

FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

118-119, First Floor, Sushant Tower, Sector – 56, Gurugram – 122011, Haryana, India.



CERTIFICATE OF ACCREDITATION (AS PER ISO/IEC 17025:2017)

This is to attest that

M/s TESTING LABORATORY “EMMTECH CALIBRATION”

Plot No. 326, Sector-68, IMT Faridabad (Haryana)-121004, India

Testing Laboratory

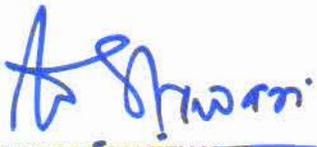
has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories and supplementary criteria for testing laboratories.

Certificate Number: TL-102

Issue Date: 28.10.2023

Valid Until: 27.10.2025

The certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard and the relevant requirements of FDAS. (for scope of accreditation visit website www.fdasindia.org).


DEVI SARAN TEWARI
Director

FEDERATION FOR DEVELOPMENT OF ACCREDITATION SERVICES

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SCOPE OF ACCREDITATION

(Annexure to Certificate of TL - 102)

Validity

28.10.2023 to 27.10.2025

Last Amended on

Chemical Testing (Laboratory Based)

S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
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Building Materials

1	Cement (OPC/PPC/PSC)	Aluminium Oxide (as Al ₂ O ₃)	IS 4032:1985 RA: 2019
		Calcium Oxide (as CaO)		
		Insoluble Residue		
		Iron Oxide (as Fe ₂ O ₃)		
		Loss on ignition		
		Magnesium Oxide (as MgO)		
		Potassium Oxide		
		Silica (as SiO ₂)		
		Sodium Oxide		
		Sulphuric Anhydride		
		Total Chloride (as Cl)		
2	Concrete	Chloride (as Cl)	IS 14959 (Part-1):2001 RA: 2021
		Sulphate (as SO ₄)	IS 4032:2019 RA:1985
3	Admixture	Ash Content	IS 9103:1999 RA: 2018
		Dry Material Content		
		pH		
		Relative Density		
		Chloride ion Content	IS 6925:1973 RA: 2018	
4	Micro Silica / Silica Fume	Available Alkali as Potassium Oxide (K ₂ O)	IS 4032:1985 RA: 2019
		Available Alkali as Sodium Oxide (Na ₂ O)		
		Loss on Ignition	IS 1727:1967 RA: 2018	
		Moisture Content		
		Silicon dioxide (SiO ₂)	IS 1727:1967 RA: 2018	

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5	Ceramic Tile	Resistance to Household Chemicals	IS 13630 (P-8) 2019
		Resistance to staining		
6	Fly Ash	Available Alkalis as Potassium Oxide (K ₂ O)	IS 3812 (P-1) 2003
		Available Alkali as Sodium Oxide (Na ₂ O)		
		Total Chlorides (as Cl)			IS 4032:1985 RA: 2019
		Combined Alumina & Ferric Oxide (as R ₂ O ₃)	IS 1727:1967 RA: 2018	
		Loss on Ignition		
		Magnesium Oxide (MgO)		
		Moisture Content		
		Silicon dioxide (SiO ₂)		
		Sulphur Trioxide (SO ₃)		
7	Plaster of Paris	Calcium Oxide (as CaO)	IS 1288:1982 RA: 2021
		Soluble Magnesium Salt (as MgO)		
		Sulphur Trioxide (as SO ₃)		
		Loss on Ignition	IS 2547(Part-1):1976 RA: 2017	
		Soluble Magnesium Salt (as MgO)		
		Soluble Sodium Salt (as Na ₂ O)		
8	Fine/Coarse Aggregate	Alkali Aggregate reactivity (Soluble silica)	IS 2386 (Part 7) 1963
		Alkali Aggregate reactivity (Reduction in alkalinity)		
		sulphate	BS 812 (P 118) :1988	
		Chloride		

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9	Soil	Available phosphorus	Laboratory SOP- No. EMTC/TPM-09C.10 Based on Ministry of Agriculture Manual 2011-4.6.3/14
		Available Potassium (as K)	Laboratory SOP- No. EMTC/TPM-09C.10 Based on Ministry of Agriculture Manual 2011-4.6.3/14	
		Chloride (as Cl)	Laboratory SOP- No. EMTC/TPM-09C.10 Based on Ministry of Agriculture Manual 2011-4.6.3/14	
		Exchangeable Calcium (as Ca)	Laboratory SOP- No. EMTC/TPM-09C.10 Based on Ministry of Agriculture Manual 2011-4.6.3/14	
		Magnesium (as Mg)	Laboratory SOP- No. EMTC/TPM-09C.10 Based on Ministry of Agriculture Manual 2011-4.6.3/14	
		Total Nitrogen	Laboratory SOP- No. EMTC/TPM-09C.10 Based on Ministry of Agriculture Manual 2011-4.6.3/14	
		Total Soluble Solid	IS 2720(P-21):1977	

