 60 kg	0.05 g to 0.28 g
	above 60 kg to 150 kg	0.28 g to 11 g
	On-site calibration for mass using following OIML Class standard weights (1) E1 weights from 1 mg to 500 g (2) F1 weights from 1 g to 20 kg (3) M1 weights from 1 kg to 50 kg in accordance with in-house procedure MTTP-CA-03(1)-001 over the following ranges :	
	1 mg to 220 g	0.02 mg to 0.24 mg
	above 220 g to 1000 g	0.24 mg to 2 mg
	above 1 kg to 10 kg	2 mg to 24 mg
	above 10 kg to 25 kg	24 mg to 50 mg
	above 25 kg to 60 kg	0.05 g to 0.28 g
	above 60 kg to 150 kg	0.28 g to 11 g

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Mass and related quantities (cont'd) - Mass (cont'd) - Weight	Calibration for mass by direct measurement in accordance with in-house procedure MTTP-CA-03(1)-002 over the following ranges :	
	1 mg to 50 g	0.11 mg
	above 50 g to 200 g	1.1 mg
	above 200 g to 1 kg	11 mg
	above 1 kg to 20 kg	0.12 g
	above 20 kg to 50 kg	0.82 g
	Calibration for mass by comparison with reference mass in accordance with in-house procedure MTTP-CA-03(1)-002 over the following ranges :	
	1 mg to 20 g	0.06 mg
	above 20 g to 50 g	0.1 mg
	above 50 g to 200 g	0.4 mg
	above 200 g to 1 kg	5 mg
	above 1 kg to 10 kg	11 mg
	above 10 kg to 20 kg	20 mg
	above 20 kg to 50 kg	0.3 g

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Thermometry - Humidity - Hygrometer	Calibration for relative humidity within the temperature range of 5 ℃ to 50 ℃ in accordance with in-house procedure MTTP-CA-02-004 over the following range : 10 %rh to 90 %rh	 2 %rh
- Temperature and humidity chamber	On-site calibration for relative humidity within the temperature range of 20℃ to 30℃ in accordance with in-house procedure MTTP-CA-11-017 over the following range : 10 %rh to 90 %rh On-site calibration for relative humidity within the temperature range of 30℃ to 85℃ in accordance with in-house procedure MTTP-CA-11-017 over the following range : 10 %rh to 85 %rh	 3.5 %rh 4.5 %rh

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Thermometry		
- Temperature		
- Temperature and humidity chamber	On-site calibration for temperature in accordance with in-house procedure MTTP-CA-11-017 over the following range :	
	-25 ℃ to 0 ℃	0.6 K
	above 0 ℃ to 30 ℃	0.3 K
	above 30 ℃ to 70 ℃	0.5 K
	above 70 ℃ to 150 ℃	1.3 K
- Dial thermometer	Calibration for temperature in accordance with in-house procedure MTTP-CA-02-002 over the following ranges :	
	0 ℃ to 100 ℃	1.7 K
	above 100 ℃ to 500 ℃	4.0 K
- Electronic thermometer	Calibration for temperature in accordance with in-house procedure MTTP-CA-02-001 over the following ranges :	
	-40 ℃ to 150 ℃	0.1 K
	above 150 ℃ to 300 ℃	0.3 K
	above 300 ℃ to 500 ℃	1.9 K
	above 500 ℃ to 1200 ℃	4.0 K

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Thermometry		
- Temperature		
- Infrared thermometer (working wavelength from 8 μm to 14 μm)	Calibration for temperature in accordance with in-house procedure MTTP-CA-02-005 at emissivity of 1.0 over the following ranges:	
	35 ℃ to 100 ℃	2.3 K
	above 100 ℃ to 250 ℃	3.0 K
	above 250 ℃ to 480 ℃	4.0 K
- Liquid-in-glass thermometer	Calibration for temperature in accordance with in-house procedure MTTP-CA-02-003 over the following ranges :	
	-30 ℃ to 0 ℃	0.3 K
	above 0 ℃ to 100 ℃	0.1 K
	above 100 ℃ to 150 ℃	0.12 K

