

Laboratory Quantum Analytics, #92/143, 9th Main Road, 3rd Phase, Peenya Industrial Area, Bangalore, Karnataka

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6310

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Validity 11.09.2018 to 10.09.2020

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I.	METALS & ALLOYS			
A.	Ferrous			
1.	Low Alloy Steels	Carbon as(C)	IS 8811:1998 (RA2018), ASTM E415-17	0.03 % to 1.50 %
		Silicon as (Si)	IS 8811:1998 (RA2018), ASTM E415-17	0.002 % to 1.80 %
		Manganese as (Mn)	IS 8811:1998 (RA2018), ASTM E415-17	0.16 % to 1.5 %
		Phosphorous as(P)	IS 8811:1998 (RA2018), ASTM E415-17	0.009 % to 0.08 %
		Sulphur as (S)	IS 8811:1998 (RA2018), ASTM E415-17	0.009 % to 0.25 %
		Chromium as (Cr)	IS 8811:1998 (RA2018), ASTM E415-17	0.002 % to 3.8 %
		Nickel as (Ni)	IS 8811:1998 (RA2018), ASTM E415-17	0.007 % to 4.5 %
		Molybdenum as (Mo)	IS 8811:1998 (RA2018), ASTM E415-17	0.002 % to 1.80 %
		Vanadium as (V)	IS 8811:1998 (RA2018), ASTM E415-17	0.008 % to 0.8 %
		Aluminium as (Al)	IS 8811:1998 (RA2018), ASTM E415-17	0.001 % to 1.8 %
		Cobalt as (Co)	IS 8811:1998(RA2018), ASTM E415-17	0.004 % to 0.50 %
		Lead as (Pb)	IS 8811:1998 (RA2018), ASTM E415-17	0.003 % to 0.30 %
		Copper as (Cu)	IS 8811:1998 (RA2018), ASTM E415-17	0.005 % to 0.80 %

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2.	Stainless Steels	Carbon as(C)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.01 % to 0.35 %
		Manganese as (Mn)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.29 % to 6.00 %
		Silicon as (Si)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.22 % to 1.70 %
		Phosphrous as(P)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.01 % to 0.03 %
		Sulphur as (S)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.001 % to 0.03 %
		Chromium as (Cr)	IS 9879-1998 (RA 2015), ASTM E1086-14	11.5 % to 23.00 %
		Molybdenum as (Mo)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.20 %to 3.30 %
		Nickel as (Ni)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.20 %to 11.0 %
		Cobalt as (Co)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.015 % to 0.20 %
		Vanadium as (V)	IS 9879-1998 (RA 2015), ASTM E1086-14	0.03 % to 0.35 %
3.	Tool Steels	Carbon as(C)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	0.90 % to 1.50 %
		Silicon as (Si)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	0.3 % to 0.50 %
		Manganese as (Mn)	QA/MV/CHE/002 Issue No.01 Issue Date.13.06.2016	0.2 % to 0.50 %
		Phosphrous as(P)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	0.01 % to 0.05 %

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		Sulphur as (S)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	0.006 % to 0.05 %
		Chromium as (Cr)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	3.50 % to 4.50 %
		Molybdenum as (Mo)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	0.60 % to 10.00 %
		Cobalt as (Co)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	0.40 % to 8.50 %
		Vanadium as (V)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	1.00 % to 2.00 %
		Tungusten as(W)	QA/MV/CHE/002 Issue No.01, Issue Date.13.06.2016	1.80 % to 19.00 %
4.	High Carbon High Chromium Steels	Carbon as(C)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	2.00 % to 4.00 %
		Silicon as (Si)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	0.20 % to 0.70 %
		Manganese as (Mn)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	0.60 % to 1.20 %
		Sulphur as (S)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	0.020 % to 0.040 %
		Phosphrous as(P)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	0.030 % to 0.070 %
		Copper as (Cu)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	0.40 % to 1.00 %
		Nickel as (Ni)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	0.60 % to 2.80 %
		Chromium as (Cr)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	14.00 % to 31.50 %

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		Molybdenum as(Mo)	QA/MV/CHE/001 Issue No.01, Issue dt.13.06.2016	0.90 % to 3.50 %
B	Non-Ferrous			
1.	Aluminium and Aluminium Alloys	Copper as(Cu)	ASTM E 1251-2017	0.02 % to 5.00 %
		Magnesium as (Mg)	ASTM E 1251-2017	0.005 % to 1.50 %
		Silicon as (Si)	ASTM E 1251-2017	0.09 % to 12.00 %
		Iron as (Fe)	ASTM E 1251-2017	0.10 % to 1.80 %
		Manganese as (Mn)	ASTM E 1251-2017	0.10 % to 0.90 %
		Nickel as (Ni)	ASTM E 1251-2017	0.01 % to 0.65 %
		Zinc as (Zn)	ASTM E 1251-2017	0.03 % to 3.60 %
		Lead as (Pb)	ASTM E 1251-2017	0.01 % to 0.30 %
		Tin as (Sn)	ASTM E 1251-2017	0.006 % to 0.25 %
		Titanium as (Ti)	ASTM E 1251-2017	0.01 % to 0.25 %
		Chromium as (Cr)	ASTM E 1251-2017	0.08 % to 0.50 %
2.	Copper and Copper Alloys	Zinc as (Zn)	BSEN 15079-2015	0.4 % to 41.00 %
		Lead as (Pb)	BSEN 15079-2015	0.07 % to 13.00 %
		Tin as (Sn)	BSEN 15079-2015	0.04 % to 12.00 %
		Phosphorous as (P)	BSEN 15079-2015	0.05 % to 0.6 %
		Iron as (Fe)	BSEN 15079-2015	0.003 % to 4.00 %
		Nickel as (Ni)	BSEN 15079-2015	0.9 % to 6.80 %
		Aluminium as (Al)	BSEN 15079-2015	0.01 % to 12.00 %
		Manganese as (Mn)	BSEN 15079-2015	0.02 % to 1.70 %
		Antimony as (Sb)	BSEN 15079-2015	0.10 % to 0.80 %
		Arsenic as (As)	BSEN 15079-2015	0.05 % to 0.35 %
II.	CORROSION TEST			
1.	Coated & Painted Metals & Alloys	Salt spray Corrosion Test	ASTM B-117-2016(NSS) ISO 9227:2017(NSS)	Qualitative

