

# Schedule

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Certificate No. : LA-2008-0422-B

Issue No. : 17

Date : 24 January 2022

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FIELD OF TESTING : Civil Engineering Testing

<b>MATERIALS / PRODUCTS TESTED</b>	<b>TESTS / PROPERTIES</b>	<b>STANDARD METHODS / TECHNIQUES / EQUIPMENT</b>	<b>SIGNATORY</b>
<b>A. AGGREGATE</b>	1. Petrographic Examination of Aggregates for Concrete	BS EN 932-3:1997 BS 7943:1999 BS 812 Part 104:1994 ASTM C295/C295M-19	) LJP, SW ) ) ) )
	2. Potential Alkali Reactivity (Mortar Bar Method)	ASTM C1260-21	)
	3. Particle Size Distribution / Sieve Analysis	SS 73:1974 ASTM C136/C136M-19 BS 812 Part 103.1:1985 BS EN 933-1:2012 ASTM D546-17 (ASTM D242/D242M-19)	) LJP, SW, MAT ) ) ) ) )
	4. Fineness Modulus	ASTM C136/C136M-19	) )
	5. Clay, Silt and Dust (Decantation Method)	SS 73:1974 (Except Method A) BS 812 Part 103.1:1985 ASTM C117-17 BS EN 933-1:2012	) ) ) ) )
	6. Moisture Content (Oven Dried Method)	SS 73:1974 BS 812 Part 109:1990 BS EN 1097-5:2008	) ) )
	7. Bulk Density	BS EN 1097-3:1998 BS 812 Part 2:1995 SS 73:1974	) LJP, SW ) ) )
	8. Relative Density & Water Absorption	BS EN 1097-6:2013 BS 812 Part 2:1995 SS 73:1974 ASTM C127-15 ASTM C128-15 (Gravimetric Method)	) ) ) ) ) ) )

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<b>A. AGGREGATE</b>	9. Sampling	BS EN 932-1:1997 BS 812 Part 102:1989 SS 73:1974	) ) )
	10. Organic Impurities	ASTM C40/C40M-20 SS 73:1974	) LJP, SW )
	11. Shell Content	SS 73 Part 6:1992 BS 812 Part 106:1985 BS EN 933-7:1998	) ) )
	12. Flakiness Index	SS 73 Part 5.1:1992 BS EN 933-3:2012 BS 812 Part 105.1:1989	) ) )
	13. Elongation Index	SS 73:1974 BS 812 Part 105.2:1990	) )
	14. Impact Value	SS 73: 1974 BS 812 Part 112:1990	) )
	15. Crushing Value	SS 73: 1974 BS 812 Part 110:1990	) )
	16. 10% Fines Value	SS 73: 1974 BS 812 Part 111:1990	) )
	17. Los Angeles Abrasion	SS 73: 1974 ASTM C131/C131M-20 BS EN 1097- 2:2020 ASTM C535-16	) ) ) )
	18. Soundness Test	ASTM C88/C88M-18 BS 812 Part 121:1989 BS EN 1367- 2:2009 SS 73 Part 21:1992	) ) ) )
	19. Shape & Surface Texture	SS 73: 1974	) )
	20. Drying Shrinkage	SS 73 Part 20:1992 BS EN 1367-4:2008 BS 812 Part 120:1995	) ) )
	21. Assessment of Fines - Methylene Blue Test	BS EN 933-9:2009+A1:2013	) LJP, SW, MAT

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<b>A. AGGREGATE</b>	22. Shape Index	BS EN 933-4:2008	) LJP, SW
	23. Angularity Number	SS 73:1974	)
	24. Assessment of Fines - Sand Equivalent Test	BS EN 933-8:2012+A1:2015 ASTM D2419:2014	) LJP, SW, ) MAT
	25. Constituents of Coarse Recycled Aggregates	BS EN 933-11:2009 SS 544: Part 2:2019	) LJP, SW ) )
	26. Organic Contaminators by Mortar Method	BS EN 1744-1:2009+A1:2012, Clause 15.3	) ) )
	27. Coral Content (Shell content in fine aggregate)	SANS 5840:2008	) ) )
	28. Aggregate Abrasion Value	BS 812-113:1990 BS EN 1097-8:2020	) ) )
	29. Influence of Recycled Aggregate Extract on the Initial Setting Time of Cement	BS EN 1744-6:2006	)
	30. Percentage of Fractured Particles in Coarse Aggregate	ASTM D5821-13(2017)	) ) )
	31. Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate	ASTM D4791-19	) )
	32. Clay Lumps and Friable Particles in Aggregates	ASTM C142/C142M-17	)
	33. Polished Stone Value	BS EN 1097-8:2020 BS 812-114:1989	) )
	34. Lightweight Particles in Aggregate	ASTM C123/C123M-14	)
	35. Particle Density of Filler	BS EN 1097-7:2008	)

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<b>B. SOIL</b>	1. Direct Shear Box Test	BS 1377 Part 7:1990 (Clause 4.5.4) BS EN ISO 17892-10:2018	) LJP, SW, MAT )
	2. Compaction Test (Maximum and Minimum Dry Density)	BS 1377 Part 4:1990 (Clause 4)	)
	3. Compaction Test (Dry Density / Moisture Content)	BS 1377 Part 4:1990 (Clause 3) ASTM D1557-12(2021) ASTM D698-12(2021) AASHTO T 180-19 AASHTO T 99-19	) ) ) ) )
	4. Unconfined Compressive Strength	BS 1377 Part 7:1990 (Section 7) ASTM D2166/D2166M-16 BS EN ISO 17892-7:2018	) ) )
	5. Moisture Content	BS 1377-2:1990 BS EN ISO 17892-1:2014 ASTM D2216-19 ASTM D4944-18 ASTM D4959-16 ASTM D4643-17	) ) ) ) ) )
	6. Liquid Limit	BS 1377-2:1990, Method 4.3 ASTM D4318-17e1 ISO 17892-12:2018 BS EN ISO 17892-12: 2018+A1: 2021	) ) ) )
	7. Plastic Limit & Plasticity Index	BS 1377-2:1990, Section 5 ASTM D4318-17e1 ISO 17892-12:2018 BS EN ISO 17892-12: 2018+A1: 2021	) ) ) )
	8. Linear Shrinkage	BS 1377-2:1990, Section 6.5	) )
	9. Particle Size Distribution	BS 1377-2:1990, Method 9.2, 9.3 & 9.5 BS EN ISO 17892-4:2016	) ) )
	10. California Bearing Ratio	BS 1377-4:1990, Method 7 ASTM D1883-16	) )