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		Conductivity	IS 2720 (P-21):1977
		Sulphate (as SO ₄)	IS 2720(P-27):1977	
		Organic Carbon/Organic Matter	IS 2720(P-22):1972	
		pH	IS 2720(P-26):1987	
Metals and Alloys				
1	Stainless Steel	Carbon (C)	IS 228(Part-1):1987 RA: 2018	.....
		Chromium (Cr)	IS 228(Part-6):1987 RA: 2019	
		Manganese (Mn)	IS 228(Part-2):1987 RA: 2018	
		Nickel (Ni)	IS 228 (Part-5):1987 RA: 2019	
		Phosphorus (P)	IS 228(Part-3): 1987 RA: 2018	
		Silicon (Si)	IS 228 (part-8) :1989 RA: 2019	
		Sulphur (S)	IS 228(PART-9):1989 RA: 2019	
		Carbon (as C)	ASTM: E-1086: 2014	Spectrometer (OES)
		chromium (as Cr)		
		Copper (as Cu)		
		Manganese (as Mn)		
		Molybdenum (as Mo)		
		Nickel (as Ni)		
		Phosphorous (as P)		
		Silicon (as Si)		
		Sulphur (as S)		

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2	Steel Products	Mass of Zinc Coating (Mass/Unit area)	IS 6745:1972 RA: 2021
		Uniformity of Zinc coating	IS 2633:1986 RA: 2021	
3	Mild Steel	Carbon (C)	IS 228(Part-1):1987 RA: 2018
		Manganese (Mn)	IS 228(Part-2):1987 RA: 2018	
		Phosphorus (P)	IS 228(Part-3):1987 RA: 2018	
		Silicon (Si)	IS 228(part-8):1989 RA: 2019	
		Sulphur (S)	IS 228(Part-9):1987 RA: 2018	
4	Ferrous Materials, alloys & products (Coated and Plated products)	Salt Spray test	ISO 9227: 2017	Salt Spray Chamber
			ASTM B 117: 2018	
5	Aluminium Products	Thickness of Anodizing Coating	IS 5523:1983 RA: 2021
6	Aluminium & its alloys	Chromium (as Cr)	ASTM:E-1251: 1999	Spectrometer (OES)
		Copper (as Cu)		
		Iron (as Fe)		
		Lead (as Pb)		
		Magnesium (as Mg)		
		Manganese (as Mn)		
		Silicon (as Si)		
		Strontium (as Sr)		
		Titanium (as Ti)		
		Vanadium (as V)		
Zinc (as Zn)				

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
7	Low, Medium & High Carbon steel	Nickel (as Ni)	ASTM E-415: 2015	Spectrometer (OES)
		Phosphorus (as P)		
		Copper (as Cu)		
		Molybdenum (as Mo)		
		Silicon (as Si)		
		Carbon (as C)		
		Chromium (as Cr)		
		Manganese (as Mn)		
		Nickel (as Ni)		
		Niobium (as Nb)		
		Sulphur (as S)		
		Vanadium (as V)		
		Boron (as B)		
		Aluminium (as Al)		
		Titanium (as Ti)		
		Phosphorous (as P)		
		Aluminium (as Al)	IS 8811:1998 RA: 2018	Spectrometer (OES)
		Boron (as B)		
		Carbon (as C)		
		Chromium (as Cr)		
		Copper (as Cu)		
		Manganese (as Mn)		
		Molybdenum (as Mo)		
		Nickel (as Ni)		
		Niobium (as Nb)		
		Phosphorous (as P)		
		Silicon (as Si)		
Sulphur (as S)				

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
8	Brass	Titanium (as Ti)	BS:EN 15079: 2015	Spectrometer (OES)
		Vanadium (as V)		
		Aluminium (as Al)		
		Iron (as Fe)		
		Lead (as Pb)		
		Manganese (as Mn)		
		Nickel (as Ni)		
		Phosphorus (as P)		
		Tin (as Sn)		
		Silicon (as Si)		
		Sulphur (as S)		
9	Copper & its alloys	Iron (as Fe)	BS:EN 15079: 2015	Spectrometer (OES)
		Lead (as Pb)		
		Aluminium (as Al)		
		Manganese (as Mn)		
		Nickel (as Ni)		
		Phosphorous (as P)		
		Tin (as Sn)		
		Zinc (as Zn)		
		Silicon (as Si)		
		Sulphur (as S)		
10	Cast Iron	Carbon (as C)	IS-15338:2000 RA: 2018	Spectrometer (OES)
		Chromium (as Cr)		
		Copper (as Cu)		
		Manganese (as Mn)		
		Molybdenum (as Mo)		
		Nickel (as Ni)		