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Construction Materials 建築材料

ITEM TESTED OR MEASURED 測試或量度項目	SPECIFIC TEST OR PROPERTY MEASURED 特定測試或量度的特性	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED 規範、標準方法或應用技術
Adhesive	Pull-off test of tile adhesive	In-house method MTTP-FT-02-001
	Pull-off test of tiles	In-house method MTTP-FT-02-002
	Pull-off test of render	In-house method MTTP-FT-02-003
	Pull-off test of concrete	Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance and Building Materials Specification Part D Cl. 4.1.3
	Pull-off test of repair mortar	Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance and Building Materials Specification Part D Cl. 2.1.15 Method 1
Concrete	Sampling fresh concrete on site	CS1: 2010 + Amd. No. 1/2017 Section 1
	Slump of fresh concrete	BS EN 12350-2: 2009 CS1: 2010 + Amd. No. 1/2017 Section 2 Part 1
	Flow table test	CS1: 2010 Section 2 Part IV
	Making test cubes from fresh concrete	BS EN 12390-2: 2009 CS1: 2010 Section 7
	Mixing and sampling of fresh concrete	CS1: 2010 Section 11
	Obtaining core samples	CS1: 2010 Section 15
	Temperature measurement of fresh concrete	BS 5328: Part 4: 1990 Cl. 3.4(b)
	Water absorption	BS 1881: Part 122: 1983 + Amd. 6108

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Concrete (diagnostic)	Carbonation test	BS EN 14630: 2006 Hong Kong Housing Authority Materials Testing Services (2022/2024) for Maintenance & Building Materials Specification Part D Cl. 4.3.1 (Method 1 & Method 2)
	Covermeter survey	BS 1881: Part 204: 1988
	Surface hardness measurement	BS 1881: Part 202: 1986 BS EN 12504-2: 2001 BS EN 12504-2: 2012
Grout	Bleeding and free expansion	ASTM C940-10a ASTM C940-16 General Specification for Civil Engineering Works (2006) Vol. 2 Cl. 17.60 Hong Kong Housing Authority Specification Library (2022) PIL1.T320.9
	Flow of grout for preplaced-aggregate concrete by flow cone method	ASTM C939-10 ASTM C939-16a ASTM C939-16a with modification (using 19 mm diameter discharge tube flow cone)

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Metallic materials (chemical analysis)	Elemental composition : -	
Iron (chemical analysis)	Total carbon content	BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A)
	Total sulphur content	BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A)
	Nitrogen content	BS EN ISO 15351: 2010 ISO 15351: 1999
Steel (chemical analysis)	Total carbon content	BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A)
	Total sulphur content	BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A)
	Nitrogen content	BS EN ISO 15351: 2010 ISO 15351: 1999
	Copper, Chromium, Manganese, Nickel Molybdenum, Phosphorus, Vanadium	In-house method MTTP-CH-10-004 (ICP-OES)
Steel reinforcing bar (Product analysis grade 250, 500B, & 500C) (chemical analysis)	Carbon, Sulphur, Phosphorus, Nitrogen, Nitrogen binding element (Vanadium), Copper and Carbon Equivalent Value	CS2: 2012 Cl. 1.5.1 in conjunction with SCCT Technical Note No. 3 *Test procedure for compliance testing of total carbon and sulphur*: BS EN ISO 15350: 2010 (Method A) ISO 15350: 2000 (Method A) *Test procedure for compliance testing of nitrogen*: BS EN ISO 15351: 2010 ISO 15351: 1999 *Test procedure for compliance testing of copper, phosphorous & nitrogen binding element (vanadium)*: In-house Method MTTP-CH-10-004 (ICP-OES) *Test procedure for compliance testing of carbon equivalent value*: CS2: 2012 Cl. 1.5.1