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<b>B. SOIL</b>	11. Particle Density	BS 1377-2:1990, Section 8 BS EN ISO 17892-3:2015	) ) )
	12. Percentage of Fines (Finer than 75micron)	ASTM D1140-17	) )
	13. Sand Replacement	BS 1377-9:1990, Method 2.1 & 2.2 ASTM D1556/D1556M-15ε1 & ASTM D4944-18	) ) ) )
	14. In-place Density & Water Content (NDG)	ASTM D6938-17ae1 ASTM D2922:2005 ASTM D3017:2005 BS 1377-9:1990 Clause 2.5	) ) ) ) )
	15. Plate Loading Test	BS 1377-9:1990 Method 4.1	) )
	16. Density	BS 1377-2:1990, Section 7 BS EN ISO 17892-2:2014	) ) )
	17. Permeability in Triaxial Cell	BS 1377-6:1990 (Section 6) BS EN ISO 17892-11:2019	) ) )
	18. Unconsolidated Undrained Triaxial (UU)	BS 1377-7:1990 (Section 8) BS EN ISO 17892-8:2018 ASTM D2850-15	) ) ) )
	19. Consolidated Undrained Triaxial (CU)	BS 1377-8:1990 (Section 7) BS EN ISO 17892-9:2018 ASTM D4767-11 (2020)	) ) ) )
	20. Consolidated Drained Triaxial (CD)	BS 1377-8:1990 (Section 8) BS EN ISO 17892-9:2018 ASTM D7181-20	) ) ) )
<b>B. SOIL</b>	21. Oedometer (One-Dimensional Consolidation)	BS 1377-5:1990 (Section 3) BS EN ISO 17892-5:2017 ASTM D2435/D2435M-11(2020)	) ) ) )
	22. Falling Head Permeability	KH. Head Vol. 2 BS EN ISO 17892-11:2019	) ) )
	23. Bentonite content in soil	ADM/CE/024:2019	) )

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<b>C. CONCRETE</b> <b>1. Fresh Concrete</b>	24. Soil Resistivity Using the Wenner Four-Electrode Method	ASTM G57-20 (BS EN IEC 62561-7:2018)	) LJP, SW ) )
	25. Corrosion Rates by Potentiodynamic Polarization Resistance Measurements	ASTM G59-97(2020) ASTM G102-89(2015)e1 (BS EN IEC 62561-7:2018)	) ) )
	1. Slump Test	SS 78: Pt A2: 1987 BS 1881: Pt 102:1983 BS EN 12350-2:2019	) LJP, SW ) )
	2. Density (Fresh Concrete)	SS 78: Pt A7: 1987 BS 1881: Pt 107:1983 BS EN 12350-6:2019	) ) )
	3. Sampling	BS EN 12350-1: 2019 SS 78 Part A1:1987 BS 1881 Part 101: 1983	) ) )
	4. Air Content-Pressure Methods	BS EN 12350-7: 2019 SS 78 Part A6: 1987 BS 1881 Part 106: 1983	) ) )
	5. Flow Table Test	SS 78: Pt A5: 1987 BS 1881: Pt 105: 1984 BS EN 12350-5: 2019	) ) )
	6. Degree of Compactibility	BS EN 12350-4: 2019	) )
	7. Laboratory Mixing and Sampling	SS 78: Pt 25: 1987 BS 1881-125: 2013 BS EN 480-1: 2014	) ) )
	8. Time of Setting of Concrete Mixtures by Penetration Resistance	ASTM C403 / C403M - 16	) ) )
	9. Slump-flow test	BS EN 12350-8: 2019	) )
	10. V-funnel test	BS EN 12350-9: 2010	) )
11. L box test	BS EN 12350-10: 2010	) )	
12. Sieve segregation test	BS EN 12350-11: 2010	) )	

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<b>C. CONCRETE</b> <b>2. Hardened Concrete</b> <b>(Physical Tests)</b>	13. J-ring test	BS EN 12350-12: 2010	)
	14. Adiabatic Temperature Rise of Fresh Concrete	ADM/CE/023: 2017	)
	1. Petrographic Examination of Hardened Concrete	ASTM C856 - 20	) LJP, SW
	2. Density (Hardened Concrete)	SS 78: Pt A14: 1987 BS 1881: Pt 114: 1983 BS EN 12390-7: 2019	) LJP, SW, WCK
	3. Compressive Strength of Cubes	SS 78: Pt A16: 1987 BS 1881: Pt 116: 1983 BS EN 12390-3: 2019 AS 1012.9: 2014	)
	4. Water Absorption	SS 78: Pt A22: 1987 BS 1881-122:2011+A1:2020 ASTM C642-13	)
	5. Water Permeability	DIN 1048: Pt 5 - 1991	)
	6. Depth of penetration of water under Pressure	BS EN 12390-8: 2019	)
	7. Making Test Beams	SS 78 Part A9: 1987 BS 1881 Part 109: 1983 BS EN 12390-1: 2021 BS EN 12390-2: 2019	) LJP, SW
	8. Making Test Cylinders	SS 78 Part A10: 1987 BS 1881 Part 110: 1983 BS EN 12390-1: 2021 BS EN 12390-2: 2019	)
9. Tensile Splitting Strength of Test Specimens	SS 78 Part A17: 1987 BS 1881 Part 117: 1983 BS EN 12390-6: 2009	) LJP, SW, WCK	
10. Making of Test Cubes	SS 78: Pt A8: 1987 BS 1881: Pt 108: 1983 BS EN 12390-1: 2021 BS EN 12390-2: 2019	) LJP, SW	