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MECHANICAL TESTING

I.	MECHANICAL PROPERTIES OF METALS			
1.	Ferrous and Non Ferrous Material	Tensile strength, Yield Stress, % Elongation, % Reduction area, 0.2 % proof stress	IS 1608-2005 (RA 2017), ASTM E8/E8M-16 ASTM A370	(5 to 200) kN Load, 100 MPa to 1800 MPa 100 MPa to 1700 MPa 2 % to 60 % 10 % to 80 %
		Bend Test	IS 1599-2012 (RA 2017)	Qualitative (Mandrel dia 12, 24, 36 & 48 mm)
2	Weld in Metals	Transverse Tensile Strength	IS 7307(part-1)-1974 (RA 2008) ASME SEC IX-2017, ISO 5173:2009, AWS D1.1M 4.1/D4.1M-2015	(5 to 200) kN Load, 100 MPa to 1800 MPa
		Bend Test Root Bend, Face Bend & Side Bend	IS 3600 Part 5-1983, ASME SEC IX-2017, ISO 5173:2009, AWS D1.1M 4.1/D4.1M-2015	Qualitative (Mandrel dia 12, 24, 36 & 48 mm)
3	Ferrous and Non Ferrous Material	Brinell Hardness Test	IS 1500 (Part 1):2013	50 HBW to 500 HBW (10/3000)
		Vickers Hardness	IS 1501 (Part 1):2013	40 HV to 1500 HV HV 1 HV 10 HV 30
		Rock well Hardness Test	IS 1586(Part 1):2012	60 HRA to 90 HRA 10 HRB to 95 HRB 20 HRC to 80 HRC
		Charpy "V" Notch Impact Test 35 to-60°C	IS 1757(part 1):2014	2 J to 240 J

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		Izod Impact Test	IS 1598-1977 (RA 2015)	2 J to 168 J
II.	METALLOGRAPHY TEST			
1.	Plated/ Coated Articles	Coating Thickness	IS 3203-1982 (RA 2016) (Microscopic method)	5 micron to 200 micron
2.	Ferrous & Non-Ferrous weld in Metals	Macro Examination	IS 3600(part-9):1985 (RA 2003), IS 7318-(part-I)-1974 (RA 2003), IS 7318-(part-II)-1974 (RA 2003)	Qualitative (Magnification 7X to 45X)
3.	Ferrous & Non-Ferrous Metals (forging & casting)	Macro Examination	IS 11371:1985 (RA 2018), IS 12573:2010 (RA 2018)	Qualitative (Magnification 7X to 45X)
4.	Steel Hot Rolled Bars and Forging	Macro Examination with Ratings	IS 13015:1991 (RA 2018)	Qualitative (Magnification 7X to 45X)
5.	Ferrous metal Steel and Cast Iron	Microstructure analysis	ASM Metals Hand Book volume-9, Edition 2004 IS 7739-1975(part-5) (RA 2018)	Qualitative (Magnification 50X, 100X, 200X, 400X)
6.	Cast Iron (Grey, SG, White, Malleable)	Micro structure (Graphite type, size & distribution)	IS 7754:1975 (RA 2018)	Qualitative (Magnification 100X)
7.	Ferrous materials, Alloys & Products	Non-metallic Inclusion rating	IS 4163:2004 (RA 2010)	Qualitative (Fine and thick A, B, C, D & DS)
8.	Ferrous Materials, Alloys & Products (Carbon and Alloy steels)	Grain Size (untwined Grains): Ferritic grain size in Low carbon steel	IS 4748:2009 ASTM E 112-13 (ASTM Plate-I)	Qualitative (Grain Size No. ASTM 01-10)

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9.	Case Hardened Steels & Nitrided Steel Materials and Products	Case depth	IS 6416:1988 (RA 2018) (Microscopic Method)	0.01mm to 2 mm Magnification (50, 100, 200X)
10.	Steel Material and product	Decarburization Depth	IS 6396:2000 (RA 2018) (Microscopy Method)	0.05 mm to 2.0 mm (Magnification: 50, 100, 200X)