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Steel reinforcing bar (Product analysis grade 250, 500B, & 500C) (chemical analysis) (Cont'd)	Carbon equivalent value	BS 4449:2005 + A2:2009 Cl. 7.1 In-house method MTTP-CH-10-005B (by calculation)
Carbon steel and low alloy steel (chemical analysis)	Carbon, Sulphur, Nitrogen, Chromium, Copper, Manganese, Molybdenum, Phosphorus, Nickel, Vanadium, Silicon, Niobium, Titanium, Aluminum	In-house method MTTP-CH-10-006 (Spark-OES)
Aggregates (chemical analysis)	Acid-soluble choride content	CS3: 2013 Cl. 21.4
	Water-soluble chloride ion content	CS3: 2013 Cl. 21.3 BS 812: Part 117: 1988 Excluding Cl.4
	Acid-soluble sulphate content	CS3: 2013 Cl. 21.5
	Total sulphate content (acid extraction)	BS 812: Part 118: 1988 Cl.6 Excluding Cl.4
	Total sulphur content	CS3: 2013 Cl. 21.6
	Presence of humus	CS3: 2013 Cl. 21.7
	Acid-soluble material in fine aggregate	BS 812: Part 119: 1985 Excluding Cl. 4
Concrete (chemical analysis)	Treatment of samples	CS 1: 2010 Section 21.4
	Chloride content	CS 1: 2010 Section 21.10.2
	Chloride content (expressed as percentage by mass of concrete)	CS 1: 2010 Section 21.10.2 in conjunction with in-house method MTTP-CH-05-002 (by calculation)
	Determination of chloride content in hardened concrete	BS EN 14629: 2007 Method A
	Sulphate content	CS 1: 2010 Section 21.10.3
	Sulphate content (expressed as percentage by mass of concrete)	CS 1: 2010 Section 21.10.3 in conjunction with in-house method MTTP-CH-05-003 (by calculation)
	Cement and Aggregate content (By calcium oxide determination)	CS 1: 2010 Section 21.6.4, 21.6.6 & 21.6.7

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Cement (chemical analysis)	Chloride ion content	BS EN 196: Part 21: 1992 Cl. 4
	Residue insoluble in hydrochloric acid and sodium carbonate	BS EN 196: Part 2: 1995 Cl. 9
	Loss-on-ignition (L.O.I.)	BS EN 196: Part 2: 1995 Cl. 7
	Manganese content (Mn)	BS EN 196: Part 2: 1995 Cl. 12
	Manganese content (as MnO)	BS EN 196: Part 2: 1995 Cl. 12
	Manganese content (as Mn_2O_3)	BS EN 196: Part 2: 1995 Cl. 12
	Impure silica content	BS EN 196: Part 2: 1995 Cl. 13.2 & Cl. 13.3
	Pure silica content	BS EN 196: Part 2: 1995 Cl. 13.6
	Soluble silica content	BS EN 196: Part 2: 1995 Cl. 13.7 and Cl. 13.8
	Total silica content (SiO_2)	BS EN 196: Part 2: 1995 Cl. 13.9
	Sulfate content (as SO_3)	BS EN 196: Part 2: 1995 Cl. 8
	Alkali content	BS EN 196: Part 21: 1992 Cl. 8 (alternative method)

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Manhole steps	Bending test of manhole steps	BS 1247: Part 1: 1990 App. A
	Pull-out test of manhole steps	BS 1247: Part 1: 1990 App. B
	Twist test of manhole steps	BS 1247: Part 1: 1990 Cl. 7.1
	Pull-out test of steps for underground man entry chambers	BS EN 13101: 2002 Annex D
	Twist test of steps for underground man entry chambers	BS EN 13101: 2002 Annex A
	Vertical loading test of steps for underground man entry chambers	BS EN 13101: 2002 Annex B
Soil (Phase I)	Moisture content by oven-drying at 45°C ± 5°C	GEOSPEC 3: 2001 Test 5.1
	Moisture content by oven-drying at 105°C ± 5°C	GEOSPEC 3: 2001 Test 5.2
	Comparative test for the determination of moisture content by oven-drying	GEOSPEC 3: 2001 Test 5.3
	Liquid limit, plastic limit and plasticity index	GEOSPEC 3: 2001 Test 6.1
	Liquidity index	GEOSPEC 3: 2001 Test 6.2
	Particle density by gas jar method	GEOSPEC 3: 2001 Test 7.1
	Particle density by small pyknometer method	GEOSPEC 3: 2001 Test 7.2
	Particle size distribution by wet sieving (with dispersant)	GEOSPEC 3: 2001 Test 8.1
	Particle size distribution by wet sieving (without dispersant)	GEOSPEC 3: 2001 Test 8.2
	Particle size distribution by hydrometer (with dispersant)	GEOSPEC 3: 2001 Test 8.5
	Particle size distribution by hydrometer (without dispersant)	GEOSPEC 3: 2001 Test 8.6

