National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

SCOPE OF ACCREDITATION

Laboratory Name	METAL HEAT TREATERS & ENGINEERS (MATERIAL TESTING LABORATORY), PLOT NO. 1803/9, ROAD A-32, PHASE IV, GIDC ESTATE, VITHAL UDYOGNAGAR, ANAND, GUJARAT , INDIA		
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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
Permanent Facility					
1	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Chromium	ASTM E1251: 2017	0.005 % to 0.15 %
2	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Copper	ASTM E1251: 2017	0.020 % to 1.50 %
3	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Iron	ASTM E1251: 2017	0.20 % to 0.70 %
4	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Lead	ASTM E1251: 2017	0.08 % to 0.20 %
5	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Magnesium	ASTM E1251: 2017	0.30 % to 7.5 %
6	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Manganese	ASTM E1251: 2017	0.050 % to 1.00 %
7	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Nickel	ASTM E1251: 2017	0.030 % to 0.50 %
8	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Silicon	ASTM E1251: 2017	0.050 % to 11.00 %
9	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Tin	ASTM E1251: 2017	0.010 % to 0.20 %
10	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Titanium	ASTM E1251: 2017	0.005 % to 0.030 %
11	CHEMICAL- METALS & ALLOYS	Aluminium & its alloys	Zinc	ASTM E1251: 2017	0.020 % to 1.00 %
12	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloy Steel	Vanadium	IS 8811: 1998	0.020 % to 0.70 %
13	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Aluminum	ASTM E415: 2017	0.005 % to 0.060 %

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14	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Aluminum	IS 8811: 1998	0.005 % to 0.060 %
15	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Carbon	IS 8811: 1998	0.050 % to 1.40 %
16	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Carbon	ASTM E415: 2017	0.050 % to 1.40 %
17	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Chromium	ASTM E415: 2017	0.005 % to 3.50 %
18	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Chromium	IS 8811: 1998	0.005 % to 3.50 %
19	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Cobalt	ASTM E415: 2017	0.050 % to 0.200 %
20	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Cobalt	IS 8811: 1998	0.050 % to 0.20 %
21	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Copper	ASTM E 415:2017: 1998	0.020 % to 0.50 %
22	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Copper	ASTM E 415: 2017	0.020 % to 0.50 %
23	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Manganese	ASTM E415: 2017	0.040 % to 3.5 %
24	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Manganese	IS 8811: 1998	0.040 % to 3.5 %
25	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Molybdenum	ASTM E415: 2017	0.05 % to 0.90 %
26	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Molybdenum	IS 8811: 1998	0.050 % to 0.900 %
27	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Nickel	ASTM E415: 2017	0.050 % to 5.00 %

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28	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Nickel	IS 8811: 1998	0.050 % to 5.00 %
29	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Niobium	ASTM E415: 2017	0.005 % to 0.15 %
30	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Nitrogen	ASTM E415: 2017	0.005 % to 0.020 %
31	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Phosphorus	ASTM E415: 2017	0.004 % to 0.120 %
32	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Phosphorus	IS 8811: 1998	0.004 % to 0.120 %
33	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Silicon	ASTM E415: 2017	0.020 % to 1.80 %
34	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Silicon	IS 8811: 1998	0.020 % to 1.80 %
35	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Sulphur	ASTM E415: 2017	0.002 % to 0.060 %
36	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Sulphur	IS 8811: 1998	0.004 % to 0.060 %
37	CHEMICAL- METALS & ALLOYS	Carbon & Low Alloys Steel	Titanium	IS 8811: 1998	0.050 % to 0.30 %
38	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Zinc	BS EN 15079: 2015	0.90 % to 35.5 %
39	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Aluminum	BS EN 15079: 2015	0.050 % to 1.00 %
40	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Iron	BS EN 15079: 2015	0.010 % to 4.00 %
41	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Lead	BS EN 15079: 2015	0.10 % to 3.00 %