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<b>2. Hardened Concrete (Physical Tests)</b>	11. Flexural Strength	SS 78: Pt A18: 1987 BS 1881: Pt 118: 1983 BS EN 12390-5: 2019	) LJP, SW, WCK ) ) )
	12. Compressive Strength of Cores	SS 78: Pt A20: 1987 BS 1881: Pt 120: 1983 BS EN 12504-1: 2019 AS 1012.9: 2014	) ) ) )
	13. Static Modulus of Elasticity in Compression	BS 1881: Pt 121: 1983 ASTM C469 / C469M - 14 BS EN 12390-13:2021	) LJP, SW, WCK ) )
	14. Initial Surface Water Absorption	BS 1881: Pt 208: 1996	) LJP, SW )
	15. Length Change (Drying Shrinkage & Wetting Expansion)	ASTM C157/C157M-17	)
	16. Concrete's Ability to Resist Chloride Ion Penetration (Rapid Chloride Permeability Test)	ASTM C1202 - 19	) LJP, SW, WCK ) ) )
	17. Coefficient of Permeability	Darcy's Theory - HDB Test Method ADM/CE/017: 2013	) ) )
	18. Water Penetration & Water Gain	HDB Test Method (1 April 1992) ADM/CE/018: 2014	) LJP, SW ) ) )
	19. Compressive Strength of Moulded Cylinder Specimens	BS EN 12390-3: 2019 AS 1012.9: 2014	) ) ) )
	20. Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete	ASTM C457 / C457M – 16 (Procedure B)	) ) ) )
	21. Water Sorptivity	ASTM C1585 - 20 ADM/CE/020: 2016	) )
	22. Density, Absorption, and Voids	ASTM C642-13	) LJP, SW, WCK
	23. Calibration of Cube Mould	BS EN 12390-1: 2021	) LJP, SW



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<b>3. Hardened Concrete (Non-Destructive Tests)</b>	24. Autogenous Strain of Cement Paste and Mortar	ASTM C1698-19	)	
	25. Flexural tensile strength (limit of proportionality (LOP), residual)	BS EN 14651:2005+A1:2007	)	
	26. Fibre content in fresh and hardened concrete	BS EN 14721:2005+A1:2007	)	
	27. Chloride Migration Coefficient	NT BUILD 492: 1999	)	
	28. Drying Shrinkage	BS ISO 1920-8:2009 BS EN 12390-16:2019 BS 8443: 2005 (Annex B)	) ) )	LJP, SW,WCK
	29. Creep in Compression	BS ISO 1920-9:2009 BS EN 12390-17:2019 ASTM C512 / C512M - 15	) ) )	LJP, SW, WCK
	30. Energy absorption capacity of fibre reinforced slab specimens	BS EN 14488-5:2006	)	
	1. Determination of Rebound Number of Hardened Concrete	ASTM C805 / C805M - 18 BS EN 12504-2:2021	) )	LJP, SW, AC
	2. Ultrasonic Pulse Velocity Measurement	ASTM C597 - 16 BS EN 12504-4:2021	) )	
	3. Covermeter Test	BS 1881: Pt 204: 1988	)	
	4. Strain Measurement (Electrical Displacement)	BS 1881: Pt 206: 1986	)	LJP, SW
	5. Initial Surface Absorption	BS 1881: Pt 208: 1996	)	
	6. Half-Cell Potential Measurement	ASTM C876 - 15	)	LJP, SW, AC
	7. Depth of Carbonation, cores or broken (on concrete)	BS EN 14630: 2006 BRE Publication (IP6/81) RILEM TC14-CPC 1988	) ) )	
	8. Penetration Resistance	ASTM C803 / C803M - 18	)	

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<b>D. REPAIR MATERIAL</b>	<b>1. Non-Shrink Grout</b> (For Pressure Grouting)	1. Flow Consistency	ASTM C939 / C939M - 16a ) LJP, SW
		2. Compressive Strength	ASTM C942-21 )
		3. Expansion/Shrinkage	ASTM C940 - 16 )
		4. Bleeding	ASTM C940 - 16 )
		5. Setting Time (Initial & Final Set)	ASTM C953 - 17 )
	<b>2. Non-Shrink Grout</b> (For Semi-Precast Construction)	1. Flow Consistency	BS 4551-1: 1998 ) LJP, SW ASTM C1437 – 20 )
		2. Compressive Strength	BS EN 196-1:2016 ) LJP, SW, WCK ASTM C109 / C109M – 21 )
		3. Change in Height	ASTM C827 / C827M - 16 ) LJP, SW
		4. Setting Time	BS EN 196-3: 2016 )
		5. Bond Strength at 28 days	BS 6319: Part 4: 1984 ) BS EN 12615: 1999 )
	<b>3. Polymer Modified Cement Mortar</b>	1. Compressive Strength	ASTM C109 / C109M – 21 ) LJP, SW, WCK BS EN 12190: 1999 ) LJP, SW ASTM C349 - 18 )
		2. Stiffening time	BS EN 1015-9: 1999 ) LJP, SW
		3. Shrinkage at 28 days	ASTM C531 - 18 )
		4. Tensile pull off strength (before and after weathering)	BS EN 1015-12: 2016 ) ADM/CE/010: 2017 ) ADM/CE/011: 2017 )
	<b>4. Bonding Agent</b>	1. Slant Shear Bond Strength (Type I)	ASTM C1042: 1999 ) LJP, SW
2. Slant Shear Bond Strength (Type II)		ASTM C1042: 1999 )	
3. Total Solids Content		ISO 124: 2014 )	

