SINGAPORE LABORATORY ACCREDITATION SCHEME

Accredited Laboratory SAC-SINGLAS

Schedule

Element Construction Testing (S) Pte Ltd
4 Tuas Loop, Tuas Connection
Singapore 637342

Certificate No. : LA-2010-0461-A

Issue No. : 22

Date : 3 July 2026

Expiry of Certificate : 26 May 2029

ACCREDITATION STANDARD : ISO/IEC 17025:2017
FIELD OF TESTING : Chemical and Biological Testing

MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
A Aggregates	1. Chloride Content	SS 73-17: 1992(2019) BS 812- 117: 1988 BS EN 1744-1: 2009 + A1: 2012 (Clause 7) BS EN 1744-5: 2006
	2. Sulfate Content	SS 73- 18: 1992 BS 812-118: 1988 BS EN 1744-1: 2009 + A1: 2012 (Clause 10, 12)
	3. Potential Alkali Silica Reactivity (Chemical Method)	ASTM C289: 2007
	4. Lightweight Organic Contaminator	BS EN 1744-1: 2009 + A1: 2012 (Clause 14.2)
	5. Humus Content	BS EN 1744-1: 2009 + A1: 2012 (Clause 15.1)
	6. Fulvo Acid	BS EN 1744-1: 2009 + A1: 2012 (Clause 15.2)
	7. Loss on Ignition	BS EN 1744-1: 2009 + A1: 2012 (Clause 17)
	8. Fixed Water Content by Ignition Test	ASTM C637-20, Clause 9.1.3.1
	9. Total Sulfur Content	BS EN 1744-1: 2009 + A1: 2012, (Clause 11.1)
	10. Water Soluble Chloride Salts using the Mohr Method	BS EN 1744-1: 2009 + A1: 2012, Clause 9

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MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
	11. Organic Impurities	ASTM C40 / C40M-20 SS 73: 1974
	12. Chloride Ion	AASHTO T260-21 (2025)
B1 Cement, Silica Fume, Ground Granulated Blast Furnace Slag	1. Loss of Ignition 2. Sulfate 3. Residual Insoluble 4. Manganese 5. Silica 6. Iron (III) Oxide 7. Alumunium Oxide 8. Calcium Oxide 9. Magnesium Oxide 10. Chloride 11. Alkali 12. Total Carbonate 13. Sulfide	BS EN 196-2:2025 SS 397: Part 2: 1997
	14. Pozzolanicity	BS EN 196-5: 2011
	15. Heat of Hydration – Solution Method	BS EN 196-8: 2010
	16. Chemical Analysis by X-Ray Fluorescence	BS EN 196-2:2025
	17. Chemical Analysis of Hydraulic Cement for Specific Analytes • Insoluble Residue • Ferric Oxide • Phosphorus Pentoxide • Titanium Dioxide • Ammonium Hydroxide Group • Magnesium Oxide • Sulfur Trioxide • Loss On Ignition • Silicon Dioxide • Aluminium Oxide • Calcium Oxide • Sodium & Potassium Oxide, Total Alkali • Chloride	ASTM C114-24
	18. Free Calcium Oxide in Cement Rapid $(Sr(NO_3)_2)$ Method	ASTM C114-24, Section 30.3
	19. Chloride ion	AASHTO T260-21 (2025)

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MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
	20. Water-soluble Chromium (VI) Content	BS EN 196-10:2016
B2 Cement, Fly Ash	1. Reactive Silica	BS EN 196-2:2025 / (SS EN 197-1: 2014) (BS EN 450-1: 2012)
B3 Silica Fume	1. Specific Surface Area – BET method	ISO 9277: 2022 ASTM C1069-09 (2022)
	2. Free Calcium Oxide	BS EN 451-1: 2017
	3. Surface Silicon	ISO 9286: 2021
	4. Loss on Ignition	ASTM C311/C311M-25
B4 Fly Ash	1. Loss of Ignition 2. Sulfate 3. Residual Insoluble 4. Manganese 5. Silica 6. Iron (III) Oxide 7. Aluminium Oxide 8. Calcium Oxide 9. Magnesium Oxide 10. Chloride 11. Alkali	BS EN 196-2:2025 (BS EN 450-1: 2012)
	12. Free Calcium Oxide	BS EN 451-1: 2017
	13. Reactive Calcium Oxide	BS EN 197-1: 2011
	14. Soluble Phosphate (P_2O_5)	BS EN 450-1: 2012 (Annex C)
	15. Loss on Ignition	ASTM C311/C311M-25
C Concrete (Hardened Concrete)	1. Chloride	BS 1881-124: 2015 + A1: 2021 BS EN 14629: 2007
	2. Sulfate	BS 1881-124: 2015 + A1: 2021
	3. Sulfide	BS 1881-124: 2015 + A1: 2021
	4. Cement Content	BS 1881-124: 2015 + A1: 2021
	5. Sodium Oxide and Potassium Oxide	BS 1881-124: 2015 + A1: 2021

