



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 1 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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	Bismuth (Bi)	ASTM E1251: 2017	0.03 % to 0.40 %
2	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Chromium (Cr)	IS 11035:1984 (Reaffirmed 2010) / ASTM E1251: 2017	0.03 % to 0.30 %
3	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Copper (Cu)	IS 11035:1984 (Reaffirmed 2010) / ASTM E1251: 2017	0.2 % to 5.5 % , 0.2 % to 6.0 %
4	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Iron (Fe)	IS 11035:1984 (Reaffirmed 2010) / ASTM E1251: 2017	0.03 % to 1.0 %,0.3 % to 0.5 %
5	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Lead (Pb)	ASTM E1251: 2017	0.08 % to 0.2 %
6	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Magnesium (Mg)	IS 11035:1984 (Reaffirmed 2010) / ASTM E1251: 2017	0.09 % to 1.2 %,0.1 % to 1.2 %
7	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Manganese (Mn)	IS 11035:1984 (Reaffirmed 2010) / ASTM E1251: 2017	0.1 % to 0.8 %
8	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Nickel (Ni)	ASTM E1251: 2017	0.010 % to 0.50 %
9	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Tin (Sn)	ASTM E1251: 2017	0.01 % to 0.20 %
10	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Titanium (Ti)	IS 11035:1984 (Reaffirmed 2010) / ASTM E1251: 2017	0.010 % to 0.25 % ,0.10 % to 0.15 %



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Certificate Number TC-5651 Page No. : 2 / 21

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11	CHEMICAL- METALS & ALLOYS	Aluminium & its Alloys	Zinc (Zn)	IS 11035:1984 (Reaffirmed 2010) / ASTM E1251: 2017	0.010 % to 0.25 %
12	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Aluminum (Al)	ASTM E 415-2017 / IS 8811-1998: 2018	0.01 % to 0.05 %
13	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Boron (B)	ASTM E 415-2017 / IS 8811-1998: 2018	0.005 % to 0.008 %
14	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Carbon (C)	ASTM E 415-2017 / IS 8811-1998: 2018	0.02 % to 1.59 %
15	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Chromium (Cr)	ASTM E 415-2017 / IS 8811-1998: 2018	0.02 % to 1.40 %
16	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Copper (Cu)	ASTM E 415-2017 / IS 8811-1998: 2018	0.09 % to 0.5 %
17	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Manganese (Mn)	ASTM E 415-2017 / IS 8811-1998: 2018	0.2 % to 1.50 %
18	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Molybdenum (Mo)	ASTM E 415-2017 / IS 8811-1998: 2018	0.03 % to 0.5 %
19	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Nickel (Ni)	ASTM E 415-2017 / IS 8811-1998: 2018	0.07 % to 3.50 %
20	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel)	Niobium (Nb)	ASTM E 415-2017 / IS 8811-1998: 2018	0.001 % to 0.100 %



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 3 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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21	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel	Nitrogen (N)	ASTM E 415: 2018	0.010 % to 0.02 %
22	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel	Phosphorus (P)	ASTM E 415-2017 / IS 8811-1998: 2018	0.009 % to 0.1 %
23	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel	Silicon (Si)	ASTM E 415-2017 / IS 8811-1998: 2018	0.03 % to 1.50 %
24	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel	Sulphur (S)	ASTM E 415-2017 / IS 8811-1998: 2018	0.005 % to 0.05 % , 0.007 % to 0.5 %
25	CHEMICAL- METALS & ALLOYS	Carbon Steel (low carbon, medium carbon & high carbon steel	Vanadium (V)	ASTM E 415-2017 / IS 8811-1998: 2018	0.003 % to 0.3 % , 0.001 % to 0.25 %
26	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Aluminum (Al)	BS EN 15079: 2015	0.010 % to 0.25 %
27	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Antimony (Sb)	BS EN 15079: 2015	0.03 % to 0.15 %
28	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Arsenic (As)	BS EN 15079: 2015	0.010 % to 0.250 %
29	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Bismuth (Bi)	BS EN 15079: 2015	0.010 % to 0.100 %
30	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Cobalt (Co)	BS EN 15079: 2015	0.010 % to 0.03 %
31	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Iron (Fe)	BS EN 15079: 2015	0.010 % to 0.40 %
32	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Lead (Pb)	BS EN 15079: 2015	0.06 % to 11.0 %