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		Phosphorous (as P)	IS-15338:2000 RA: 2018	Spectrometer (OES)
		Silicon (as Si)		
		Sulphur (as S)		
		Vanadium (as V)		
		Aluminium (as Al)		
		Carbon (as C)	ASTM E 1999: 2011	Spectrometer (OES)
		Chromium (as Cr)		
		Copper (as Cu)		
		Manganese (as Mn)		
		Molybdenum (as Mo)		
		Nickel (as Ni)		
		Phosphorous (as P)		
		Silicon (as Si)		
		Sulphur (as S)		
Titanium (as Ti)				
Vanadium (as V)				
11	Austenitic and ferritic stainless steel	Carbon (as C)	IS:9879:1998 RA: 2021	Spectrometer (OES)
Chromium (as Cr)				
Copper (as Cu)				
Manganese (as Mn)				
Molybdenum (as Mo)				
Nickel (as Ni)				
Phosphorus (as P)				
Silicon (as Si)				
Sulphur (as S)				
12	Low Alloy Steel	Copper (as Cu)	ASTM E-415: 2015	Spectrometer (OES)
Molybdenum (as Mo)				
Silicon (as Si)				

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		Carbon (as C)	ASTM E-415: 2015	Spectrometer (OES)
		Chromium (as Cr)		
		Manganese (as Mn)		
		Nickel (as Ni)		
		Niobium (as Nb)		
		Sulphur (as S)		
		Vanadium (as V)		
		Boron (as B)		
		Aluminium (as Al)		
		Phosphorous (as P)		
		Titanium (as Ti)		
		Aluminium (as Al)	IS 8811:1998 RA: 2018	Spectrometer (OES)
		Boron (as B)		
		Carbon (as C)		
		Chromium (as Cr)		
		Copper (as Cu)		
		Manganese (as Mn)		
		Molybdenum (as Mo)		
		Nickel (as Ni)		
		Niobium (as Nb)		
Phosphorous (as P)				
Silicon (as Si)				
Sulphur (as S)				
Titanium (as Ti)				
Vanadium (as V)				
13	Nickel & its Alloys	Carbon (as C)	ASTM E3047: 2016	Spectrometer (OES)
	Chromium (as Cr)			
	Cobalt (as CO)			
	Copper (as Cu)			

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Iron (as Fe)	ASTM E3047: 2016
		Manganese (as Mn)		
		Molybdenum (as Mo)		
		Niobium (as Nb)		
		Silicon (as Si)		
		Tungsten (as W)		
14	Tool Steel	Carbon (C)	JISG 1253: 2002	Spectrometer (OES)
		Chromium (Cr)		
		Cobalt (Co)		
		Manganese (Mn)		
		Molybdenum (Mo)		
		Phosphorus (P)		
		Silicon (Si)		
		Sulphur		
		Nickel (as Ni)		
		Tungsten (as W)		
		Vanadium (as V)		
Water				
15	Water	Inorganic Solid	IS:3025(Part-18):2022
			APHA 23rd Edn.2017 - 2540 E (Fixed and Volatile Solids Ignited at 5500C): 2017
		Organic Solid	APHA-2540 E:23rd edition: 2017
			IS:3025(Part-18):2022

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		pH	IS 3025 (Part 11) Electrometric method: 2022	.....
		Sulphate (as SO ₄)	IS 3025 (Part 24) Turbidity Method: 1986 Reaffirmed: 2019	.....
		Total Solid / Total Dissolved Solid	IS 3025(Part-16):2023	.....
		Total Suspended Solid	IS 3025(Part-17):2022	.....
		Acidity	IS 3025(Part-22):1986 RA: 2014	.....
		Chloride (as Cl)	IS 3025(Part-32):1988 Argentometric Method, RA: 2019	.....
		Calcium (as Ca)	IS 3025 (Part 40):1991 EDTA Titrimetric method	.....
		Magnesium (as Mg)	IS 3025 (Part 46):1994 EDTA Volumetric Method	.....
		Chemical oxygen demand	IS 3025 (Part 58): 2006	.....
		Bio Chemical oxygen demand	IS 3025 (Part 44):2023	.....
		Hardness (as CaCO ₃)	IS 3025 (Part 21): 2009
		Conductivity	IS 3025 (Part 14): 2013
		Dissolved oxygen	IS 3025 (Part 38): 1989

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
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		Silica (as SiO ₂)	IS 3025 (Part 35): 1988
		Iron (as Fe)	IS 3025 (Part 53): 2003
		Fluoride (as F)	APHA 23rd Edn.2017-- 4500 F-D (Spands method)
		Colour/ Appearance	IS 3025 (Part 4): 2021	.....
		Alkalinity	IS 3025(Part-23):1986 RA: 2019	.....
		Turbidity	IS 3025 (Part 10): 2023	.....
		Sulphate (as SO ₃)	IS 3025 (Part 24):1986
		Sodium (as Na)	IS 3025 (Part 45):1993
		Potassium (as K)	IS 3025 (Part 45):1993

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Mechanical Testing (Laboratory Based)

S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
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Building Material