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42	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Manganese	BS EN 15079: 2015	0.010 % to 0.30 %
43	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Nickel	BS EN 15079: 2015	0.010 % to 4.00 %
44	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Phosphorus	BS EN 15079: 2015	0.030 % to 0.250 %
45	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Silicon	BS EN 15079: 2015	0.005 % to 0.20 %
46	CHEMICAL- METALS & ALLOYS	Copper & its alloys	Tin	BS EN 15079: 2015	0.020 % to 15.00 %
47	CHEMICAL- METALS & ALLOYS	Cu base Metal & Alloys (PMI)	PMI Test by XRF Portable Analyzer:Copper (Cu)Zinc (Zn)Lead (Pb)Tin (Sn)Iron (Fe)Nickel (Ni)	ASTM E1476: 2004	Qualitative(Positive Metal Identification)
48	CHEMICAL- METALS & ALLOYS	Fe base Metal & Alloys	PMI Test by XRF Portable Analyzer : Manganese (Mn)Chromium (Cr)Nickel (Ni)Molybdum (Mo)Titanium (Ti)Tungstan (W)Niobium (Nb)Copper (Cu)	ASTM E1476: 2004	Qualitative(Positive Metal Identification)

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49	CHEMICAL- METALS & ALLOYS	Ni base Metal & Alloys	PMI Test by XRF Portable Analyzer : Iron (Fe)Chromium (Cr) Nickel (Ni) Molybdenum (Mo) Titanium (Ti) Tungsten (W) Niobium (Nb) Copper (Cu)	ASTM E1476: 2004	Qualitative(Positive Metal Identification)
50	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Cobalt	ASTM E3047: 2016	0.030 % to 0.20 %
51	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Aluminum	ASTM E3047: 2016	0.030 % to 0.20 %
52	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Carbon	ASTM E3047: 2016	0.005 % to 0.15 %
53	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Chromium	ASTM E3047: 2016	0.10 % to 25.00 %
54	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Copper	ASTM E3047: 2016	0.010 % to 1.00 %
55	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Iron	ASTM E3047: 2016	0.50 % to 6.00 %
56	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Manganese	ASTM E3047: 2016	0.050 % to 1.00 %
57	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Molybdenum	ASTM E3047: 2016	0.030 % to 6.50 %
58	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Niobium	ASTM E3047: 2016	0.03 % to 4.00 %
59	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Silicon	ASTM E3047: 2016	0.07 % to 0.30 %
60	CHEMICAL- METALS & ALLOYS	Nickel & its alloys	Titanium	ASTM E3047: 2016	0.02 % to 0.30 %

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61	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Carbon	ASTM E1086: 2014	0.010 % to 0.30 %
62	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Carbon	IS 9879: 1998	0.010 % to 0.30 %
63	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Chromium	ASTM E1086: 2014	16.0 % to 28.00 %
64	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Chromium	IS 9879: 1998	12.0 % to 28.00 %
65	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Cobalt	MSP-3.1 Issue-2, Dt. 29.03.: 2019	0.01 % to 0.07 %
66	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Copper	ASTM E1086: 2014	0.050 % to 1. 0 %
67	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Copper	IS 9879: 1998	0.050 % to 1.00 %
68	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Manganese	ASTM E1086: 2014	0.50 % to 2.00 %
69	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Manganese	IS 9879: 1998	0.50 % to 2.00 %
70	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Molybdenum	ASTM E1086: 2014	0.050 % to 4.50 %
71	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Molybdenum	IS 9879: 1998	0.050 % to 4.5 %
72	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Nickel	ASTM E1086: 2014	1.5 % to 18.0 %
73	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Nickel	IS 9879: 1998	7.0 % to 16.0 %
74	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Niobium	MSP-3.1 Issue-2, Dt. 29.03: 2019	0.1 % to 1.5 %