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 4 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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33	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Manganese (Mn)	BS EN 15079: 2015	0.005 % to 0.02 %
34	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Nickel (Ni)	BS EN 15079: 2015	0.02 % to 0.07 %
35	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Phosphorous (P)	BS EN 15079: 2015	0.007 % to 0.30 %
36	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Silicon (Si)	BS EN 15079: 2015	0.010 % to 0.25 %
37	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Tin (Sn)	BS EN 15079: 2015	1.50 % to 12.0 %
38	CHEMICAL- METALS & ALLOYS	Copper & its Alloys	Zinc (Zn)	BS EN 15079: 2015	0.12 % to 34.0 %
39	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Aluminum (Al)	ASTM E3047: 2016	0.02 % to 0.2 %
40	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Carbon (C)	ASTM E3047: 2016	0.08 % to 0.20 %
41	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Chromium	ASTM E3047: 2016	15.92 % to 22.44 %
42	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Cobalt (Co)	ASTM E3047: 2016	0.03 % to 1.5 %
43	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Copper (Cu)	ASTM E3047: 2016	0.010 % to 34.0 %
44	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Iron (Fe)	ASTM E3047: 2016	1.8 % to 20.0 %
45	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Manganese (Mn)	ASTM E3047: 2016	0.4 % to 1.5 %
46	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Molybdenum (Mo)	ASTM E3047: 2016	0.010 % to 40.00 %



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 5 / 21

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47	CHEMICAL- METALS & ALLOYS	Nickel & its Alloys	Silicon (Si)	ASTM E3047: 2016	0.02 % to 0.5 %
48	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Carbon (C)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	0.010 % to 0.350 %
49	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Chromium (Cr)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	5.0 % to 25.0 % , 17.0 % to 26.0 %
50	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Copper (Cu)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	0.05 % to 1.8 % , 0.02 % to 0.3 %
51	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Manganese (Mn)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	0.2 % to 5.0 % ,0.2 % to 2.2 %
52	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Molybdenum (Mo)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	0.2 % to 3.0 % ,0.01 % to 3.0%
53	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Nickel (Ni)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	2.0 % to 16.0 % , 7.5 % to 16.0 %
54	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Nitrogen (N)	IS 228 part 23: 2014	0.015 % to 0.10 %
55	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Phosphorus (P)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	0.01 % to 0.1 % ,0.01 % to 0.2 %
56	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Silicon (Si)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	0.2 % to 0.8 % , 0.2 % to 1.0 %
57	CHEMICAL- METALS & ALLOYS	Stainless Steels & its Alloy	Sulphur (S)	IS:9879-1998(RA2015) / ASTM E 1086: 2014	0.005 % to 0.025 %0.005 % to 0.08 %



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Certificate Number TC-5651 Page No. : 6 / 21

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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
58	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous & its Alloys	% Elongation	IS:1608 / ASTM A/SA-370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS-3600(Part-1)/ IS-3600(Part-2)/ IS-3600(Part-3)/ IS-3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO-5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API-1104/ GOST:1497/ BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/ EN 895/ IS:2825/ IS 1865/ IS 1786: 2014	1 % to 80 %



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 7 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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
59	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous & its Alloys	%Reduction of Area , Modulus of Elasticity	IS:1608 / ASTM A/SA-370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS-3600(Part-1)/ IS-3600(Part-2)/ IS-3600(Part-3)/ IS-3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO-5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API-1104/ GOST:1497/ BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/ EN 895/ IS 2825/ IS 1865/ IS 1786: 2014	1 % to 80 %
60	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous & its Alloys	Bend Test	IS:1599/IS:1239/ IS:2329/AWS D1.1/IBR REG 1950 AND:2015/ ASME Sec.IX/ ASTM A /SA-370/ DIN EN ISO 15614(Part-1&2)/ ASTM E190/ ASTM E290/ ISO-5173/ API-1104/ API 5L/IS3600(Part-5)/ IS-3600(Part-6)/ IS-7307/ IS-7310/ ISO 7438/ ASTM A262: 2014	Qualitative(Maximum Applied Load :400 kN(Mandrel Diameter:4 ,8,10, 12,16, 20 ,24, 3,2,38.1, 40 ,48, 50,60, 90 mm))