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Soil (Phase I) (cont'd)	Construction of a continuous particle size distribution curve from the results of wet sieving and sedimentation tests	GEOSPEC 3: 2001 Test 8.7
	Dry density/moisture content relationship of soils containing particles which are not susceptible to crushing (using a 1000cc mould and 2.5 kg rammer)	GEOSPEC 3: 2001 Test 10.1
	Dry density/moisture content relationship of soils containing particles which are susceptible to crushing (using a 1000cc mould and 2.5 kg rammer)	GEOSPEC 3: 2001 Test 10.2
	Dry density/moisture content relationship of soils containing particles which are not susceptible to crushing (using a CBR mould and 2.5 kg rammer)	GEOSPEC 3: 2001 Test 10.3
	Dry density/moisture content relationship of soils containing particles which are susceptible to crushing (using a CBR mould and 2.5 kg rammer)	GEOSPEC 3: 2001 Test 10.4
	Dry density/moisture content relationship of soils containing particles which are not susceptible to crushing (using a 1000cc mould and 4.5 kg rammer)	GEOSPEC 3: 2001 Test 10.5
	Dry density/moisture content relationship of soils containing particles which are susceptible to crushing (using a 1000cc mould and 4.5 kg rammer)	GEOSPEC 3: 2001 Test 10.6
	Dry density/moisture content relationship of soils containing particles which are not susceptible to crushing (using a CBR mould and 4.5 kg rammer)	GEOSPEC 3: 2001 Test 10.7

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Soil (Phase I) (cont'd)	Dry density/moisture content relationship of soils containing particles which are susceptible to crushing (using a CBR mould and 4.5 kg rammer)	GEOSPEC 3: 2001 Test 10.8
	In-situ bulk density and in-situ dry density of soils by the sand replacement method suitable for fine- and medium-grained soils (with small pouring cylinder)	GEOSPEC 3: 2001 Test 11.1
	In-situ bulk density and in-situ dry density of soils by the sand replacement method suitable for fine-, medium-, and coarse-grained soils (with large pouring cylinder)	GEOSPEC 3: 2001 Test 11.2
	Relative compaction of fill material	GEOSPEC 3: 2001 Test 11.4 Buildings Department PNAP APP-15 (2005) Cl. 4 App. A
Soil (other)	Pull-out test of soil nails	General Specification for Civil Engineering Works (2006) Vol. 1 Cl. 7.138 General Specification for Civil Engineering Works (2020) Vol. 1 Cl. 7.144 GEOGUIDE 7 (2017) Cl. 6.3.2 Hong Kong Housing Authority Specification Library (2022) SLO.T315.9 & SLO.T320.9
	Soil nail performance	Architectural Services Department General Specification for Building (2022) Cl. 26.47

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Soil (chemical analysis)	Organic matter content	GEOSPEC 3: 2001 Test 9.1
	Mass loss on ignition	GEOSPEC 3: 2001 Test 9.2
	Water-soluble chloride content	GEOSPEC 3: 2001 Test 9.4
	pH value	GEOSPEC 3: 2001 Test 9.5
	Water-soluble sulphate content	GEOSPEC 3: 2001 Test 9.3
	Acid-soluble sulphate content	GEOSPEC 3: 2001 Test 9.3