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
75	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Nitrogen	IS 228 part 23: 2003	0.010 % to 0.10 %
76	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Nitrogen	IS 228(Part 23): 2017	0.010 % to 0.30 %
77	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Phosphorous	ASTM E1086: 2014	0.005 % to 0.060 %
78	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Phosphorus	IS 9879: 1998	0.005 % to 0.060 %
79	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Silicon	IS 9879: 1998	0.25 % to 1.00 %
80	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Sulphur	ASTM E1086: 2014	0.005 % to 0.050 %
81	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Sulphur	IS 9879: 1998	0.005 % to 0.050 %
82	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Titanium	MSP-3.1 Issue-2, Dt. 29.03: 2019	0.05 % to 0.5 %
83	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Titanium	MSP-3.1 Issue-2, Dt. 29.03.: 2019	0.05 % to 0.5 %
84	CHEMICAL- METALS & ALLOYS	Stainless steel & Alloys	Vanadium	MSP-3.1 Issue-2, Dt. 29.03: 2019	0.03 % to 0.4 %
85	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Metallic Material	%Elongation	IS 1608 (Part 1): 2018	2 % to 90 %
86	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Metallic Material	%Elongation	ASTM A370: 2017	2 % to 90 %

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87	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Elongation	SA 370: 2017	2 % to 90 %
88	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Elongation	ASTM E8: 2016	2 % to 90 %
89	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Elongation	ASTM E8M: 2016	2 % to 90 %
90	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Elongation	ISO 6892 (Part 1): 2016	2 % to 90 %
91	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Elongation	BS EN 1561: 2011	2 % to 90 %
92	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Elongation	Indian Boiler Regulation 1950: 2018	2 % to 90 %
93	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Reduction of Area	IS 1608 (Part 1): 2018	2 % to 90 %

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94	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Reduction of Area	ASTM A370: 2017	2 % to 90 %
95	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Reduction of Area	SA 370: 2017	2 % to 90 %
96	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Reduction of Area	ASTM E8: 2016	2 % to 90 %
97	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Reduction of Area	ASTM E8M: 2016	2 % to 90 %
98	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Reduction of Area	ISO 6892 (Part 1): 2016	2 % to 90 %
99	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Reduction of Area	BS EN 1561: 2011	2 % to 90 %
100	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	%Reduction of Area	Indian Boiler Regulation 1950: 2018	2 % to 90 %

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101	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	0.2% Proof Stress	ASTM E8: 2016	100 N/mm² to 1200 N/mm²
102	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	0.2% Proof Stress	ASTM E8M: 2016	100 to 1200 N/mm²
103	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	0.2% Proof Stress	ASTM A370: 2017	100 to 1200 N/mm²
104	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	0.2% Proof Stress	SA 370: 2017	100 to 1200 N/mm²
105	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Parent Metal)	IS 1599: 2012	Qualitative(Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)

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106	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Parent Metal)	SA 370: 2017	Qualitative(Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
107	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Parent Metal)	ASTM A370: 2017	Qualitative(Qualitative :Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
108	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Parent Metal)	ASRM E290: 2014	Qualitative(Qualitative :Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)

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109	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Parent Metal)	BS EN ISO 7438: 2016	Qualitative(Qualitative :Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
110	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Parent Metal)	IS 1786: 2008	Qualitative(Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
111	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Weld Metal)	ASME Section IX: 2017	Qualitative(Qualitative :Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)

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112	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Weld Metal)	Indian Boiler Regulation 1950: 2018	Qualitative(Qualitative :Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
113	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Weld Metal)	ASTM E190: 2014	Qualitative(Qualitative :Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
114	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Weld Metal)	IS 3600 (Part 5): 2016	Qualitative(Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
115	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Weld Metal)	IS 3600 (Part 6): 1983	Qualitative(Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
116	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Weld Metal)	ISO 5173: 2010	Qualitative(Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
117	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Bend Test (Weld Metal)	AWS D1.1: 2015	Qualitative(Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)