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<b>5. Waterproofing Material for External Wall Seepage Repair</b>	1. Tensile pull off strength	ASTM D4541: 2002 (Method A, Type I Tester) ASTM D7234 -21	) LJP, SW ) )
	2. Water Vapour Transmission (Water Method only)	ASTM E96 / E96M - 16 ASTM D1653-13(2021)	) ) )
	3. Tensile Strength & Elongation at Break	ASTM D412-16(2021) Method A	) )
	4. Crack Bridging	ASTM C836 / C836M - 18 ADM/CE/001: 2017 AS/NZS 4548.5: 1999	) LJP, SW ) )
<b>6. Flexible Cementitious Waterproof Membrane (Water-Based)</b>	1. Tensile pull off strength	ASTM D4541: 2002 (Method A, Type I Tester) ASTM D7234 -21	) LJP, SW ) )
	2. Tensile Strength & Elongation at Break	ASTM D412-16(2021) Method A	)
	3. Crack Bridging	ASTM C836 / C836M - 18 ADM/CE/002: 2017	) )
	4. Water Penetration Test	DIN 1048: Pt 5 - 1991 ADM/CE/003: 2010	) )
	5. Initial Hardness (Shore A)	ASTM D2240-15(2021)	)
	6. Set to touch	ASTM D1640/D1640M-14(2018)	)
<b>7. Flexible Non-Cementitious Waterproof Membrane (Water-Based)</b>	1. Tensile pull off strength	ASTM D4541: 2002 (Method A, Type I Tester) ASTM D7234 -21	) LJP, SW ) )
	2. Tensile Strength & Elongation at Break	ASTM D412-16(2021) Method A	) )
	3. Crack Bridging	ASTM C836 / C836M - 18 ADM/CE/002: 2017	) )
	4. Water Penetration Test	DIN 1048: Pt 5 - 1991 ADM/CE/004: 2010	) )
	5. Initial Hardness (Shore A)	ASTM D2240-15(2021)	)
	6. Set to touch	ASTM D1640/D1640M-14(2018)	)

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<b>8. Waterproofing Membrane for RC Roof - Bituminous Type</b>	1. Tensile pull off strength	ASTM D4541: 2002 (Method A, Type I Tester) ASTM D7234 -21	) LJP, SW ) ) )
	2. Tensile Strength & Elongation at Break	ASTM D412-16(2021) Method A	)
	3. Crack Bridging	ASTM C836 / C836M - 18 ADM/CE/002: 2017	) )
	4. Water Vapour Transmission	ASTM E96 / E96M - 16	)
	5. Water Penetration Test	DIN 1048: Pt 5 - 1991 ADM/CE/005: 2010	) )
	6. Initial Hardness (Shore A)	ASTM D2240-15(2021)	)
	7. Accelerated Weathering	ASTM G154 - 16 ADM/CE/007: 2012	) )
	8. Set to touch	ASTM D1640/D1640M-14(2018)	)
	9. Solid Content	SS 133: 2017 Annex D (Method A)	)
	10. Heat Test	SS 133: 2017 Annex H	)
	11. Water Resistance Test	SS 133: 2017 Annex J	)
	12. Direct Flame Test	SS 133: 2017 Annex K	)
<b>9. Repair Material - Reinforcement Primer / Reinforcement Bar</b>	1. Half-Cell Potential	ASTM C876 - 15	) LJP, SW )
	2. Bond Performance	SS 2 Part 3: 1987 Appendix A	)
<b>10. Epoxy Mortar</b>	1. Working Time, Initial Setting Time and Service Strength Setting Time	ASTM C308-18	) LJP, SW
	2. Compressive Strength	ASTM C579 - 18 BS 6319-2:1983	) )



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<b>13. Waterproofing Membrane</b>	2. Tensile Strength & Elongation at Break	SS 374: 1994 (2017) ASTM D412-16(2021) Method A BS EN 12311-1: 2000 BS EN 12311-2: 2013 BS EN ISO 527-1: 2019 BS EN ISO 527-3: 2018	) ) ) ) ) )
	3. Dimensional Stability	SS 374: 1994 (2017) BS EN 1107-1: 2000 BS EN 1107-2: 2001 DIN 53377: 2015-04 & DIN 16726:2017	) ) ) ) )
	4. Watertightness/Behaviour under Hydrostatic Pressure / Water impermeability	SS 374: 1994 (2017) BS EN 1928: 2000 DIN 16726:2017 BS EN 12390-8: 2019, based on BS EN 14891: 2017, Part A7 for concrete mix design	) ) ) ) )
	5. Peel or Stripping Strength to Concrete	ASTM D903 - 98(2017)	)
	6. Puncture Resistance	ASTM E154/E154M-08a(2019) Section 10	) )
	7. Impact Resistance	ADM/CE/021: 2016 & ASTM G14 - 04 (2018)	) )
	8. Static Crack Bridging	ASTM C836 / C836M - 18 & ASTM C1305/C1305M-16 BS EN 1062-7: 2004, Method A	) ) )
	9. Pull-Off Adhesion Strength	ASTM D4541: 2002 (Method A, Type I Tester) ASTM D7234 -21 BS EN 1542: 1999	) ) )
	10. Artificial ageing by long term exposure to elevated temperature	BS EN 1296: 2001 SS 374: 1994 (2017) DIN 16726:2017	) ) )
	11. Behaviour after Storage in Aqueous Solutions	DIN 16726:2017	)

LJP, SW

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<b>14. Rubber Waterstop</b>	12. Chemical Resistance	BS EN 14414: 2004 (METHOD A & B) ASTM D543 - 20	)
	13. Resistance to Leaching	BS EN 14415: 2004 (METHOD A & B)	)
	14. Hydrostatic Pressure Resistance	ASTM D5385/D5385M-20	)
	15. Lateral Water Migration	ADM/CE/022: 2016 & ASTM D5385/D5385M-20	)
	16. Tear Strength	ASTM D624 - 00 (2020) (Type C & T)	)
	17. Resistance to static loading	BS EN 12730:2015 Method B	)
	18. Resistance Tearing	BS EN 12310-2:2018	)
	19. Peel resistance of joints	BS EN 12316-2:2013	)
	20. Electrical resistivity	ASTM D257 - 14(2021)e1	) LJP, SW
	21. Adhesive and Cohesive Strength Between Materials in Roofing or Waterproofing Membranes and Systems	ASTM D7105 /D7105M-06 (2019)e1	)
	22. Static Puncture Resistance	ASTM D5602/D5602M-2018	)
	1. Change in Mass (after immersion) Change in Volume (after immersion)	ASTM D471-16a(2021)	) LJP, SW