1	Aggregate (Coarse)	10% fine Value	IS 2386(Part-4):1963 RA : 2021
		Aggregate Crushing Value	IS 2386(Part-4):1963 RA: 2021	
		Bulk Density	IS 2386(Part-3):1963 RA: 2021	
		Combined Flakiness & Elongation Index	IS 2386(Part-1):1963 RA: 2021	
		Sieve Analysis	IS 2386(Part-1):1963 RA: 2021	
		Impact Value	IS 2386(Part-4):1963 RA: 2021	
		Los Angles Abrasion Test	IS 2386(Part-4):1963 RA: 2021	
		Material finer than 75 micron IS sieve	IS 2386(Part-1):1963 RA: 2021	
		Soundness Test	IS 2386(Part-5):1963 RA: 2021	
		Specific Gravity	IS 2386(Part-3):1963 RA: 2021	
		Water Absorption	IS 2386(Part-3):1963 RA: 2021	
		Clay Lumps	IS 2386(Part-2):1963 RA: 2021	
		Coal & Lignite	IS 2386(Part-2):1963 RA: 2021	
		Soft Particles	IS 2386(Part-1):1963 RA: 2021	

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
2	Aggregate (Fine)	Bulk Density	IS 2386(Part-3):1963 RA: 2021	.....
		Material finer than 75 micron	IS 2386(Part-1):1963 RA: 2021	.....
		Sieve Analysis	IS 2386(Part-1):1963 RA: 2021	.....
		Soundness Test	IS 2386(Part-5):1963 RA: 2021	.....
		Specific Gravity	IS 2386(Part-3):1963 RA: 2021	.....
		Water Absorption	IS 2386(Part-3):1963 RA: 2021	.....
		Clay Lumps	IS 2386(Part-2):1963 RA: 2021	.....
		Coal & Lignite	IS 2386(Part-2):1963 RA: 2021	.....
		Organic Impurities	IS 2386(Part-2):1963 RA: 2021	.....
		Silt Content	AS Per CPWD VOL-1: 2019	.....
		Total of percentage of all deleterious materials	IS 383: 2016	.....
		Fineness Modulus	ASTM C136/C136M-19: 2019	.....
3	Brick (Brunt Clay Brick)	Dimension (Height)	IS 1077-1992 RA: 2021	.....
		Dimension (Length)		
		Dimension (Width)		
		Efflorescence	IS 3495(Part-3): 2019	
		Compressive Strength	IS 3495(Part-1): 2019	
		Water Absorption	IS 3495(Part-2): 2019	

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4	Brick (Brunt Clay Fly Ash Brick)	Dimension (Height)	IS 13757:1993 RA: 2021
		Dimension (Length)	IS 13757:1993 RA: 2021	
		Dimension (Width)	IS 13757:1993 RA: 2021	
		Efflorescence	IS 3495(Part-3): 2019
		Compressive Strength	IS 3495(Part-1): 2019	
		Water Absorption	IS 3495(Part-2): 2019	
5	Brick (Pulverized Fuel Ash-Lime Bricks)	Dimension (Length)	IS 12894:2002 RA: 2017
		Dimension (Height)	IS 12894:2002 RA: 2017	
		Dimension (Width)	IS 12894:2002 RA: 2017	
		Efflorescence	IS 3495(Part-3): 2019	
		Water Absorption	IS 3495(Part-2): 2019	
		Compressive Strength	IS 3495(Part-1): 2019	
		Drying Shrinkage	IS 4139: 1989	
6	Brick (Sewer Brick)	Dimension (Height)	IS 4885:1988 RA: 2020
		Dimension (Length)	IS 4885:1988 RA: 2020	
		Dimension (Width)	IS 4885:1988 RA: 2020	
		Compressive Strength	IS 3495(Part-1): 2019	
		Efflorescence	IS 3495(Part-3): 2019	
		Water Absorption	IS 3495(Part-2): 2019	
7	Brick (Pulverized Fuel Ash –Cement Bricks)	Dimension (Height)	IS 16720 : 2018
		Dimension (Length)	IS 16720 : 2019	
		Dimension (Width)	IS 16720 : 2020	
		Compressive Strength	IS 3495(Part-1): 2019	
		Efflorescence	IS 3495(Part-3): 2019	
		Water Absorption	IS 3495(Part-2): 2019	
8	Cement (OPC / PPC / PSC)	Compressive Strength 672 hours	IS 4031(Part-6):1988 RA: 2019

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		Compressive Strength (168 Hours)	IS 4031(Part-6):1988 RA: 2019
		Compressive Strength (72 Hours)	IS 4031(Part-6):1988 RA : 2019	
		Consistency	IS 4031(Part-4):1988 RA: 2019	
		Density	IS 4031(Part-11):1988 RA: 2019	
		Final Setting Time	IS 4031(Part-5):1988 RA: 2019	
		Fineness (Blaine's Air Permeability)	IS 4031(Part-2):1999 RA: 2018	
		Fineness (Dry Sieve Method)	IS 4031(Part-1):1996 RA : 2016	
		Initial Setting Time	IS 4031(Part-5):1988 RA: 2019	
		Soundness (Autoclave Method)	IS 4031(Part-3):1988 RA: 2019	
		Soundness (Le-Chatelier Method)	IS 4031(Part-3):1988 RA: 2019	
9	Ceramic/Vitrified Tiles	Length	IS 13630(Part-1): 2019	.....
		Width		
		Thickness		
		Straightness of Side		
		Rectangularity		
		Surface Flatness (Center Curvature)		
		Surface Flatness (Edge Curvature)		
		Surface Flatness (Warpage)		
		Surface Quality		