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 8 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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
61	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous & its Alloys	Tensile Test	IS:1608 / ASTM A/SA-370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS-3600(Part-1)/ IS-3600(Part-2)/ IS-3600(Part-3)/ IS-3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO-5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API-1104/ GOST:1497/ BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/EN 895/ IS 2825/ IS 1865/ IS 1786: 2014	0.02 kN to 380 kN



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 9 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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62	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous & its Alloys	Yield Stress , 0.2% , 0.5% , 1.0% proof Stress	IS 1608 / ASTM A/SA- 370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS- 3600(Part-1)/ IS- 3600(Part-2)/ IS- 3600(Part-3)/ IS- 3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO- 5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API- 1104/ GOST-1497/BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/ EN 895/ IS:2825/ IS 1865/ IS 1786: 2014	10 MPa to 1300 MPa
63	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous base Material , Alloys & Products(Tubes & Pipes)	Flaring Test / Drift Expansion Test	IS-2328-2018/ASTM A 370-18/SA-370- 2018/IS-2335- 2005(RA:2017)//SA 530-18/ISO 8493- 1993(R:2014)/IS::1239 Part -1-2004 (RA:2014)/IS:1239 Part. 2-2004(RA:2015): .	Qualitative(Maximum Applied Load : 400 kN Tube Thickness :- 1mm to 15mm OD : 10mm to 250mm)



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 10 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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64	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous Materials Alloys & Products/Other Non – Ferrous Materials Alloys & Products/Welds & Welded test Specimens	Charpy 'V'Notch Impact Test-25° C to (-)196°C	IS-1757(Part-1)- 2014/ISO-148(Part-1)- 2016/EN ISO 9016- 2012/IS-3600(Part-2)- 1985(RA:2013)/EN 875/BSEN 10045- (Part-1)/IS-3600(Part- 2)-1985-RA: 2013	2 Joule to 300 Joule
65	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous Materials Alloys & Products/Other Non – Ferrous Materials Alloys & Products/Welds & Welded test Specimens	Weldment dimensional measurement by Stereomicroscope software	ASTM E 340- 2015/ASME Sec-IX- 2017: .	Qualitative(Magnificatio n :- 40X to 600X & 0.001mm to 50mm)
66	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous Materials, Alloys & Products(Tubes & Pipes)	Flattening Test	IS:2328-2018 ASTM A 370-2017 SA 370-2017 IS-2335-2005(RA17) ASTM A 530-2016 SA 530-2017 ASTM A 450- 18 SA 450-2017 IS:3589-2001(RA2017) IS:1239(P1):04(RA14) IS:1239(P2):11(RA16) API 5L:2013 ISO:8492:2013 ASTM A999/A999M:18 ASTM A1016/A1016M:2018a ASTM B111/B111M:2018a: : 2018	Qualitative(Maximum Applied Load:400 kNTube thickness 1mm to 15mm &OD:- 10mm to 250mm)