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<b>E. BUILDING MATERIAL</b>	<b>1. Tile Adhesive (Fast and Normal Set)</b>	1. Tensile Adhesion Bond Strength	) LJP, SW
		2. Tensile Adhesion Bond Strength	)
		2. Tensile Adhesion Bond Strength (After Water immersion)	)
		3. Tensile Adhesion Bond Strength (After Heat Aging)	)
		4. Open Time	)
		5. Deformity	)
		6. Slip	)
	<b>2. Tile Grout</b>	7. Pull Out Test (Site Test)	) LJP, AC
		1. Shrinkage	) LJP, SW
		2. Water Absorption	)
		3. Compressive Strength	)
		4. Flexural Strength	)
	<b>3. Prepacked Floor Screed/ Prepacked Waterproof Screed</b>	5. Abrasion Resistance	)
		1. Average compressive strength	) LJP, SW, WCK
		2. Flow	) LJP, SW
		3. Water Absorption	)
		4. Water Penetration Test	)
		5. Flexural Strength	)
		6. Water Retentivity	)
		7. Stiffening time	)
	8. Volume change	)	



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<b>4. Prepacked Plaster/ Prepacked Mortar</b>	1. Tensile pull off strength	BS EN 1015-12: 2016	) LJP, SW
	2. Compressive Strength	BS EN 1015-11: 2019 BS 4551-1: 1998	) )
	3. Consistence Retentivity	BS 4551: 2005 + A2: 2013	)
	4. Water Retentivity	BS 4551: 2005 + A2: 2013	)
	5. Stiffening time	BS EN 1015-9:1999 (Method A)	)
	6. Linear Shrinkage	ASTM C531 - 18	)
	7. Pull Out Test (Site Test)	ADM/CE/016: 2011	) LJP, AC
	8. Determination of modulus of elasticity in compression	BS EN 13412:2006 (Method 2)	) LJP, SW, WCK
	9. Flexural strength	BS EN 1015-11:2019	) LJP, SW
<b>5. Prepacked Skim Coat</b>	1. Tensile pull off strength	BS EN 1015-12: 2016	) LJP, SW
	2. Tensile pull off strength (after weathering)	BS EN 1015-12: 2016 ADM/CE/008: 2017	) )
	3. Compressive Strength	BS EN 1015-11: 2019	)
	4. Water Retentivity	BS 4551: 2005+A2: 2013	)
	5. Setting Time	BS EN 196-3: 2016	)
	6. Linear Shrinkage	ASTM C531 - 18	)
	7. Pull Out Test (Site Test)	ADM/CE/016: 2011	) LJP, AC
<b>6. Acrylic Polymer Cementitious Coating</b>	1. Compressive Strength	ASTM C109 / C109M – 21	) LJP, SW, WCK
	2. Flexural Strength	ASTM C348-21	) LJP, SW
	3. Tensile Strength	ASTM C307-18	)
	4. UV Accelerated Weathering	ASTM G154 - 16 ADM/CE/009: 2012	) )
	5. Skid Resistance	ASTM E303 - 93 (2018)	)

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<b>6. Acrylic Polymer Cementitious Coating</b>	6. Taber Abrasion	ASTM D4060: 2019 ADM/CE/012: 2015	) )
	7. Shear Bond Adhesive	ASTM C482: 2020 ADM/CE/013: 2010	) LJP, SW )
	8. Water Penetration Test	DIN 1048: Pt 5 – 1991 ADM/CE/006: 2010	)
<b>7. Self-Leveling Screed</b>	1. Compressive Strength	ASTM C109 / C109M – 21	) LJP, SW, WCK
	2. Linear Shrinkage/Length Change	ASTM C157/C157M-17 ASTM C531 - 18	) LJP, SW )
	3. Slip Resistance (before & after accelerated weathering)	BS 7976-2: 2002+A1: 2013	)
	4. Tensile Adhesion Bond Strength	ASTM D4541: 2002 (Method A, Type I Tester) BS EN 13892-8: 2002	) ) )
	5. Shear Adhesion Bond Strength	ASTM C482: 20	)
	6. Accelerated Weathering (UV Exposure)	ASTM G154 - 16	)
	7. Flowability	ASTM C939 / C939M - 16a	)
<b>8. Sealant</b>	8. Water Absorption	ASTM C413 - 18 (Method A)	)
	1. Staining and Color Change	ASTM C510 - 16	) LJP, SW
	2. Extrusion Rate	ASTM C1183 / C1183M-13 (2018)	)
	3. Rheological (Flow) Properties	ASTM C639 – 15 (2020)	)
	4. Indentation Hardness	ASTM C661 - 15	)
	5. Tack-Free Time	ASTM C679 - 15	)
	6. Adhesion and Cohesion Under Cyclic Movement (Hockman Cycle)	ASTM C719 – 14 (2019)	)
7. Effects of Heat Aging	ASTM C1246 - 17	)	

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<b>F. PAINT/ COATING</b>	8. Effects of Laboratory Accelerated Weathering	ASTM C793 - 05 (2017)	)	
	9. Adhesion-in-Peel	ASTM C794 - 18	)	
	10. Durability of Sealants Exposed to Continuous Immersion in Liquids	ASTM C1247 - 20	)	
	1. Adhesion (Pull Off) Strength	ASTM D4541 – 17(Method B) ASTM D7234 -21 BS EN ISO 4624:2016 (Method B) BS EN 1542:1999	) ) ) ) )	LJP, SW
	2. Non-Destructive Measurement of Dry Film Thickness of Non-Magnetic Coatings Applied to a Ferrous Base	ASTM D7091-21 BS EN ISO 2178:2016	) ) ) ) )	LJP
	3. Dry Film Thickness	ISO 2808:2019 (Method 7B2 and 7c) ASTM D7091-21 ASTM D6132 - 13(2017)	) ) ) )	
	4. Alkali resistance (spotting method)	SS 5 - G2 : 2003 (2013)	)	LJP, SW
	5. Compatibility on wet concrete	BS EN 13578:2003	)	
	6. Methods of conditioning before testing - UV accelerated weathering	BS EN 1062-11:2007 ISO 11507:2007 ISO 16474-3:2021	) ) )	
	7. Static Crack Bridging	BS EN 1062-7: 2004, Method A	)	
	8. Tensile & Elongation at Break	BS ISO 37:2017	)	
9. Water-Vapour Transmission	BS EN ISO 7783: 2018	)		
10. Luminance Factor	SS 589: 2013 (BS EN 1871:2020 Annex F)	) )		
11. Skid Resistance	SS 589: 2013 Annex C	)		