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Water Absorption	IS 13630(Part-2): 2019	.....
		Bulk Density		
		Thermal expansion	IS 13630(Part-4): 2020	
		Breaking Strength	IS 13630(P-6): 2019	
		Modulus of Rupture		
		Scratch Hardness of Surface	IS 13630(Part-13): 2019	
10	Cheqered Cement Concrete Tiles	Dimension-Length	IS:13801:2013 RA:2018	.....
		Dimensions Width		
		Dimensions- Thickness		
		Flatness of the Surface		
		Resistance to Wear		
		Straightness		
		Thickness of wearing layer		
		Water Absorption %		
		Wet Transverse Strength		
		Flatness of the Tile surface		
		Perpendicularity		
11	Bitumen, Modified bitumen, Bitumen Felts & Bitumen Emulsion	Ductility	IS 1208(P-1):2023	.....
		Flash Point		
		Fire Point	IS 1448(Part-69): 2019	
		Loss on Heating	IS 1212:2022	
		Softening Point	IS 1205:2022	
		Solubility in Trichloroethylene	IS 1216:1978 RA: 2019	
		Penetration	IS 1203:2022	.....
		Absolute Viscosity	IS 1208:1978 RA: 2019	
		Kinematic Viscosity	IS 1206 (P-III):2021	
		Specific gravity	IS 1202:2021	

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Mechanical Testing (Laboratory Based)

S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Industrial Viscosity	IS 1206 (P-1):1978: 2019	
		Elastic Recovery	IS 1208(P-2):2023	
12	Hardened Concrete	Accelerated Compressive Strength by Boiling Water Method	IS 9013-1978 RA: 2018	.....
		Compressive Strength	IS 516(P-1/SEC-1): 2021	
		Compressive Strength of concrete core	IS 516(P-4) : 2018	
		Flexural Strength	IS 516(P-1/SEC-1): 2021	
		Split Tensile Strength		
13	AAC Block	Compressive Strength	IS 6441(P-5):1972 RA : 2022	.....
		Density	IS 6441(P-1):1972 RA : 2022	
		Drying Shrinkage	IS 6441(P-2):1972 RA : 2022	
		Moisture Content	IS 6441(P-1):1972 RA : 2022	
		Length	IS 2185(P-3):1984 RA: 2020	
		Width	IS 2185(P-3):1984 RA: 2020	
		Height	IS 2185(P-3):1984 RA: 2020	
14	Concrete Kerb Stone	Length	IS 5758: 2020
		Height		
		Chase		
		Draw		

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Thickness	IS 5758: 2020	
		Flatness		
		Straightness		
		Thickness of facing layer		
		water Absorption		
		Compressive Strength		
		Bending Strength		
		Profile		
		Radius		
15	Paver Block	Length	IS 15658: 2021
		Width		
		Arris/Chamfer		
		Aspect ratio		
		Thickness		
		Thickness of wearing layer		
		Visual observation		
		Wearing face area		
		plan area		
		Ratio of wearing face area and plan area		
		Deviation from squareness		
		Tensile Splitting Strength		
		Flexural Strength		
		Failure load per unit length		
		Compressive Strength		
		Water Absorption		
		Abrasion resistance (Wet Condition)		

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Abrasion resistance (Dry Condition)	IS 15658: 2021
		Freeze thaw Durability		
		Visual inspection		
16	Fly Ash	Compressive strength	IS 1727 : 1967/RA:2018
		Density		
		Fineness (By Blaine's air)		
		Retained on 45 micron		
		Soundness by Autoclave		
17	Rock	Density	IS 13030:1991 RA: 2021
		Point Load Strength	IS 8764:1979 RA: 2019	
		Porosity	IS 13030:1991 RA: 2021	
		Unconfined Compressive Strength	IS 9143:1979 RA: 2021	
		Water Content	IS 13030:1991 RA: 2021	
		Slake Durability Test	IS 10050:1981 RA: 2021	
		Tensile Strength of Rock (Brazilian Test)	IS 10082:1981 RA: 2021	
18	Soil	Triaxial - Consolidated Drained (CD) (C)	BS EN ISO 17892-9: 2018
		Consolidated Drained (CD) (phi)		
		Triaxial - Consolidated Undrained (CU) with pore water pressure measurement - Angle of Shearing Resistance (phi)	IS 2720(Part-12):1981 RA: 2021	

