SINGAPORE LABORATORY ACCREDITATION SCHEME

Accredited Laboratory SAC-SINGLAS

Schedule

CAST Laboratories Pte Ltd
17 Tuas Ave 8
Singapore 639232

Certificate No. : LA-2000-0182-G

Issue No. : 22

Date : 8 February 2025

Expiry of Certificate : 22 January 2028

FIELD OF TESTING: Mechanical Testing

MATERIALS / PRODUCTS TESTED	TEST / PROPERTIES	STANDARD METHODS / TECHNIQUES
A. Metallic Materials / Metals	1. Tensile Test	JIS Z 2241: 2022 ASTM A370: 2024 BS EN ISO 6892:1: 2019 BS EN ISO 4136: 2022 ASME IX: 2021(Article 1) AWS D1.1/D1.1M: 2020
	2. Bend Test	ASTM A370: 2024 ASME IX: 2021(Article 1) AWS D1.1/D1.1M: 2020 BS EN ISO 5173: 2023 ASTM E290: 2022
	3. Macro-etching metals & alloys macroscopic examination on welds	ASME IX: 2021(Article 1) AWS D1.1/D1.1M: 2020 BS EN ISO 17639: 2022 ASTM E340: 2023 ASTM E381: 2022
	4. Hardness Test (i) Vickers Hardness Test	ASTM E92: 2023 BS EN ISO 6507-1: 2023 BS EN ISO 9015-1: 2011
	(ii) Rockwell Hardness ("B" & "C") Test	BS EN ISO 6508-1: 2023 ASTM E18: 2024
	5. V Notch Charpy Impact	ASTM A370: 2024 ASTM E23: 2024 BS EN ISO 148-1: 2016

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MATERIALS / PRODUCTS TESTED	TEST / PROPERTIES	STANDARD METHODS / TECHNIQUES
A. Metallic Materials / Metals	6. Fracture Test	ASME IX: 2021 AWS D1.1/D1.1M: 2020 BS EN ISO 9017: 2018
	7. Determination of Chemical Composition (i) Carbon and Low-Alloy Steel Elements: Al, B, C, Cr, Co, Cu, Mn, Mo, N, Ni, Nb, P, S, Si, Sn, Ti, V, W	ASTM A751: 2021 ASTM E415: 2021
	(ii) Stainless Steels Elements: C, Cr, Cu, Mn, Mo, N, Ni, P, S, Si	ASTM A751: 2021 ASTM E1086: 2022
	(iii) Aluminium & Aluminium Alloy Elements: Ag, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Sc, Si, Sn, Sr, Ti, Tl, V, Zn, Zr	ASTM E1251: 2017a
B. Steel Reinforcement Bar	1. Tensile Test 2. Bend Test 3. Rebend Test	SS 2 : pt 1 :1999 SS 2 : pt 2 :1999 SS 2 : pt 3 : 1987 BS 4449: 2005 +A3: 2016 BS EN ISO 6892:1: 2019 BS EN ISO 15630-1: 2019 SS 560: 2016(2024)+A1:2024
	4. Dimensional Measurement / Surface Geometry	BS 4449: 2005 +A3: 2016 SS 560: 2016(2024)+A1:2024 BS EN ISO 15630-1: 2019
C. Welded Steel Fabric	1. Tensile Test 2. Bend Test 3. Rebend Test 4. Reverse Bend Test 5. Weld Shear Test 6. Strength of Joint For Welded Fabric	SS 18: pt1: 1999 SS 18: pt2: 1970 (1981) SS 32: pt 1: 1999 SS 32: pt 2: 1986 SS 561: 2010(2022)+A2:2022 BS EN ISO 15630-1: 2019 BS EN ISO 15630-2: 2019 BS EN ISO 6892-1: 2019

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D. Seven wire prestressing strand/ high tensile steel wire/prestressing Steel	1. Tensile Test (Breaking Load)	BS 5896: 2012 ASTM A416/416M: 2024 (exclude Table 2 - Yield Strength) SS 475:pt 1 & 4: 2000 BS EN ISO 6892-1: 2019 BS EN ISO 15630-3: 2019
	2. Tensile Strength	BS 5896: 2012 BS EN ISO 15630-3: 2019 BS EN ISO 6892-1: 2019 ASTM A416/A416M: 2024
E. Reinforcement steel bar with coupler	1. Tensile Load & Permanent Set	MEC-S029-RO_Jan17 (BS 8110-1: 1997) BS EN 1992-1-1:2004+A1: 2014
	2. Tensile Test & Slip Test (Permanent Elongation)	ISO 15835-2: 2018
F. Bolts	1. Tensile Test Full Size Bolts	BS EN ISO 898 - 1: 2013 (Clause 9.2)
	2. Single Shear Test	ASTM F606/F606M: 2021 CL 3.8
G. Nuts	1. Proof Load	BS EN ISO 898 - 2: 2022 BS 3692: 2014 BS 4190: 2014
H. Fiber reinforcement polymer matrix composite bars / GFRP bar	1. Tensile Test	In-house Developed Procedure MEC-S031-R1-May18
I. Metal formwork	1. Tensile Test 2. Dimension Test	JIS Z 2241: 2022 In-house Developed Procedure MEC-S032-R0-Mar18

Approved signatories

Mr Tee Boon Huat	For all tests
Mr Benedict Lim	For all tests
Mr S. Arivoli	For tests A7, B

Note:

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid test results and calibrations. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and meet the principles of ISO 9001 **Quality Management Systems — Requirements** and are aligned with its pertinent requirements.