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<b>G. ADMIXTURES</b>	12. Flow Resistance	SS 589: 2013 Annex B	)
	13. Softening Point	SS 589: 2013 (BS EN 1871:2020 Annex G)	)
	14. Heat stability	SS 589: 2013 (BS EN 1871:2020 Annex H)	)
	15. Rating Adhesion by Tape Test	ASTM D3359 - 17	)
	16. Carbon Dioxide Permeability	BS EN 1062-6:2002 (Method A)	)
	17. Gloss Value at 20°, 60° and 85°	ISO 2813:2014 SS 5: Part E1: 2003 (2013)	)
	18. Visual comparison of colour of paints	ISO 3668:2017 SS 5: Part E3: 2003 (2013)	)
	1 Water Reduction	BS EN 12350-2: 2019 BS EN 480-1: 2014 SS EN 934-2: 2015	) ) )
	2 Compressive Strength	BS EN 12390-3: 2019 BS EN 480-1: 2014 SS EN 934-2: 2015	) ) )
	3 Air Content-Pressure Methods	BS EN 12350-7: 2019 BS EN 480-1: 2014 SS EN 934-2: 2015	) ) )
	4 Increase in Consistence	BS EN 12350-2: 2019 BS EN 480-1: 2014 SS EN 934-2: 2015	) ) )
	5 Retention of Consistence	BS EN 12350-2: 2019 BS EN 480-1: 2014 SS EN 934-2: 2015	) ) )
	6 Bleeding	BS EN 480-4: 2005 BS EN 480-1: 2014 SS EN 934-2: 2015	) ) )
	7 Setting Time	BS EN 480-2: 2006 BS EN 480-1: 2014 SS EN 934-2: 2015	) ) )

LJP, SW

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<b>H. CEMENT</b> <b>1. Ordinary Portland Cement/Sulphate-resisting and Portland Blast Furnace Slag Cement. Ground Granulated Blast Furnace Slag, Silica Fume &amp; Fly Ash</b>	8 Capillary Absorption	BS EN 480-5: 2005 BS EN 480-1: 2014 SS EN 934-2: 2015	) ) )	
	9 Sampling	BS EN 934-6: 2019 SS EN 934-6: 2008 (2015)	) )	
	1. Determination of Strength	BS EN 196-1: 2016 ASTM C109 / C109M – 21  SS 397 Part 1: 1997	) ) ) )	LJP, SW LJP, SW, WCK LJP, SW
	2. Determination of Setting Times	BS EN 196-3: 2016 SS 397 Part 3: 1997 ASTM C191 – 19	) ) ) )	
	3. Determination of Soundness	BS EN 196-3: 2016 SS 397 Part 3: 1997	) ) ) )	
	4. Determination of Fineness	BS EN 196-6: 2018 SS 397 Part 6: 1997 ASTM C204 – 18e1	) ) ) ) ) )	
	5. Moisture Content	BS EN 15167: Pt 1: 2006 Annex A SS EN 15167: Pt 1: 2008 Annex A (2016)	) ) ) )	
	6. Activity Index	BS EN 196-1: 2016 BS EN 15167-1: 2006, 5.3.2.3 BS EN 13263-1:2005+A1:2009, 5.3.3 BS EN 450-1: 2012, 5.3.2	) ) ) ) ) ) ) )	
	7. Air Content	ASTM C185 - 20	) ) )	
	8. Amount of Water Required for Normal Consistency	ASTM C187 - 16	) ) ) )	
	9. Fineness by Wet Sieving	BS EN 451-2:2017	) ) )	
10. Water Requirement for Category S Fly Ash	BS EN 450-1:2012, Annex B	) ) )		
11. Potential Expansion of Portland-Cement Mortars Exposed to Sulfate	ASTM C452–21	)		

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<b>2. Masonry Cement</b>	1. Setting Time	BS EN 413-2: 2016 BS EN 196-3: 2016	) LJP, SW ) )
	2. Soundness	BS EN 196-3: 2016	) )
	3. Compressive Strength	BS EN 196-1: 2016	) )
	4. Consistence of Fresh Mortar	BS EN 413-2:2016	) )
	5. Air Content	BS EN 413-2:2016	) )
	6. Water Retentivity	BS EN 413-2:2016	) )
	7. Sieve Residue	BS EN 196-6: 2018	) )
<b>I. CURING COMPOUND</b>	1. Water Retention	ASTM C156-20	) LJP, SW )
	2. Bond Strength Test	ASTM C882/C882M: 2020, Clause 11.3 only ADM/CE/019: 2014	) ) )
	3. Density Test	ASTM D1475-13(2020)	) )
	4. Non Volatile Matter Test	ASTM D1644 - 01(2017) (Method A & B)	) ) )
	5. Volatile Content	ASTM D2369 - 20	) )
	6. Curing Efficiency Index	BS 7542:1992	) )
<b>J. MASONRY UNITS 1. Ferrocement Roof Slabs / Sunbreaker Slabs</b>	1. Dimension and Density	BS EN 12390-7: 2019	) LJP, SW )
	2. Cover Measurement	BS 1881: Pt 204: 1988	) )
	3. Initial Surface Absorption	BS 1881: Pt 208: 1996	) )
	4. Carbonation Depth	BRE Publication (IP6/81) BS EN 14630: 2006	) )
<b>2. Burnt Clay and Shale Bricks</b>	1. Determination of Dimensions	} SS 103: 1974	) LJP, SW ) ) ) )
	2. Determination of Compressive Strength		) )
	3. Water Absorption Test		) )
	4. Soluble Salt Content		) )
	5. Efflorescence Test		) )