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118	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Brinell Hardness Test (Ø10/3000kgf)	IS 1500 (Part 1): 2013	100 HBW to 550 HBW
119	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Brinell Hardness Test (Ø10/3000kgf)	BS EN ISO 6506 (Part 1): 2014	100 HBW to 550 HBW
120	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Brinell Hardness Test (Ø10/3000kgf)	ASTM E10: 2017	100 to 550 HBW
121	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Charpy Impact Test (U Notch)Room Temperature to -196 Deg. Cent	IS 1499 (Part 1): 2003	2 J to 300 J
122	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Charpy Impact Test (U Notch)Room Temperature to -196 Deg. Cent	ISO 148 (Part 1): 2009	2 J to 300 J
123	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Charpy Impact Test (V Notch)Room Temperature to -196 Deg. Cent	SA 370: 2017	2 J to 300 J
124	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Charpy Impact Test (V Notch)Room Temperature to -196 Deg. Cent	IS 1757 (Part 1): 2014	2 J to 300 J

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
125	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Charpy Impact Test (V Notch)Room Temperature to -196 Deg. Cent	ISO 148 (Part 1): 2009	2 J to 300 J
126	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic material	Charpy Impact Test (V Notch)Room Temperature to -196 Deg. Cent	ASTM E23: 2016	2 J to 300 J
127	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Charpy Impact Test (V Notch)Room Temperature to -196 Deg. Cent.	ASTM A370: 2017	2 J to 300 J
128	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flaring Test / Drift Expansion Test	IS 2335: 2005	Qualitative(Using 60º Conical Mandrel)
129	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flaring Test / Drift Expansion Test	ASTM A370: 2017	Qualitative(Using 60º Conical Mandrel)
130	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flaring Test / Drift Expansion Test	SA 370: 2017	Qualitative(Using 60º Conical Mandrel)
131	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flaring Test / Drift Expansion Test	BS EN ISO 8493: 2004	Qualitative(Using 60º Conical Mandrel)

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
132	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flattening Test (Steel Tubes/Pipes)	SA 370: 2017	Qualitative(Tube/Pipe : 2mm to 500mm)
133	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flattening Test (Steel Tubes/Pipes)	SA 450: 2017	Qualitative(Tube/Pipe : 2mm to 500mm)
134	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flattening Test (Steel Tubes/Pipes)	IS 2328: 2018	Qualitative(Tube/Pipe : 2mm to 500mm)
135	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flattening Test (Steel Tubes/Pipes)	SA 530: 2017	Qualitative(Tube/Pipe : 2mm to 500mm)
136	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flattening Test (Steel Tubes/Pipes)	SA 999: 2017	Qualitative(Tube/Pipe : 2mm to 500mm)
137	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flattening Test (Steel Tubes/Pipes)	BS EN ISO 8492: 2013	Qualitative(Tube/Pipe : 2mm to 500mm)
138	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Flattening Test (Steel Tubes/Pipes)	ASTM A370: 2017	Qualitative(Tube/Pipe : 2mm to 500mm)

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139	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Fracture Test (Weld Metal / Weld Joint)	Indian Boiler Regulation 1950: 2018	Qualitative
140	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Fracture Test (Weld Metal / Weld Joint)	IS 3600 (Part 8): 1985	Qualitative
141	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Fracture Test (Weld Metal / Weld Joint)	BS EN ISO 9017: 2018	Qualitative
142	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Fracture Test (Weld Metal / Weld Joint)	BS EN 1320: 1997	Qualitative
143	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Fracture Test (Weld Metal / Weld Joint)	AWS D1.1: 2015	Qualitative
144	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Fracture Test (Weld Metal/Weld Joint)	ASME Section IX: 2017	Qualitative

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
145	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Full Size Breaking Load Test (Bolt / Stud)	SA 193: 2017	Qualitative(5kN to 1000kNMandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
146	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Full Size Breaking Load Test (Bolt / Stud)	IS 1367 (Part 3): 2017	Qualitative(5kN to 1000kNMandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
147	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Full Size Breaking Load Test (Bolt / Stud)	ISO 898 (Part 1): 2013	Qualitative(5kN to 1000kNMandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
148	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Full Size Breaking Load Test (Bolt / Stud)	SA 370: 2017	Qualitative(5kN to 1000kN Mandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
149	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Full Size Breaking Load Test (Bolt / Stud)	ASTM A370: 2017	Qualitative(5kN to 1000kN Mandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
150	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Macro Examination of Metal	ASTM E381: 2017	Qualitative
151	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Macro Examination of Metal	ASM Handbook Vol.9 : 2004	Qualitative
152	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Macro Examination of Metal	ASTM E340: 2015	Qualitative