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 11 / 21

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67	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous Materials,Alloys & Products /Other Non – Ferrous Materials,Alloys & Products /Welds & Welded test Specimens	Rockwell Hardness Testin scale HRA,HRB,HRC	ASTM E18-19/IS- 1586(Part-1)- 2012/ASTM A 370- 2018/ISO:6508-1-: 2016	20 HRA to 95 HRA,30 HRB to 100 HRB,20 HRC to 70 HRC
68	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous Materials,Alloys & ProductsOther Non – Ferrous Materials Alloys & ProductsWelds & Welded test Specimens	Brinell Hardness Test	IS:1500-Part 1- 2013/ASTM E10- 18/ASTM A370-18/EN 1043-(Part- 1)/ISO:6506-1-: 2014	30 HBW 2.5/187.5,5/250 to 650 HBW 2.5/187.5,5/250
69	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Ferrous Materials,Alloys & Products/Other Non – Ferrous Materials Alloys & Products/Welds & Welded test Specimens	Vickers Hardness Test in Scale :- HV1,HV5,HV10,HV30, HV50	IS-1501(Part-1)- 2013/ASTM E384- 2017/ISO 6507(Part-1)- 2018/DIN EN ISO 15614/(Part-1)- 2017/BS EN ISO 9015(Part-1- 2011)/AWS D 1.1/D1.1M-2015/ASTM E92-17/EN 1043-(Part- 1)/BS EN ISO 9015- Part-1-: 2011	40 HV 1,5,10,30,50 to 800 HV 1,5,10,30,50
70	MECHANICAL- MECHANICAL PROPERTIES OF METALS	High strength deformed steel bars and wires for concrete Reinforcement	Re-Bend Test	IS:1786-2008-RA: 2013	Qualitative(Mandrel Dia in mm:- 4,8,10,12,16,20,24,32,3 8.1,40,48,50,60,90)



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 12 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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71	MECHANICAL- MECHANICAL PROPERTIES OF METALS	High strength deformed steel bars and wires for concrete Reinforcement	Weight per meter measurement	IS 1786-2008 RA: 2013	0.01kg to 30kg
72	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Non Ferrous Materials & its Alloys (Cu / Al / Ni- Base Metals)	% Elongation	IS 1608 / ASTM A/SA-370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS-3600(Part-1)/ IS-3600(Part-2)/ IS-3600(Part-3)/ IS-3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO-5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API-1104/ GOST:1497/ BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/ EN 895/ IS:2825/ IS 1865/ IS 1786: 2014	1 % to 80 %



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Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 13 / 21

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73	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Non Ferrous Materials & its Alloys (Cu / Al / Ni- Base Metals	Bend Test	IS:1599/IS:1239/ IS:2329/AWS D1.1/IBR REG 1950 AND:2015/ ASME Sec.IX/ ASTM A /SA-370/ EN ISO 15614-1-2015 / ASTM E190/ ASTM E290/ ISO-5173/ API-1104/ API 5L/IS3600(Part-5)/ IS-3600(Part-6)/ IS- 7307/ IS-7310/ ISO 7438/ ASTM A262: 2014	Qualitative(Applied Load :400 kN(Mandrel Diameter:Mandrel Dia in mm :- 4,8,10,12,16, 20,24,32,38.1, 40,48,50,60, 90))
74	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Non Ferrous Materials & its Alloys (Cu / Al / Ni- Base Metals)	Yield Stress , 0.2% , 0.5% , 1.0% proof Stress	IS 1608 / ASTM A/SA- 370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS- 3600(Part-1)/ IS- 3600(Part-2)/ IS- 3600(Part-3)/ IS- 3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO- 5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API- 1104/ GOST:1497/ BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/ EN 895/ IS:2825/ IS 1865/ IS 1786: 2014	10 MPa to 1300 MPa



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 14 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Non Ferrous Materials & its Alloys (Cu / Al / Ni- Base Metals)	%Reduction of Area , Modulus of Elasticity	IS:1608 / ASTM A/SA- 370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS- 3600(Part-1)/ IS- 3600(Part-2)/ IS- 3600(Part-3)/ IS- 3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO- 5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API- 1104/ GOST:1497/ BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/ EN 895/ IS:2825/ IS 1865/ IS:1786 : 2014	1 % to 80 %



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 15 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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
76	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Non Ferrous Materials & its Alloys (Cu / Al / Ni- Base Metals)	Tensile test	IS 1608 / ASTM A/SA- 370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS- 3600(Part-1)/ IS- 3600(Part-2)/ IS- 3600(Part-3)/ IS- 3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO- 5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API- 1104/ GOST:1497/ BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/ EN 895/ IS:2825/ IS 1865/ IS 1786: 2014	0.02 kN to 380 kN
77	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Threaded Fasteners(Bolt/Nut)	Proof Load Test	IS 1376(Part-6)/IS 1367(Part-3)- 2017/ASTM A 370- 2018/ASTM F606- 16/ISO-898 (Part-1)- 2013/SA 193-17 , SA 194-17/ISO-898 (Part- 2): 2013	Qualitative(Upto 400kN)