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Structural fixings	Tensile test of anchors and dowel bars by incremental loading in the force range 1 kN – 800 kN	BS 5080: Part 1: 1993 Cl. 6, 7.1.1 & 7.1.3
	Tensile proof load test of anchors and dowel bars by incremental loading in the force range 1 kN – 800 kN	BS 5080: Part 1: 1993 Cl. 6, 7.1.1 & 7.1.3 with modifications
	Tensile proof load test of drilled-in anchors used for cantilevered structure/hanger/curtain wall remedial works by incremental loading in the force range 1 kN – 800 kN	Buildings Department PNAP APP-169 (Oct 2023) App. A
	Tensile proof load test of drilled-in anchors used for works other than cantilevered structure/ hanger/curtain wall remedial works in the force range 1 kN – 800 kN	Buildings Department PNAP APP-169 (Oct 2023) App. B
	Tensile proof load test for cementitious or polymer based grouted bolts or dowels or reinforcing bars works in the force range 1 kN – 800 kN	Buildings Department PNAP APP-169 (Oct 2023) App. C
	Shear test of anchors and dowel bars by incremental loading in the force range 1 kN – 800 kN	BS 5080: Part 2: 1986 + Amd. 7602 Cl. 4, 7.1, 7.2.1 & 7.2.3
	Shear proof load test of drilled-in anchors used for cantilevered structure/hanger/curtain wall remedial works by incremental loading in the force range 1 kN – 800 kN	Buildings Department PNAP APP-169 (Oct 2023) App. A
	Shear proof load test of drilled-in anchors used for works other than cantilevered structure/ hanger/curtain wall remedial works in the force range 1 kN – 800 kN	Buildings Department PNAP APP-169 (Oct 2023) App. B
	Shear proof load test cementitious or polymer based grouted bolts or dowel or reinforcing bars works in the force range 1 kN – 800 kN	Buildings Department PNAP APP-169 (Oct 2023) App. C

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Welds (non-destructive)	Liquid penetrant test (Colour contrast method)	BS 6443: 1984 + Amd. 4844 BS EN 571-1: 1997 BS EN ISO 3452-1: 2021 in conjunction with the following specification(s): BS 5135: 1984 Table 18 & 19 BS EN ISO 5817: 2007 Table 1 BS EN ISO 5817: 2014 Table 1 Buildings Department Code of Practice for the Structural Use of Steel (2005) Table 14.3b Buildings Department Code of Practice for the Structural Use of Steel (2011) Table 14.3b
	Magnetic particle test (Magnetic flow method, colour contrast method using permanent magnets & A.C. yokes)	BS 6072 : 1981 (1986) BS EN 1290 : 1998 + A2: 2003 BS EN ISO 9934-1: 2016 BS EN ISO 17638: 2009 BS EN ISO 17638: 2016 in conjunction with the following specification(s): BS 5135: 1984 Table 18 & 19 BS EN ISO 5817: 2007 Table 1 BS EN ISO 5817: 2014 Table 1 Buildings Department Code of Practice for the Structural Use of Steel (2005) Table 14.3b Buildings Department Code of Practice for the Structural Use of Steel (2011) Table 14.3b
	Ultrasonic test (Butt welds in plates and pipes, 'T' joint welds, nozzle welds and node welds)	BS 3923: Part 1: 1986 (Level 1, 2a, 2b & 3) BS EN 1714: 1998 (Level A, B, & C) BS EN ISO 17640: 2010 (Level A, B, & C) BS EN ISO 17640: 2018 (Level A, B, & C) in conjunction with the following specification(s): BS 5135: 1984 Table 18 & 19 BS EN ISO 5817: 2007 Table 1 BS EN ISO 5817: 2014 Table 1 Buildings Department Code of Practice for the Structural Use of Steel (2005) Table 14.3b Buildings Department Code of Practice for the Structural Use of Steel (2011) Table 14.3b