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<b>3. Masonry Units / Autoclaved Aerated Concrete</b>	1. Compressive Strength	BS EN 772-1: 2011+A1:2015 ASTM C1693-11(2017), Section 6	) LJP, SW )	
	2. Density	BS EN 772-13: 2000 BS EN 678: 1994 ASTM C1693-11(2017), Section 7	) ) )	
	3. Drying Shrinkage	BS EN 680: 2005 ASTM C1693-11(2017), Section 8	) )	
	4. Water Absorption due to Capillary Action	BS EN 772-11: 2011	) )	
	5. Dimensions	BS EN 772-16: 2011	)	
<b>4. Concrete Masonry Units</b>	1. Geometrical Characteristics	SS 271: 1983	) LJP, SW ) ) )	
	2. Compressive Strength		)	
	3. Drying Shrinkage		)	
	4. Total Water Absorption		)	
	5. Measurement of Dimensions	ASTM C140 / C140M - 21	) ) )	
6. Compressive Strength	)			
7. Absorption	)			
<b>K. CERAMIC WALL AND FLOOR TILES</b>	1. Determination of Dimensions	BS EN ISO 10545-2: 2018	) LJP, SW ) ) ) )	
	2. Determination of Straightness of Side		SS 483: 2000), BS ISO 13006: 2018 (BS EN 14411: 2016)	) ) ) )
	3. Determination of Rectangularity		)	
	4. Determination of Surface Flatness		) ) )	
	5. Determination of Surface Quality		) ) )	

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<b>K. CERAMIC WALL AND FLOOR TILES</b>	6. Determination of Resistance to Deep Abrasion	(SS 483: 2000) BS ISO 13006: 2018 (BS EN 14411: 2016) ISO 10545-6: 2010	) ) ) ) )	
	7. Tensile and Shear Adhesion Bond Strength	ASTM C482 – 20	) ) )	
	8. Determination of Modulus of Rupture	(SS 483: 2000) BS ISO 13006: 2018 (BS EN 14411: 2016) ISO 10545-4: 2019	) ) ) ) )	
	9. Determination of Water Absorption	(SS 483: 2000) BS ISO 13006: 2018 (BS EN 14411: 2016) ISO 10545-3: 2018	) ) ) ) )	
	10. Determination of Scratch Hardness of Surface	EN 101: 1991 BS 6431 Part 13: 1986 EN 159: 1991 SS 301: 1985 Appendix G	) ) ) ) )	
	11. Slip Resistance Test	(SS 483: 2000) BS ISO 13006: 2018 SS 485: 2011 (BS EN 14411: 2016)	) ) ) ) )	LJP, SW
	12. Reverse Staining	ADM/CE/014: 2011	) ) )	
	13. Stain Resistance	(SS 483: 2000) BS ISO 13006: 2018 (BS EN 14411: 2016) SS 57: 1989 Appendix H.7 ISO 10545-14: 2015	) ) ) ) ) ) )	
	14. Chemical Resistance	(SS 483: 2000) BS ISO 13006: 2018 (BS EN 14411: 2016) ISO 10545-13: 2016	) ) ) ) ) )	
	15. Coefficient of Friction	SS 485: 2011	) ) )	
	16. Sampling and Basic for Acceptance	(SS 483: 2000) BS ISO 13006: 2018 (BS EN 14411: 2016) ISO 10545-1: 2014	) ) ) ) ) )	







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<b>O. BITUMINUOUS PREMIXES</b>	12. Measuring Pavement Macrotexture Depth Using a Volumetric Technique	ASTM E965 – 15 (2019) BS EN 13036-1: 2010	) LJP ) )
	13. Preparation of Asphalt Mixture Specimens Using Marshall Apparatus	ASTM D6926 - 20	) LJP, SW, ) LCH )
	14. Mechanical Size Analysis of Extracted Aggregate	ASTM D5444 - 15	) ) )
	15. Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures	ASTM D2726/D2726M-21	) ) )
	16. Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures	ASTM D3203 / D3203M - 17	) LJP, SW, ) LCH )
	17. Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures	ASTM D2041 / D2041M - 19	) ) )
	18. Effect of Moisture on Asphalt Concrete Paving Mixtures	ASTM D4867 / D4867M - 09 (2014)	) ) )
	19. Determination of Wheel-tracking Rate and Depth	BS 598-110:1998 BS EN 12697-22: 2020	) )
	20. Density of Bituminous Concrete in Place by Nuclear Methods	ASTM D2950/D2950 M- 14	) LJP, SW ) )
	<b>P. PRECAST CONCRETE UNITS 1. Concrete Paving Blocks</b>	1. Compressive Strength	} BS EN 1338: 2003
2. Visual Aspects and Appearance (Annex J)		)	
3. Shape and Dimensions, Thickness of Facing Layer (Annex C)		)	
4. Tensile Splitting Strength (Annex F)		)	
5. Slip/Skid Resistance (USRV) (Annex I)		)	

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<b>2. Concrete Kerb, Channel</b>	6. Total Water Absorption (Annex E)	)	)
	1. Water Absorption	} SS 214: 2009 BS 7263-1: 1994 BS 7263-1: 2001	) LJP, SW, WCK
2. Transverse Strength	)		
<b>3. Slab (Aeration/Porous)</b>	1. Water Absorption	} BS 7263-1: 1994 BS 7263-1: 2001	) LJP, SW
	2. Transverse Strength		)
<b>4. Concrete Paving Flags</b>	1. Visual Aspects and Appearance (Annex J)	} BS EN 1339: 2003	)
	2. Bending Strength and Breaking Load (Annex F)		)
	3. Slip/Skid Resistance (USRV) (Annex I)		)
	4. Total Water Absorption (Annex E)		)
<b>5. Concrete Kerb Units</b>	1. Visual Aspects and Appearance (Annex J)	} BS EN 1340: 2003	) LJP, SW
	2. Shape and Dimensions, Thickness of Facing Layer (Annex C)		)
	3. Bending Strength (Annex F)		)
	4. Slip/Skid Resistance (USRV)(Annex I)		)
	5. Total Water Absorption (Annex E)		)
<b>6. Clay Pavers</b>	1. Shape and Dimensions (Annex B)	} BS EN 1344: 2013	) LJP, SW
	2. Transverse Breaking Load (Annex D)		)
	3. Abrasion Resistance (Annex E)		)
	4. Slip/Skid Resistance (USRV)		)
<b>Q. GROUTS 1. Geotechnical Grouting</b>	Specification BS EN 12715: 2020	} BS EN 12715: 2020 ASTM C940 - 16	) LJP, SW
	1. Bleeding		)
	2. Setting Time		) BS EN 196-3: 2016