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
153	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Macro Examination of Weld Joint	ASME Section IX: 2017	Qualitative
154	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Macro Examination of Weld Joint	Indian Boiler Regulation 1950: 2018	Qualitative
155	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Macro Examination of Weld Joint	IS 3600 (Part 9): 1985	Qualitative
156	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Macro Examination of Weld Joint	BS EN ISO 17639: 2013	Qualitative
157	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Nick Break Test (Weld Metal/ Weld Joint)	ASME Section IX: 2017	Qualitative
158	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Nick Break Test (Weld Metal/ Weld Joint)	Indian Boiler Regulation 1950: 2018	Qualitative
159	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Nick Break Test (Weld Metal/ Weld Joint)	IS 3600 (Part 8): 1985	Qualitative

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
160	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Nominal Mass of TMT Bar	IS 1786: 2008	Qualitative(10gm to 15Kg)
161	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Nut)	SA 194: 2017	Qualitative(5kN to 1000kN Threaded Mandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
162	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Nut)	IS 1367 (Part 6): 2017	Qualitative(5kN to 1000kN Threaded Mandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
163	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Nut)	ISO 898 (Part 2): 2013	Qualitative(5kN to 1000kN Threaded Mandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")

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164	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Nut)	SA 370: 2017	Qualitative(5kN to 1000kN Threaded Mandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
165	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Nut)	ASTM A370: 2017	Qualitative(5kN to 1000kN Threaded Mandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
166	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Bolt / Stud)	ISO 898 (Part 1): 2013	Qualitative(5kN to 1000kNMandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
167	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Bolt / Stud)	SA 370: 2017	Qualitative(5kN to 1000kNMandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
168	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Bolt / Stud)	ASTM A370: 2017	Qualitative(5kN to 1000kNMandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
169	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Stud / Bolt)	SA 193: 2017	Qualitative(5kN to 1000kNMandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
170	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Proof Load Test (Stud / Bolt)	IS 1367 (Part 3): 2017	Qualitative(5kN to 1000kNMandrel Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")

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171	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Rebend Test of TMT bar (Reinforcement bar)	IS 1786: 2008	Qualitative(Mandrel Dia.: 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 24, 25, 30, 32, 33, 34, 36, 40, 42, 44, 48, 50, 54, 56, 60, 62, 64, 68, 70, 72, 75, 76, 80, 84, 86, 90, 96, 100, 108, 110, 112, 120, 125, 128, 140, 144, 160, 180, 200mm)
172	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Rockwell Hardness Test (B Scale)	ASTM E18: 2018	40 HRB to 100 HRB
173	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Rockwell Hardness Test (B Scale)	IS 1586 (Part 1): 2018	40 HRB to 100 HRB
174	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Rockwell Hardness Test (B Scale)	BS EN ISO 6508 (Part 1): 2016	40 HRB to 100 HRB
175	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Rockwell Hardness Test (C Scale)	ASTM E18: 2018	20 HRC to 70 HRC
176	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Rockwell Hardness Test (C Scale)	IS 1586 (Part 1): 2018	20 HRC to 70 HRC

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177	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Rockwell Hardness Test (C Scale)	BS EN ISO 6508 (Part 1): 2016	20 HRC to 70 HRC
178	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Strength	ISO 4136: 2012	100 to 1500 N/mm2
179	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Strength	BS EN ISO 5178: 2011	100 to 1500 N/mm2
180	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Strength	ASME Section IX: 2017	100 to 1500 N/mm2
181	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Strength	Indian Boiler Regulation 1950: 2018	100 to 1500 N/mm2
182	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Strength	IS 3600 (Part 3): 2018	100 to 1500 N/mm2
183	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Strength	AWS D1.1: 2015	100 N/mm2 to 1500 N/mm2