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MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
	6. Silane Content by Py-GC	EL-A-OP-CH-SIN-MD505 Iss 1 July 2023
	7. Apparent Chloride Diffusion Coefficient of Cementitious Mixtures by Bulk Diffusion	ASTM C1556-22 Nordtest Method NT BUILD 443 (Approved 1995-11)
	8. Chloride resistance of concrete, Unidirectional Diffusion	BS EN 12390-11: 2015
	9. Determining the Penetration of Chloride Ion into Concrete by Ponding	ASTM C1543-10a
	10. Chloride ion	AASHTO T260-21 (2025)
	11. Acid-soluble chloride of mortar and concrete	ASTM C1152/C1152M-20
D Plaster / Motar / Screed	1. Mix Composition (i.e. Cement, Lime, Gypsum & Aggregate) 2. Chloride 3. Sulfate	BS 4551: 2005 + A2: 2013
	4. Extraction and Determination of Soluble Salts	BS EN 16455:2014
E Admixture	1. Absolute Density at 20°C	ISO 758: 1976
	2. Conventional Dry Material Content	BS EN 480-8: 2012
	3. pH Value at 20°C	ISO 4316: 1977
	4. Water Soluble Chloride	BS EN 480-10: 2009
	5. Alkali Content	BS EN 480-12: 2005
	6. Silicon Dioxide SiO_2 Content	BS EN 196-2:2025
	7. Infrared Analysis	BS EN 480-6: 2005
	8. Ash Content	SS 320: 1987
	9. Homogeneity	BS EN 934-1:2008
	10. Colour	BS EN 934-1:2008

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MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
	11. Total Chlorine Content	ISO 1158:1998
F Repair Material		
1 Polymer Modified Cement Mortar / Waterproofing Coating / Modified Cement Mortar / Waterproofing Coating	1. Polymer Content	EL-A-OP-CH-SIN-MD501 Iss 3 Apr 2025
	2. Polymer Identification	EL-A-OP-CH-SIN-MD502 Iss 3 Apr 2025
	3. Cement Content	BS 4551:2005+A2:2013
2 Cementitious Waterproof Membrane	1. Verification of base polymer	EL-A-OP-CH-SIN-MD501 Iss 3 Apr 2025 EL-A-OP-CH-SIN-MD502 Iss 3 Apr 2025
	2. Chloride Content	EL-A-OP-CH-SIN-MD503 Iss 3 Apr 2025
3 Waterproofing Coating - for repair to external wall	1. Verification of base polymer	EL-A-OP-CH-SIN-MD502 Iss 3 Apr 2025
	2. Polymer Content	EL-A-OP-CH-SIN-MD501 Iss 3 Apr 2025
4 Non-Cementitious Waterproof Membrane	1. Volatile Content	EL-A-OP-CH-SIN-MD501 Iss 3 Apr 2025
	2. Verification of base polymer	EL-A-OP-CH-SIN-MD501 Iss 3 Apr 2025 EL-A-OP-CH-SIN-MD502 Iss 3 Apr 2025
G Building Material		
1 Prepacked Mortar 2 Prepacked Skim Coat 3 Prepacked Waterproof Screed 4 Tile Grout 5 Acrylic Polymer Cementitious Coating	1. Polymer Content	EL-A-OP-CH-SIN-MD501 Iss 3 Apr 2025
	2. Product Identification Analysis	EL-A-OP-CH-SIN-MD502 Iss 3 Apr 2025
H Paint and Coating	1. Density	SS 5: Part B7: 2013(2018)+A1:2018 ASTM D1475-13(2025)