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 16 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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
78	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Threaded Fasteners(Bolt/Nut)	Wedge Tensile Load Test /Full Size- Breaking Tensile Test	IS:1367(Part-6-1994)- RA:2015 /IS:1367 (Part-3-2002)-RS- 2017/ASTM A 370- 2018/ASTM F606- 16/ISO-898 (Part-1)- 2013/ISO-898 (Part-2)- 2013 , /SA 193-17 , SA 194-17: .	Qualitative(Upto 400kN)
79	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Welds & welded test specimen	Tensile	IS1608 / ASTM A/SA- 370/ ASTM E8/8M/ BS EN ISO 6892(Part-1)/ ASME Sec.IX/ ASTM B557/ IBR REG 1950 AND:2015/ IS- 3600(Part-1)/ IS- 3600(Part-2)/ IS- 3600(Part-3)/ IS- 3600(Part-4)/ DIN EN ISO 15614(Part-1&2)/ JISZ-2201/ EN ISO- 5178/ EN ISO-4136/ AWS D1.1/ D1.1M/ API- 1104/ GOST:1497/ BS EN 10002(Part- 1)/ API 5L:2013/ IS 7307/ IS 7310/ EN 895/ IS 2825/ IS 1865/ IS 1786: 2014	0.02 kN to 380 kN



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 17 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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
80	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Welds & Welded test specimens	Bend Test	IS 1599-2012 AWS D1.1:2010 IBR REG 1950 AND 2011 ASME-Sec.IX:2015 ASTM-A-370-2017 SA- 370:2015 EN ISO15614-1- 2015 ASTM E 190-2014 ASTM E 290-2014 ISO-5173:2011 API- 1104:2014 API 5L: 2013	Qualitative(Maximum Load:400 kN(Mandrel Diameter:4,8,10,12,16, 20,24,32,38.1,40,48,50 ,60,90 mm))
81	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Welds & Welded test Specimens(i.e Fe/Cu/Ni/Al Base Materials)	Fracture Test	IS 3600(Part-8)- 1985(RA:2013)/ASME- Sec.IX-2017/BS EN ISO 9017-2018/IS 2825:1969(RA:2017)/IB R REG 1950/AWS D1.1-2015/EN 1320: 2013	Qualitative(0.02 kN to 400 kN)
82	MECHANICAL- MECHANICAL PROPERTIES OF METALS	Welds & Welded test Specimens(i.e Fe/Cu/Ni/Al Base Materials)	Nick Break Test	IS:3600(Part-8)- 1985(RA:2013)/ASME- Sec.IX-2017/IS:7307- Part- 1:1974/IS:2825:1969(R A:2017)/IBR REG 1950/API 1104/ API 5L- 2013: .	Qualitative(Up to 400kN)
83	MECHANICAL- METALLOGRAPHY TEST	Austenitic Stainless Steel	Corrosion test in Nitric Acid medium by measurement of loss in mass(Huey test)	IS 10461(Part-1)-1994: RA:2016	Qualitative(0.5 to 100 Mpy)



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 18 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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
84	MECHANICAL- METALLOGRAPHY TEST	Austenitic stainless steel	Intergranular Corrosion test	ASTM A262: 2015	Qualitative(Practice A Magnification :- 250x to 500x Practice B,C,F - weight loss/ 0.5 to 100 Mpy Practice E :(Bend Test:1 to 4T/close bend/ Magnification :- 20x)
85	MECHANICAL- METALLOGRAPHY TEST	Cast Iron	Designation of the Microstructure of graphite in cast iron	IS-7754 - 1975(RA:2018)/ ASTM A247 -17/ ASTM E1245-03(2016): .	Qualitative(Magnification :- 40X to 600X)
86	MECHANICAL- METALLOGRAPHY TEST	Ferritic stainless steel	Inter granular corrosion test	ASTM A763: 2015	Qualitative(Practice W Magnification :- 200x to 500x Practice X ,Y& Z weight loss:0.5 to 100 Mpy)
87	MECHANICAL- METALLOGRAPHY TEST	Ferritic , Duplex steel & Austenitic stainless steel	Corrosion test in media containing sulfuric acid & Corrosion test in a sulphuric acid /copper sulphate medium in the presence of copper turnings(Monypenny Strauss test)	ISO 3651(Part-2)-1988 / IS 10461(Part-2)-1994(RA:2016): .	Qualitative(0.5 to 100Mpy)