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
184	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Strength	BS EN ISO 15614 (Part 1): 2017	100 N/mm2 to 1500 N/mm2
185	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Parent Metal)	ASTM E8M: 2016	5 kN to 1000 kN
186	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Parent Metal)	ISO 6892 (Part 1): 2016	5 kN to 1000 kN
187	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Parent Metal)	BS EN 1561: 2011	5 kN to 1000 kN
188	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Parent Metal)	Indian Boiler Regulation 1950: 2018	5 kN to 1000 kN
189	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Parent Metal)	IS 1608 (Part 1): 2018	5 kN to 1000 kN
190	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Parent Metal)	ASTM A370: 2017	5 kN to 1000 kN

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
191	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile test (Parent Metal)	SA 370: 2017	5 kN to 1000 kN
192	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Parent Metal)	ASTM E8: 2016	5 kN to 1000 kN
193	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Weld Metal)	ASME Section IX: 2017	5 kN to 1000 kN
194	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Weld Metal)	Indian Boiler Regulation 1950: 2018	5 kN to 1000 kN
195	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Weld Metal)	IS 3600 (Part 3): 2018	5 kN to 1000 kN
196	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Weld Metal)	ISO 4136: 2012	5 kN to 1000 kN
197	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Weld Metal)	BS EN ISO 5178: 2011	5 kN to 1000 kN

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
198	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Weld Metal)	AWS D1.1: 2015	5 kN to 1000 kN
199	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tensile Test (Weld Metal)	BS EN ISO 15614 (Part 1): 2017	5 kN to 1000 kN
200	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Tube to Tubesheet Mock up (Pull out / Push out, Location of Fracture, Breaking Load)	ASME Section VIII (Div. 1): 2017	Qualitative(5kN to 1000kN)
201	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Ultimate Tensile Strength (Parent Metal)	IS 1608 (Part 1): 2018	100 to 1500 N/mm²
202	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Ultimate Tensile Strength (Parent Metal)	ASTM A370: 2017	100 to 1500 N/mm²
203	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Ultimate Tensile Strength (Parent Metal)	SA 370: 2017	100 to 1500 N/mm²
204	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Ultimate Tensile Strength (Parent Metal)	ASTM E8: 2016	100 to 1000 N/mm²

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
205	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Ultimate Tensile Strength (Parent Metal)	ASTM E8M: 2016	100 to 1500 N/mm²
206	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Ultimate Tensile Strength (Parent Metal)	ISO 6892 (Part 1): 2016	100 to 1500 N/mm²
207	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Ultimate Tensile Strength (Parent Metal)	BS EN 1561: 2011	100 to 1500 N/mm²
208	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Ultimate Tensile Strength (Parent Metal)	Indian Boiler Regulation 1950: 2018	100 to 1500 N/mm2
209	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test	ASTM E92: 2017	100 HV5 to 700 HV5
210	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV 5)	IS 1501: 2013	100 HV5 to 700 HV5
211	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV 5)	BS EN ISO 6507 (Part 1): 2018	100 HV5 to 700 HV5

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
212	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV 5)	BS EN 1043 (Part 1): 1996	100 HV5 to 700 HV5
213	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV10)	ASTM E92: 2017	100 HV10 to 700 HV10
214	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV10)	IS 1501: 2013	100 HV10 to 700 HV10
215	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV10)	BS EN ISO 6507 (Part 1): 2018	100 HV10 to 700 HV10
216	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV10)	BS EN 1043 (Part 1): 1996	100 HV10 to 700 HV10
217	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV30)	ASTM E92: 2017	100 HV30 to 700 HV30
218	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV30)	IS 1501: 2013	100 HV30 to 700 HV30