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Welds (non-destructive) (cont'd)	Visual examination	BS 5289: 1976 BS EN 970: 1997 BS EN ISO 17637: 2011 BS EN ISO 17637: 2016 in conjunction with the following specification(s): BS 5135: 1984 Table 18 & 19 BS EN ISO 5817: 2007 Table 1 BS EN ISO 5817: 2014 Table 1 Buildings Department Code of Practice for the Structural Use of Steel (2005) Table 14.3b Buildings Department Code of Practice for the Structural Use of Steel (2011) Table 14.3b
	Visual examination and bend test on stud connectors	<Visual examination as follows:> BS 5289: 1976 BS EN 970: 1997 BS EN ISO 17637: 2011 BS EN ISO 17637: 2016 <together with the following bend test method:> BS 5400: Part 6: 1999 + Corr. 1: 2002 Cl. 5.5.4(b) BS 5950: Part 3: 1990 Cl. A.3.2 BS EN ISO 14555: 2017 Cl. 11.2, 11.3 (excluding Torque wrench method), 12.2 & 12.3 Buildings Department Code of Practice for the Structural Use of Steel (2005) Cl. 14.3.7.3 Buildings Department Code of Practice for the Structural Use of Steel (2011) Cl. 14.3.7.3

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Concrete	Curing of test specimens	CS1: 2010 Section 10
	Compressive strength of concrete cubes in the force range 50 kN - 3000 kN	CS1: 2010 Section 12
	Compressive strength of concrete cores in the force range 50 kN - 3000 kN	CS1: 2010 Section 15
	Density of hardened concrete	CS1: 2010 Section 16
Grout	Compressive strength of grout cubes in the force range 20 kN to 3000 kN	CS1: 2010 Section 12

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Metallic materials	Bond property of steel reinforcing bars by surface geometry measurement	CS2: 2012 (Rev. 6) Cl. 6.1 & 6.7.2 in conjunction with the following specification(s): BS 4449: 2005 + A2: 2009 Cl. 7.4 & 9
	Breaking force test of steel wire ropes in the force range of 2 kN to 2000 kN	BS EN 12385-1: 2002 + A1: 2008 Cl. 6.4.1 ISO 3108: 2017 in conjunction with the following specification(s): BS EN 12385-2: 2002 + A1: 2008 BS EN 12385-3: 2002 + A1: 2008 BS EN 12385-4: 2002 + A1: 2008 BS EN 12385-5: 2002 BS EN 12385-6: 2004 BS EN 12385-7: 2002 BS EN 12385-8: 2002 BS EN 12385-9: 2002 BS EN 12385-10: 2003 + A1: 2008 ISO 2408: 2017
	Charpy V-notch impact test	BS 131-2: 1972 BS EN 10045-1: 1990 BS EN ISO 148-1: 2016 in conjunction with the following specification(s): BS 4360: 1986 Cl. 27 BS 4360: 1990 Cl. 25 to 27 BS EN 10025-1: 2004 Cl. 10.2.2 BS EN 10025-2: 2004 Cl. 10.2 & Table 9 BS EN 10025-3: 2004 Cl. 10.2, Table 6 & 7 BS EN 10025-4: 2004 Cl. 10.2, Table 6 & 7 BS EN 10025-5: 2004 Cl. 10.2, Table 5 BS EN 10025-6: 2004 + A1: 2009 Cl. 10.2, Table 6 & 7 BS EN 10210-1: 2006 Cl. 6.6.2, 9.2.3, Table A.3 & B.3 BS EN 10219-1: 2006 Cl.6.7.2, 9.2.3, Table A.3, B.4 & B.5
	Dimensions of forged steel shackles	BS EN 13889: 2003 + A1: 2008 Cl. 5.1 & Table 2
	Mass per metre of steel reinforcing bars, wire rods and wires	BS EN ISO 15630-1: 2002 Cl. 12 CS2: 2012 (Rev. 6) Cl. 6.1 & 6.2 in conjunction with the following specification(s): BS 4449: 1997 Cl. 5 & Annex B.1 BS 4449: 2005 + A2: 2009 Cl. 7.2.2, 7.3 & 9 BS 4482: 1985 Cl. 9 & App. A BS 4482: 2005 + Amd. 1: 2007 Cl. 7.3 & 9