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<b>2. Prestressing Tendons</b>	3. Density by Mud Balance	BS EN ISO 10414-1: 2008	)
	4. Marsh Cone Viscosity	BS EN 14117: 2004	)
	5. Viscosity & Yield Strength	BS EN ISO 10414-1: 2008	)
	6. Workability by Abraham Cone	BS EN 12350-8: 2019	)
	7. Penetrability by Filter Pump	BS EN 14497: 2004	)
	8. Compressive Strength	BS 1377-7: 1990, Section 7 (Load Frame Method)	)
	1 Sieve test	BS EN 445:2007 Clause 4.2	) LJP, SW
	2 Fluidity test - Cone method	BS EN 445:2007 Clause 4.3.1	)
	3 Fluidity test - Grout spread	BS EN 445:2007 Clause 4.3.2	)
	4 Volume change and bleeding measurement - Wick-induced test	BS EN 445:2007 Clause 4.5	)
<b>R. SOIL-CEMENT MIXTURE (CEMENT TREATED BASE)</b>	5 Compressive strength test	BS EN 445:2007 Clause 4.6	)
	6 Setting time	BS EN 196-3:2016	)
	7 Density test	BS EN 445:2007 Clause 4.7	)
	1. Wetting and Drying Compacted Soil-Cement Mixtures	ASTM D559 / D559M - 15	) LJP, SW
	2. Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures	ASTM D558 - 19	) LJP, SW, MAT
	3. Compressive Strength of Molded Soil-Cement Cylinders	ASTM D1633 - 17	)
	4. Measuring Thickness of Concrete Elements Using Drilled Concrete Cores	ASTM C174 / C174M - 17	)
<b>S. RESILIENT FLOOR COVERINGS</b>	1. Determination of side length, edge, straightness and squareness of tiles	BS EN ISO 24342: 2018	) LJP, SW
	2. Determination of overall thickness	BS EN ISO 24346: 2012	)

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<b>T. DRY WALL</b>	3. Determination of thickness of layers	BS EN ISO 24340: 2012	)	
	4. Determination of mass per unit area	BS EN ISO 23997: 2012	)	
	5. Determination of flexibility and deflection	BS EN ISO 24344: 2012 (Method A)	)	
	6. Determination of wear resistance. Frick-Taber test	BS EN 660-2: 1999	)	
	7. Slip Resistance (dry floor friction & wet pendulum test methods)	SS 485: 2011	)	
	8. Determination of staining and resistance to chemicals	BS EN ISO 26987: 2012	)	
	1. Determination of partition wall stiffness (Annex A)	SS 492: 2001 (2014) BS 5234-2: 1992	) )	LJP, SW
	2. Determination of surface damage by small hard body impact (Annex B)	SS 492: 2001 (2014) BS 5234-2: 1992	) )	
	3. Determination of resistance to damage by impact from a large soft body (Annex C)	SS 492: 2001 (2014) BS 5234-2: 1992	) )	
	4. Determination of resistance to perforation by small hard body impact (Annex D)	SS 492: 2001 (2014) BS 5234-2: 1992	) )	
	5. Determination of resistance to structural damage by multiple impacts from a large soft body (Annex E)	SS 492: 2001 (2014) BS 5234-2: 1992	) )	
	6. Determination of the effects of door slamming (Annex F)	SS 492: 2001 (2014) BS 5234-2: 1992	) )	
	7. Determination of resistance to crowd pressure (Annex G)	SS 492: 2001 (2014) BS 5234-2: 1992	) )	
	8. Lightweight anchorage pull out test (Annex H)	SS 492: 2001 (2014) BS 5234-2: 1992	) )	

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	9. Lightweight anchorage pull down test (Annex J)	SS 492: 2001 (2014) BS 5234-2: 1992	) )
	10. Heavyweight anchorage (wash basin) eccentric downward loading test (Annex K)	SS 492: 2001 (2014) BS 5234-2: 1992	) ) )
	11. Heavyweight anchorage (high level wall cupboard) eccentric downward loading test (Annex L)	SS 492: 2001 (2014) BS 5234-2: 1992	) ) )
	12. Surface & Total water absorption	BS EN 520:2004+A1:2009 Clause 5.9	)
	13. Moisture Movement	ASTM C1185 - 08(2016) Clause 8 BS EN 12467:2012+A2:2018 Annex C	) ) ) )
	14. Water impermeability	BS EN 12467:2012+A2:2018 Clause 7.3.3	) )
	<b>U. WINDOWS &amp; CURTAIN WALLS</b>	1. Field watertightness test	BCA Conquas 21: 2017, Appendix 2 Part 5 Item 2. SS CP 96: 2002 (2011) Clause 4.3a

## Approved Signatories

LJP : Mr Lu Jin Ping  
SW : Ms Sherly Wijaya  
MAT : Ms Perinpanayagam Mathurathy  
WCK : Mr Wee Chip Kai  
AC : Mr Chuo Chung Hai (Alex)  
LCH : Ms Leong Chee Huan

## 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 test results. 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

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**LEGEND :**



New Standard/Method



Updated Standard/  
Method



Withdraw



Typo error/Corrected



New Signatory



Update after uploading  
to  
SAC portal