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
219	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV30)	BS EN ISO 6507 (Part 1): 2018	100 HV30 to 700 HV30
220	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Vickers Hardness Test (HV30)	BS EN 1043 (Part 1): 1996	100 HV30 to 700 HV30
221	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Wedge Load Test (Bolt)	SA 370: 2017	Qualitative(5kN to 1000kN Mandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
222	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Wedge Load Test (Bolt)	ASTM A370: 2017	Qualitative(5kN to 1000kN Mandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
223	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Wedge Load Test (Bolt)	SA 193: 2017	Qualitative(5kN to 1000kN Mandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
224	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Wedge Load Test (Bolt)	IS 1367 (Part 3): 2017	Qualitative(5kN to 1000kN Mandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
225	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Wedge Load Test (Bolt)	ISO 898 (Part 1): 2013	Qualitative(5kN to 1000kN Mandrel, Adaptor & Wedge Size: M10, M12, M14, M18, M20, M22, M24, M27, M30, M33, M36, M39, 1/2", 3/4", 5/8", 7/8", 1", 1.1/4", 1.3/8", 1.1/8", 1.3/4")
226	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Yield Stress	IS 1608 (Part 1): 2018	100 N/mm2 to 1200 N/mm2

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
227	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Yield Stress	ASTM A370: 2017	100 to 1200 N/mm2
228	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Yield Stress	SA 370: 2017	100 to 1200 N/mm2
229	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Yield Stress	ASTM E8: 2016	100 to 1200 N/mm2
230	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Yield Stress	ASTM E8M: 2016	100 to 1200 N/mm2
231	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Yield Stress	ISO 6892 (Part 1): 2016	100 to 1200 N/mm2
232	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Yield Stress	BS EN 1561: 2011	100 to 1200 N/mm2
233	MECHANICAL-MECHANICAL PROPERTIES OF METALS	Metallic Material	Yield Stress	Indina Boiler Regulation 1950: 2018	100 to 1200 N/mm2

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
234	MECHANICAL-METALLOGRAPHY TEST	Metallic Material	Average Grain Size	IS 4748: 2009	Qualitative(Range No. 1 to 10 by Comparison MethodMagnification : 100x)
235	MECHANICAL-METALLOGRAPHY TEST	Metallic Material	Average Grain Size	ASTM E112: 2013	Qualitative(Range No. 1 to 10 by Comparison MethodMagnification : 100x)
236	MECHANICAL-METALLOGRAPHY TEST	Metallic Material	IGC Practice "E"	ASTM A262: 2015	Qualitative
237	MECHANICAL-METALLOGRAPHY TEST	Metallic Material	IGC Practice "A"	ASTM A262: 2015	Qualitative
238	MECHANICAL-METALLOGRAPHY TEST	Metallic Material	Inclusion Rating	IS 4163: 2004	Qualitative(Method AType A, B, C, D, DSFine Series 0.5 to 3.0Thick Series 0.5 to 3.0)
239	MECHANICAL-METALLOGRAPHY TEST	Metallic Material	Inclusion Rating	ASTM E45: 2018	Qualitative(Method A & DType A, B, C, DFine Series 0.5 to 3.0Thick Series 0.5 to 3.0)

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S.No	Discipline / Group	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing/ Limits of Detection
Site Facility					
1	CHEMICAL- METALS & ALLOYS	Cu base Metal & Alloys (PMI)	PMI Test by XRF Portable Analyzer:Copper (Cu)Zinc (Zn)Lead (Pb)Tin (Sn)Iron (Fe)Nickel (Ni)	ASTM E1476: 2004	Qualitative(Positive Metal Identification)
2	CHEMICAL- METALS & ALLOYS	Fe base Metal & Alloys	PMI Test by XRF Portable Analyzer : Manganese (Mn)Chromium (Cr)Nickel (Ni)Molybdum (Mo)Titanium (Ti)Tungstan (W)Niobium (Nb)Copper (Cu)	ASTM E1476: 2004	Qualitative(Positive Metal Identification)
3	CHEMICAL- METALS & ALLOYS	Ni base Metal & Alloys	PMI Test by XRF Portable Analyzer : Iron (Fe)Chromium (Cr) Nickel (Ni) Molybdenum (Mo) Titanium (Ti) Tungsten (W) Niobium (Nb) Copper (Cu)	ASTM E1476: 2004	Qualitative(Positive Metal Identification)