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Metallic materials (cont'd)	Mass per metre square, pitch and dimension of steel fabrics for reinforcement of concrete	BS 4483: 1998 Cl. 6 & 10 BS EN ISO 15630-1: 2002 Cl. 12 in conjunction with the following specification(s): BS 4483: 2005 Cl. 7.3, 8.1.3.2, 9 & BS 4449: 2005 + A2: 2009 Cl. 7.3 & 9
	Proof load test of stainless steel nuts in the force range 2 kN – 2000 kN	BS EN ISO 898-2: 2012 Cl. 9.1 in conjunction with the following specification(s): BS EN ISO 3506-2: 2020 Cl. 10.1
	Proof load test of steel nuts in the force range 2 kN – 2000 kN	BS 3692: 2014 Annex C.1 BS 4190: 2014 Annex A.1 BS EN ISO 898-2: 2012 Cl. 9.1
	Proof load test of unmachined (finished) bolts, screws and studs in the force range 2 kN – 2000 kN	BS EN ISO 898-1: 2013 Cl. 9.6 in conjunction with the following specification(s): BS 3692: 2014 Cl. 14 & 21
	Rebend test of reinforcing bars, wire rods, welded fabrics or cold reduced wires for reinforcement of concrete	BS EN ISO 15630-1: 2002 Cl. 7 CS2: 2012 (Rev. 6) Cl. 6.1 & 6.5 in conjunction with the following specification(s): BS 4449: 1997 Cl. 11.3 & App. E.1.6 BS 4449: 2005 + A2: 2009 Cl. 7.2.5 & 9 BS 4482: 1985 Cl. 12.2 & App. C.5 BS 4482: 2005 + Amd. 1: 2007 Cl. 7.2.4 & 9 BS 4483: 1998 Cl. 13.1 BS 4483: 2005 Cl. 7.2.5 & 8.1.3.2 & 9
	Static tension test, static compression test, cyclic tension & compression tests for mechanical connector systems (Type 2 Splice) for steel reinforcing bars in the force range 10 kN - 2000 kN	ICC Evaluation Service, Inc. AC133 (Approved May 2008, Effective 1 Jun 2008) Cl. 4.1.2 with modifications ICC Evaluation Service, Inc. AC133 (Approved Jan 2010, Effective 1 Jul 2010) Cl. 4.1.2 with modifications ICC Evaluation Service, Inc. AC133 (Approved Oct 2015) Cl. 4.1.2 with modifications in conjunction with the following specification(s): Buildings Department Code of Practice for Structural Use of Concrete (2013) Cl. 3.2.8.4(b), (c) & (d)
	Static tensile test of forged steel shackles in the force range 2 kN – 2000 kN	BS EN 13889: 2003 + A1: 2008 Cl. 6.2.3 & Table 4

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Construction Materials 建築材料		
ITEM TESTED OR MEASURED 測試或量度項目	**SPECIFIC TEST OR PROPERTY MEASURED** 特定測試或量度的特性	**SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED** 規範、標準方法或應用技術
Metallic materials (cont'd)	Tensile test of high tensile 7-wire strands in the force range 10 kN - 2000 kN	BS 18-2: 1971 BS EN ISO 6892-1: 2019 Cl. 10.3.2 & 10.3.3 Methods A & B BS EN ISO 15630-3: 2002 Cl. 5 BS EN ISO 15630-3: 2010 Cl. 5 BS EN ISO 15630-3: 2019 Cl. 5 in conjunction with the following specification(s): BS 5896: 1980 App. A BS 5896: 2012 Cl. 7.2.2
	Tensile test of metallic materials in the force range 2 kN - 2000 kN	BS 18: 1987 BS EN 10002-1: 2001 BS EN ISO 6892-1: 2009 Cl. 10.3 & 10.4 Methods A & B BS EN ISO 6892-1: 2016 Cl. 10.3.2 & 10.3.3 Methods A1, A2 & B BS EN ISO 6892-1: 2019 Cl. 10.3.2 & 10.3.3 Methods A & B in conjunction with the following specification(s): BS 4360: 1986 Cl. 23 BS 4360: 1990 Cl. 23 BS EN 10025-1: 2004 Cl. 7.3.1, 9.2.3.2 & 10.2.1 BS EN 10025-2: 2004 Cl. 10.2 & Table 7 BS EN 10025-3: 2004 Cl. 10.2 & Table 5 BS EN 10025-4: 2004 Cl. 10.2 & Table 5 BS EN 10025-5: 2004 Cl. 10.2 & Table 4 BS EN 10025-6: 2004 + A1: 2009 Cl. 10.2, Table 5 BS EN 10210-1: 2006 Cl. 6.6.1, 9.2.1 & 9.2.2 BS EN 10219-1: 2006 Cl. 6.7.1, 9.2.1 & 9.2.2
	Tensile test & slip/permanent elongation test of mechanical couplers for reinforcing bar in the force range 2 kN - 2000 kN	BS EN ISO 6892-1: 2009 Cl. 10.3 & 10.4 Methods A & B & ISO 15835-2: 2018 Cl. 5.4 excluding Cl. 5.4.4 BS EN ISO 6892-1: 2019 Cl. 10.3.2 & 10.3.3 Methods A & B & ISO 15835-2: 2018 Cl. 5.4 excluding Cl. 5.4.4 in conjunction with the following specification(s): ISO 15835-1: 2018 Cl. 5.4.1 & 5.4.2 BS 8110: Part 1: 1997 Cl. 3.12.8.16.2 Buildings Department Code of Practice for Structural Use of Concrete (2004) Cl. 3.2.8.2 Buildings Department Code of Practice for Structural Use of Concrete (2013) Cl. 3.2.8.3 General specification for Civil Engineering Works (2006) Vol. 2 Cl. 15.35 General specification for Civil Engineering Works (2020) Vol. 2 Cl. 15.35