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 19 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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
88	MECHANICAL- METALLOGRAPHY TEST	Ferrous Materials Alloys & Products/ Other Non – Ferrous Materials Alloys & Products/ Welds & Welded test Specimens	Macro etch test	IS 3600(Part-9)-1985(RA:2013)/ASME-Sec.IX-2017/BS EN ISO 5817:2014/IS-2825-1969(RA:2017)/IBR REG 1950/EN ISO 17639/ AWS D 1.1/D1.1M-2015 /ASM Handbook Vol 9-2004/ASTM E340-2015&ASTM E 381-17: 2011	Qualitative(Magnification :- 7X to 45X)
89	MECHANICAL- METALLOGRAPHY TEST	Ferrous Materials Alloys & Products/ Other Non – Ferrous Materials Alloys & Products/ Welds & Welded test Specimens	Micro structure analysis	ASM Handbook Vol 9-2004/IS 7739 Part-1 - 1975(RA:2017)& Part-2- 1975(RA:2018)/IS:3600 -Part 9-1985(RA:2013) /ASTM E3-11(2017)/ASTM E 407-07(2015)/ASTM A 247-16a/DIN EN ISO 17639:- 2013	Qualitative(Magnification :- 40X to 600X)
90	MECHANICAL- METALLOGRAPHY TEST	Micrographic determinatoon of The apparent Grain Size by comparison method	Steels	IS-4748-2009(RA:2017)/ASTM E3/ASTM E112/-13/ISO:643:- 2012	Qualitative(Magnification :- 100x/ASTM No.-1 to 15)
91	MECHANICAL- METALLOGRAPHY TEST	Stainless steel and related alloys(Nickel)	Pitting Corrosion test- Method-A	ASTM G48: 11(2015)	Qualitative(ASTM G48 METHOD A)



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 20 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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
92	MECHANICAL- METALLOGRAPHY TEST	Steel	Case Depth Measurement by microscopic method	IS-6416-1988(RA:2018)/ASTM E1077:: 2014	Qualitative(Magnification :- 100x/ 0.001mm to 10mm)
93	MECHANICAL- METALLOGRAPHY TEST	steels	Depth of ecarburization Measurement by microscopic method	IS-6396:2000(RA:2018) / ASTM E1077-14: .	Qualitative(100x/0.1mm to 10mm)
94	MECHANICAL- METALLOGRAPHY TEST	steels	Non Metallic Inclusion Rating by method A	IS-4163 - 2004(RA:2017) / ASTM E45-18a: .	Qualitative(Method A)
95	MECHANICAL- METALLOGRAPHY TEST	Wrought ,Nickel Rich ,Chromium -Bearing Alloys	Detecting susceptibility to Intergranular corrosion test Method - A(Ferric sulfate-sulfuric acid test)	ASTM G28: 02(2015)	Qualitative(0.1mdd to 100 Mpy)



National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)



SCOPE OF ACCREDITATION

Laboratory Name ADVANCE METALLURGICAL SERVICES, A1-265/12 , BANK OF BARODA LANE, VADODARA, GUJARAT, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number TC-5651 Page No. : 21 / 21

Validity 24/04/2019 to 23/04/2021 Last Amended on 29/04/2019

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Site Facility					
1	CHEMICAL- METALS & ALLOYS	Ferrous & Non Ferrous Metals & its alloy	Cr,Ni,Mo,Cu,Mn,V,Ti,W ,Co,Fe	ASTM E1476: 2012	Qualitative(Positive material identification test by XRF Method(PMI))