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MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
	2. Non-Volatile Matter	SS 5: Part B2: 2013 (2018), ISO 3251: 2019, IDT ASTM D2369-24
	3. Paint Dilution Test	EL-A-OP-CH-SIN-MD504 Iss 1 July 2023
	4. Volatile Organic Compounds	ISO 11890-1: 2007
	5. Determination of Low Concentrations of Mercury in Paint by Atomic Absorption Spectroscopy	SS 5: Part C4: 1988 (2019)
	6. Determination of Hexavalent Chromium (Cr(VI)) in Polymers and Electronics by the Colorimetric Method	IEC 62321-7-2: 2017
	7. Fourier Transform Infrared Spectroscopy (FTIR) and Thermogravimetric Analysis (TGA)	EL-A-OP-CH-SIN-MD528 Iss 1 Mar 2026
I Metals and Metal Products	Determination of Metal Composition by Optical Emission Spectroscopy	
	1. Carbon and Low Alloy Steels	ASTM E415-21 ASTM A751-25
	2. Stainless Steels	ASTM E1086-22 ASTM A751-25
J. Mixing Water for Concrete	Suitability of Water 1. Oils and Fats 2. Detergents 3. Colour 4. Suspended Matter 5. Odour 6. Acids 7. Humic Matter 8. Chloride Content 9. Sulphate Content 10. Alkali Content	BS EN 1008: 2002
K. Soil	1. pH Value	BS 1377-3: 2018 + A1: 2021 Clause 12

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MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
	2. Organic Matter	BS 1377-3: 2018 + A1: 2021 Clause 4
	3. Mass Loss on Ignition	BS 1377-3: 2018 + A1: 2021 Clause 6
	4. Water soluble sulphate in soil	BS 1377-3: 2018 + A1: 2021 Clause 7.3
	5. Water Extract or Groundwater Sulfate (Ion Chromatography Method)	BS 1377-3: 2018 + A1: 2021 Clause 7.4
	6. Acid or Water Extract or Groundwater Sulfate (Gravimetric Method)	BS 1377-3: 2018 + A1: 2021 Clause 7.6
	7. Sulfate in Groundwater	BS 1377-3: 2018 + A1: 2021 Clause 7.8
	8. Acid Soluble Sulfate	BS 1377-3: 2018 + A1: 2021 Clause 7.9
	9. Carbonate Content	BS 1377-3: 2018 + A1: 2021 Clause 8.2 BS 1377-3: 2018 + A1: 2021 Clause 8.3 BS 1377-3: 2018 + A1: 2021 Clause 8.4
	10. Water Soluble Chloride	BS 1377-3: 2018 + A1: 2021 Clause 9.2
	11. Acid Soluble Chloride	BS 1377-3: 2018 + A1: 2021 Clause 9.3
	12. Total Dissolved Solid	BS 1377-3: 2018 + A1: 2021 Clause 11
	13. Total Organic Carbon (TOC)	BS 1377-3: 2018 + A1: 2021 Clause 5
	14. Heavy Metals (Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Sr, Ti, V and Zn)	Digestion by USEPA 3051A: 2007 USPEA 3050B: 1996 Analysis by USEPA 6020B: 2014 (ICPMS) USEPA 6010D: 2018 (ICP-AES)

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MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT
	15. Rapid Determination of Carbonate Content of Soils	ASTM D4373-21
	16. Determination of the specific electrical conductivity in soil	ISO 11265:2025
	17. Electrical Resistivity	BS 1377-3: 2018 + A1: 2021 Clause 13
	18. Cation Exchange Capacity (CEC)	EPA 9081
L. Polymer	1. FTIR Analysis	ASTM E1252-98 (2021)
	2. Fluorine Content	BS EN 15408:2011

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Approved Signatories

S/N	Name		Scope
1.	Ms Sherly Wijaya	–	For all accredited tests except: • Section B3: Test 4 • Section B4: Test 13, 14, 15 • Section C: Test 9 • Section E: Test 11 • Section H: Test 5, 6 • Section J
2.	Ms May Soe Moe	–	For all accredited tests except Section K17
3.	Ms Sophia Voicu (Aurora)	–	For all accredited tests except Section K17
4.	Mr Ahmad Arif	–	For tests in Sections A, F, G and L
5.	Ms Tan Hui Ying (Yvonne)	–	For tests in Section H1-H3, I, J, K1-10, K16, K19 and L1

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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