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Consolidated Undrained (CU) with pore water pressure measurement - Cohesion (C)	IS 2720(Part-12):1981 RA: 2021	
		Permeability by Falling Head Method	IS 2720(Part-17):1986 RA: 2021	
		Permeability By Constant Head Method		
19	Stone (Granite, Kota, Marble)	Density	IS 13030:1991 RA: 2021
		Water Content		
		Apparent Specific Gravity	IS 1124:1974 RA: 2017	
		Specific Gravity		
		Water Absorption		
		Apparent Porosity		
		Apparent Specific Gravity	.....
	Hardness (Moh's Scale)	IS 13630 (P-13): 2019		
	Stone (Granite)	Dimension (Length)	IS 14223 (P-1):1995 RA: 2022
		Dimension (Breadth)		
Dimension (Thickness)				
Stone (Marble)	Dimension (Length)	IS 1130:1969 RA: 2017	.....
	Dimension (Breadth)			
	Dimension (Thickness)			
20	Soil	California Bearing Ratio (CBR)	IS 2720(Part-16):1987 RA: 2021
		Consolidation - Preconsolidation Pressure	IS 2720(Part-15):1986 RA: 2021	
		Direct Shear - Cohesion (C)	IS 2720(Part-13):1986 RA: 2021	
		Direct Shear - Angle of Shearing Resistance (phi)	IS 2720(Part-13):1986 RA: 2021	

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Free Swell Index	IS 2720(Part-40):1986 RA: 2021	
		Heavy Compaction (MDD)	IS 2720(Part-8):1983 RA: 2020	
		Heavy Compaction (OMC)	IS 2720(Part-8):2015 RA: 2020	
		Grain Size Analysis by Hydrometer	IS 2720(Part-4):1985 RA: 2020	
		Light Compaction (MDD)	IS 2720(Part-7):1980 RA: 2021	
		Light Compaction (OMC)	IS 2720(Part-7):1980 RA: 2021	
		Liquid Limit by Cone Penetrometer	IS 2720(Part-5):1985 RA: 2020	.....
		Water Content by Oven Drying Method	IS 2720(Part-2):1973 RA: 2020	
		Plastic Limit	IS 2720(Part-5):1985 RA: 2020	
		Shrinkage Limit	IS 2720(Part-6):1972 RA: 2021	
		Grain Size Analysis, (Dry & Wet)	IS 2720(Part-4):1985 RA: 2020	
		Specific Gravity- Fine Grained Soil	IS 2720(Part 3/ Section- 2):1980 RA: 2021	
		Unconfined Compressive Strength	IS 2720(Part-10):1991 RA: 2020	
		Triaxial Compression - UU (C)	IS 2720(Part-11):1993 RA: 2021	
		Triaxial Compression - UU (phi)	IS 2720(Part-11):1993 RA: 2021	

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used	
21	GSB/WMM/WBM	California Bearing Ratio (CBR)	IS 2720(Part-16):1987 RA: 2021	
		Flakiness index	IS 2386(P-1):1963		
		Elongation index	IS 2386(P-1):1963		
		Impact Value	IS 2386(P-4):1963		
		Liquid Limit	IS 2720(Part-5):1985 RA: 2020		
		Plastic Limit	IS 2720(Part-5):1985 RA: 2020		
		Los Angles Abrasion Test	IS 2386(P-4):1963		
		Sieve Analysis	IS 2386(P-1):1963		
		MDD (Heavy Compaction)	IS 2720(Part-8):1983 RA: 2020		
		OMC (Heavy Compaction)	IS 2720(Part-8):1983 RA: 2020	
		MDD (Light Compaction)	IS 2720(Part-7):1980 RA: 2021		
		OMC (Light Compaction)	IS 2720(Part-7):1980 RA: 2021		
		22	Track Ballast		Aggregate Abrasion Value	IS 2386(P-4):1963	.....
Aggregate impact value	IS 2386(P-4):1963				
Gradation (53-0.75mm)	IS 2386(P-1):1963				
Water Absorption	IS 2386(P-2):1963				
Mechanical Properties of Material					
1	Hot Rolled Medium and High Tensile Structural Steel	Tensile Strength	IS 1608(Part-1): 2022	
		Yield Stress			
		Percentage Elongation			
		0.2% proof stress			

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Total Elongation at maximum force	IS 1608(Part-1): 2022	
		Bend Test	IS 1599: 2019	
		Rebend Test	IS 1786:2008 RA: 2018	
		TS/YS Ratio		
2	Dimensions for Hot Rolled Steel Beam, Column, Channel & Angle Sections	Mass	IS:808: 2021	.....
3	Specification for Rolling & Cutting Tolerance for Hot Rolled Steel Products	Mass	IS:1852:1985 RA: 2017	
4	Hot Rolled Carbon Steel Sheet And Strip	Dimensions	IS 1079: 2017	
5	High Strength Deformed steel, bars & wires for Concrete reinforcement, Structural Steel	Tensile Strength	IS 1608(Part-1): 2022	.....
		Percentage Elongation		
		0.2% proof stress		
		Total Elongation at maximum force		
		Bend Tests	IS 1599: 2019	
		Rebend Test	IS 1786:2008 RA: 2018	
		TS/YS Ratio		
6	Reinforcement couplers for mechanical splices of bars	% Elongation	IS:1608(Part-1):2022	.....
		Location of failure	IS:16172:2014	
		Slip test		
		Tensile Strength	IS:1608(Part-1):2022	
7	Cast Iron Fittings for Pressure Pipes for Water, Gas & Sewage	Mass	IS 1538:1993 RA: 2018