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Construction Materials 建築材料		
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Metallic materials (cont'd)	Tensile test of machined bolts and screws in the force range 2 kN – 2000 kN	BS EN ISO 6892-1: 2019 Cl. 10.3.2 & 10.3.3 Methods A & B in conjunction with the following specification(s): BS 3692: 2014 Cl. 14 & 21 BS 4190: 2014 Cl. 15 & 21 BS EN ISO 898-1: 2013 Cl. 9.7
	Tensile test of unmachined (finished) bolts and screws in the force range 2 kN – 2000 kN	BS EN ISO 6892-1: 2019 Cl. 10.3.2 & 10.3.3 Methods A & B in conjunction with the following specification(s): BS 3692: 2014 Cl. 14 & 21 BS 4190: 2014 Cl. 15 & 21 BS EN ISO 898-1: 2013 Cl. 9.2
	Tensile test of stainless steel bolts, screws and studs in the force range 2 kN – 2000 kN	BS EN ISO 3506-2: 2020 Cl. 10.1
	Tensile test of reinforcing bars, wire rods, welded fabrics or cold reduced wires for reinforcement of concrete in the force range 2 kN - 2000 kN	BS EN 10002-1: 2001 BS EN ISO 6892-1: 2009 Cl. 10.3 & 10.4 Methods A & B in conjunction with the following specification(s): BS 4449: 1997 Cl. 11.1 & 11.2 BS 4449: 2005 + A2: 2009 Cl. 7.2.2, 7.2.3 & 8.1.3.1 & 9 BS 4482: 1985 Cl. 12.1 & App. C.3 BS 4482: 2005 + Amd. 1: 2007 Cl. 8.1.3.1 & 9 BS 4483: 1998 Cl. 13.1 BS 4483: 2005 Cl. 7.2.2, 7.2.3, 8.1.3.1 & 9 BS EN ISO 15630-1: 2002 Cl. 5 BS EN ISO 15630-2: 2002 Cl. 5 CS2: 2012 (Rev. 6) Cl. 6.1 & 6.4
	Weld shear force test of steel fabrics for reinforcement of concrete	BS EN ISO 15630-2: 2002 Cl. 7 ISO 10287: 1992 in conjunction with the following specification(s): BS 4483: 2005 + Amd. 1: 2007 Cl. 7.2.2, 7.2.4 & 9 BS 4483: 1998 Cl. 13.2
	Test for deformation of forged steel shackles in the force range 2 kN – 2000 kN	BS EN 13889: 2003 + A1: 2008 Cl. 6.2.2 & Table 4