

Laboratory Perfect Met Lab & Consultancy, Street No. 6, Patel Nagar, 80 Feet Road, Rajkot, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6320

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Validity 05.04.2018 to 04.04.2020

Last Amended on --

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			
1.	Carbon & Low Alloy Steel	C	ASTM E 415 - 2017	0.020% to 1.200%
		Si		0.020% to 1.0%
		Mn		0.100% to 2.000%
		P		0.005% to 0.085%
		S		0.005% to 0.250%
		Cr		0.020% to 3.0%
		Ni		0.020% to 2.0%
		Mo		0.010% to 1.0%
		Cu		0.005% to 0.500%
2.	Stainless Steel	C	ASTM E 1086 - 2014	0.01% to 0.20%
		Si		0.100% to 1.0%
		Mn		0.100% to 2.000%
		P		0.003% to 0.085%
		S		0.003% to 0.065%
		Cr		10.00% to 25.00%
		Ni		2.000% to 21.00%
		Mo		0.010% to 3.00%
		Cu		0.050% to 1.0%
3.	Cast Iron	C	ASTM E 1999 - 2011	1.90% to 3.80%
		Si		0.50% to 3.70%
		S		0.01% to 0.20%
		P		0.01% to 0.400%
		Mn		0.030% to 1.0%
		Mo		0.010% to 1.2%
4.	Copper & its Alloy	Ni	BS EN 15079 - 2015	0.01% to 1.000%
		Al		0.01% to 1.000%
		Sn		0.01% to 1.000%
		Pb		0.01% to 2.50%
		Zn		20.0% to 40.00%

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5.	Alluminium & its alloy	Fe	ASTM E 1251 - 2017a	0.01% to 1.000%
		Si		5.000% to 15.00%
		Mn		0.01% to 1.000%
		Cr		0.01% to 0.50%
		Cu		0.01% to 2.50%
		Fe		0.01% to 1.0%
		Mg		0.01% to 1.0%
		Zn		0.01% to 1.0%

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MECHANICAL TESTING

I. MECHANICAL PROPERTIES OF METALS				
1.	Ferrous & Non-Ferrous Metals & Alloys (Machined Test Piece)	Tensile Strength	ASTM A370:2017a, IS 1608:2008 (RA 2017)	100 Mpa to 1500 Mpa 8 kN to 400 kN
		0.2% Proof Strength		100 Mpa to 1200 Mpa 8 kN to 400 kN
		1 % Proof Strength		100 Mpa to 1200Mpa 8 kN to 400 kN
		% Elongation		5% to 80%
		% Reduction in Area		10% to 80%
		Bend	ASTM A370:2017a IS 1599:2012 (RA 2015)	Qualitative (Mandrel Dia. 4, 6,10, 32 mm)
		Vickers Hardness	IS 1501-1:2013, ASTM E92 : 2017,	20 HV30 to 800 HV30
2.	Ferrous Metals & Alloys (Material & Products)	Hardenability	ASTM A255-2010 IS 3848-1981 (RA 2009)	20 HRC to 70 HRC
		Rockwell Hardness HRB	ASTM E 18-2017e1 IS 1586-1-2012(RA 2017)	20 HRBW to 100 HRBW
		HRC		20 HRC to 70 HRC
II. METALLOGRAPHY TEST				
1.	Austenitic Stainless Steel	IGC - Practice " A "	ASTM A262:2015	Qualitative (250X & 500X)
		IGC - Practice " B "		2 mpy to 100 mpy
		IGC - Practice " C "		2 mpy to 100 mpy
		IGC - Practice " E "		Bend Test (1T) / 20X
		IGC - Practice " F "		2 mpy to 100 mpy
2.	Duplex Austenitic/ Ferritic Steel	Detrimental Intermetallic Phase Method - A	ASTM A923:2014	Qualitative (400X & 500X)
		Detrimental Intermetallic Phase Method - C		0.10 mdd to 100 mdd

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3.	Stainless Steel & Nickel Base Alloys	Pitting Corrosion - Method "A"	ASTM G-48:2015	0.000001 g/cm ² to 0.001 g/cm ²
4.	Nickel Base Alloys	IGC - Method 'A'	ASTM G-28-02:2015	0.1 mpy to 100 mpy
5.	Ferrous Metals & Alloys (Material & Products)	Average Grain size	IS 4748 - 2009 (RA 2017) ISO 643 - 2003 ASTM E-112-2013 Comparison method	ASTM 1 To 10 Plate I ASTM 1 To 8 Plate IV
		Total Case Depth	IS 6416 - 1988 (RA 2012) Microscopic Method	0.03 to 1.0mm / 100 X
		Non Metallic Inclusion Rating by Method "A"	IS 4163 - 2004 (RA 2017) ISO 4967:1998 ASTM E45 - 2013	Thin & Heavy : (A,B,C & D) - 0.5 to 3 / 100 X
		Depth of Decarburization	IS 6396 - 2000 (RA 2012) Microscopic Method	0.03 to 1.0mm / 100 X
		Macro-Etch Testing	IS 11371 - 1985 (RA 2012) IS 13015 - 1991 (RA 2012) ASTM E 340 - 2015 ASTM E 381 - 2017	Qualitative (10 X / 20X)
		Designation of Microstructure of Graphite in Cast Iron by form, size & distribution	IS 7754 - 1975 (RA 2012) Comparison method	100X
6.	Ferrous & Non-Ferrous (copper and aluminum) Metals & Alloys	Microstructure	ASM Hand Book - Vol-9 : 2004 ASTM E3-2011(2017) IS 7739-(Part-1)-1975 RA1996 IS 7739-(Part-5)-1976 (RA 2003)	Qualitative (100X, 200X, 500X, 1000X)
7.	Ferrous Metals & Alloys (Bearing Products)	Rating the Microstructure of High Carbon Bearing Steels	SEP-1520-1998	Qualitative (100X, 200X, 500X, 1000X)