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
	Cast Iron/Ductile Iron Drainage Pipes	Mass	IS 1729:2002 RA: 2017	.....
8	Centrifugally Cast Iron Pressure pipes for Water, Gas & Sewage application	Mass	IS 1536:2001 RA: 2021	.....
9	Galvanized Steel Barbed Wire for Fencing	Mass	IS 278:2009 RA: 2020	.....
10	Steel plates, sheets, Strips & Flats for Structural & General Engg. Purposes- Dimension	Mass	IS:1730:1989 RA: 2019	.....
11	Steel Tubes for Structural Purposes- Specification	Mass	IS:1161:2014 RA: 2019	.....
	Steel Tubes for Structural Purposes	Diameter	IS 1161:2014 RA: 2019	.....
12	Steel Pipes	Flattening Test	IS 2328: 2018	.....
	Steel Plates	Sides (Length, Width)	IS 1730:1989 RA: 2019	
		Thickness	IS 1730:1989 RA: 2019	
13	Steel Products (Angle, Channel, Beam)	Depth	IS 808: 2021	.....
14	Steel Tubes Used for Water Wells	Dimensions	IS 4270:2001 RA: 2017	.....
15	Steel Bars round and Square for structural and general engineering purpose	Dimensions	IS 1732:1989/ RA: 2019	.....
		Mass	IS:1732:1989 RA: 2019	
	Steel Tubes, Tubulars and Other Wrought Fittings Part 1: Steel Tubes	Mass	IS 1239(Part-1): 2019	

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
16	Hollow Steel Sections for Structural use	Mass	IS 4923: 2017
17	Wrought Aluminium and Aluminium Alloys – Extruded Round Tube and Hollow Sections for General Engineering Purposes	Dimensions	IS 1285:2002 RA: 2017
18	Ferrous materials, alloys & products	Jominy End Quench/ Hardenability Test	IS:3848:1981
		Brinell Hardness 10/250	ASTM E10 : 2018: 2018	
			IS 1500(P-1): 2019	
		Brinell Hardness 10/500	ASTM E10 : 2018	
			IS 1500(P-1):2019	
		Brinell Hardness 10/1000	ASTM E10 : 2018	
			IS 1500(P-1): 2019	
		Brinell Hardness 10/1500	ASTM E10 : 2018	
			IS 1500(P-1): 2019	
Brinell Hardness 10/3000	ASTM E10 : 2018			
	IS 1500(P-1): 2019			
19	Other Non Ferrous materials, alloys & products	Brinell Hardness 10/250	ASTM E10 :: 2018
			IS 1500(P-1):: 2019	
		Brinell Hardness 10/500	ASTM E10 : 2018	
			IS 1500(P-1): 2019	
		Brinell Hardness 10/1000	ASTM E10 : 2018	
IS 1500(P-1): 2019				

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Brinell Hardness 10/1500	ASTM E10 : 2018 IS 1500(P-1): 2019
		Brinell Hardness 10/3000	ASTM E10 : 2018 IS 1500(P-1): 2019	
		Brinell Hardness 5/250	ASTM E10 : 2018 IS 1500(P-1): 2019	
		Brinell Hardness 5/750	ASTM E10 : 2018 IS 1500(P-1): 2019	
20	Ferrous materials, alloys & products	Rockwell Hardness HRA	ASTM E18 : 2020 IS 1586(P-1): 2018
		Rockwell Hardness HRBW	ASTM E18 : 2020 IS 1586(P-1): 2018	
		Rockwell Hardness HRC	ASTM E18 : 2020 IS 1586(P-1): 2018	
		Rockwell Superficial Hardness HR15N	IS 1586(P-1): 2018 ASTM E18 : 2018	
		Rockwell Superficial Hardness HR30N	ASTM E18 : 2020 IS 1586(P-1): 2018	
		Rockwell Superficial Hardness HR45N	ASTM E18 : 2020 IS 1586(P-1): 2018	
		Rockwell Superficial Hardness HR15TW	ASTM E18 : 2020 IS 1586(P-1): 2018	
		Rockwell Superficial Hardness HR30TW	ASTM E18 : 2020 IS 1586(P-1): 2018	
		Rockwell Superficial Hardness HR45TW	ASTM E18 : 2020 IS 1586(P-1): 2018	
		21	Other Non Ferrous materials, alloys & products	
Rockwell Hardness HRBW	ASTM E18 : 2020 IS 1586(P-1): 2018			

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Rockwell Hardness HRC	ASTM E18 : 2020
			IS 1586(P-1): 2018	
		Rockwell Superficial Hardness HR15N	ASTM E18 : 2020	
			IS 1586(P-1): 2018	
		Rockwell Superficial Hardness HR30N	ASTM E18 : 2020	
			IS 1586(P-1): 2018	
		Rockwell Superficial Hardness HR45N	ASTM E18 : 2020	
IS 1586(P-1): 2018				
Rockwell Superficial Hardness HR15TW	ASTM E18 : 2020			
	IS 1586(P-1): 2018			
Rockwell Superficial Hardness HR30TW	ASTM E18 : 2020			
	IS 1586(P-1): 2018			
Rockwell Superficial Hardness HR45TW	ASTM E18 : 2020			
	IS 1586(P-1): 2018			
22	Ferrous materials, alloys & products	Vicker Hardness HV1	ASTM E92 : : 2017
			IS 1501(P-1):: 2020	
		Vicker Hardness HV5	ASTM E92: 2017	
			IS 1501(P-1):: 2020	
Vicker Hardness HV10	ASTM E92: 2017			
	IS 1501(P-1): 2020			
Vicker Hardness HV30	ASTM E92: 2017	.....	
	IS 1501(P-1):2020			
23	Other Non Ferrous materials, alloys & products	Vicker Hardness HV1	ASTM E92 : 2017
			IS 1501(P-1): 2020	
		Vicker Hardness HV5	ASTM E92 : 2017	
			IS 1501(P-1): 2020	

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used	
		Vicker Hardness HV10	ASTM E92 : 2017 IS 1501(P-1): 2020	.....
		Vicker Hardness HV30	ASTM E92 : 2017 IS 1501(P-1): 2020		
24	Ferrous materials, alloys & Products	Micro Vicker Hardness HV0.1	IS 1501(P-1): 2020	
		Micro Vicker Hardness HV0.2			
		Micro Vicker Hardness HV 0.3			
		Micro Vicker Hardness HV0.5			
		Micro Vicker Hardness HV1			
25	High strength deformed steel bars & wires for concrete reinforcement (TMT Steel Bar)	Pull Out Test Bond Strength at a measured slip of 0.25 mm	IS 2770(P-1):1967 (RA:2022)	.....
		Pull-out Test Bond Strength at a measured slip of 0.025 mm		.....
26	Uncoated Stress relieved low relaxation seven ply strand wire for prestressed concrete	Breaking strength	IS 1608(P-1):2022	.....
		Diameter difference between centre and surrounding wire	IS 14268:2022		
		Length of lay			

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
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		Nominal area	IS 14268:2022
		Nominal diameter		
		Nominal mass		
		Workmanship & Finish		
		% Elongation on 600 mm Gauge Length	IS 1608(P-1):2022	
		0.2 % proof load		
		Modulus of elasticity		

Metallographic Tests

1	Ferrous materials, alloys & Products	Micro Structure @ (50X , 100X, 200X , 500X) Magnification	IS 7739(P-5):1976 RA: 2018	Metallurgical Microscope
		Case Depth @ (50X , 100X, 200X , 500X) Magnification	IS 6416:1988 RA: 2018	
		Phase analysis @ (50X , 100X, 200X , 500X) Magnification	E562: 2019	
		Grain Size @ 100X Magnification	IS 4748: 2021	
		Grain Size @ 100X Magnification	E 112: 2019	
		Coating thickness @ 100 X	IS 3203:1981 RA: 2021	
		Coating Thickness @ 100 X	B 499: 2021	

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S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
		Decarburization @ (50X , 100X, 200X , 500X) Magnification	IS 6396:2000 RA: 2018	
		Decarburization @ (50X , 100X, 200X , 500X) Magnification	E 1077: 2021	
		Macro Examination at 10 X	IS 11371:1985: 2018	Stereo Microscope
		Welding Penetration at 10 X	ASME Sec-9: 2019	
		Heat Affected Zone	ASME Sec-9: 2019	

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Non Destructive Testing (At Site)

S. No.	Material/Products	Component /Parameter/ Characteristic Tested	Test Method	Equipment Used
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Other (Hardened concrete)

1	Concrete/Reinforced Concrete(NDT)	Ultrasonic Pulse velocity test	IS 516(P-5/SEC-1): 2018	UPV
2	Concrete (NDT)	Rebound Hammer	IS 516(P-5/SEC-4): 2020	Rebound Hammer
3	Concrete (NDT)	Carbonation test	IS 516(P-5/SEC-3): 2021	Phenolphthalein Indicator
4	Concrete (NDT)	Crack Depth measurement in reinforced structures	IS 516(P-5/SEC-1): 2018	UPV

Other (soil Field)

5	Soil/GSB/WMM/WBM	Compaction (by Soil Core Cutter)	IS 2720 (P-29):1975 RA: 2020	.....
6	Soil/GSB/WMM/WBM	Compaction (by Sand Replacement)	IS 2720 (P-28):1974 RA: 2020

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