

**Laboratory** UGC Supply Chain Solution Pvt. Ltd., Laboratory Division, 279,  
Nanekarwadi, Nashik Road, Chakan, Tal. Khed, Dist. Pune,  
Maharashtra

**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** TC-7338

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**Validity** 06.06.2018 to 05.06.2020

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.	METAL & ALLOYS			
1.	Low Alloy Steel	Carbon	ASTM E415-2017 IS 8811-1998(RA 2012) ASTM E1019 -2011	0.07 % to 1.50 %
		Silicon	ASTM E415-2017 IS 8811-1998(RA 2012)	0.05 % to 1.50 %
		Manganese	ASTM E415-2017 IS 8811-1998(RA 2012)	0.4 % to 1.45 %
		Phosphorus	ASTM E415-2017 IS 8811-1998(RA2012)	0.01 % to 0.1 %
		Sulphur	ASTM E415-2017 IS 8811-1998 (RA2012) ASTM E1019 -2011	0.01 % to 0.35 %
		Chromium	ASTM E415-2017 IS 8811-1998 (RA2012)	0.05 % to 2.02 %
		Molybdenum	ASTM E415-2017 IS 8811-1998(RA2012)	0.01 % to 0.80 %
		Nickel	ASTM E415-2017 IS 8811-1998(RA2012)	0.02 % to 3.70 %
		Aluminum	ASTM E415-2017 IS 8811-1998(RA2012)	0.002 % to 0.15 %
		Cobalt	ASTM E415-2017 IS 8811-1998(RA2012)	0.01 % to 0.2 %
		Copper	ASTM E415-2015 IS 8811-1998(RA2012)	0.01 % to 0.5 %
		Titanium	ASTM E415-2017 IS 8811-1998(RA2012)	0.01 % to 0.04 %
		Vanadium	ASTM E 415-2017 IS 8811-1998(RA2012)	0.01 % to 0.60 %

**Sachin Tomar**  
Convenor

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		Niobium	ASTM E 415-2017 IS 8811-1998(RA2012)	0.001 % to 0.05 %
2.	Stainless Steel	Carbon	ASTM E 1086-2014 IS 9879-1998 ASTM E1019 -2011	0.01 % to 0.20 %
		Silicon	ASTM E 1086-2014 IS 9879-1998	0.17 % to 0.6 %
		Manganese	ASTM E 1086-2014 IS 9879-1998	0.6 % to 2.0 %
		Phosphorus	ASTM E 1086-2014 IS 9879-1998	0.005 % to 0.02 %
		Sulphur	ASTM E 1086-2014 IS 9879-1998 ASTM E1019 -2011	0.005 % to 0.02 %
		Chromium	ASTM E 1086-2014 IS 9879-1998	12.0 % to 23.0 %
		Molybdenum	ASTM E 1086-2014 IS 9879-1998	0.01% to 3.0 %
		Nickel	ASTM E 1086-2014 IS 9879-1998	6.50 % to 13.00 %
		Copper	ASTM E 1086-2014 IS 9879-1998	0.05 % to 0.35 %
3.		Cast Iron	Carbon	ASTM E1019 -2011
	Silicon		ASTM E 1999-2011	1.0 % to 2.0 %
	Sulphur		ASTM E1019 -2011	0.003 % to 0.08 %
	Phosphorus		ASTM E 1999-2011	0.005 % to 0.4 %
	Manganese		ASTM E 1999-2011	0.03 % to 1.0 %
	Nickel		ASTM E 1999-2011	0.05 % to 2.0 %
	Chromium		ASTM E 1999-2011	0.025 % to 1.5 %
	Molybdenum		ASTM E 1999-2011	0.10 % to 0.6 %
	Copper		ASTM E 1999-2011	0.05 % to 3.0 %
	Tin		ASTM E 1999-2011	0.01 % to 0.15 %
	Titanium	ASTM E 1999-2011	0.07 % to 1.0 %	
	Vanadium	ASTM E 1999-2011	0.05 % to 0.07 %	

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4.	<b>Aluminum Base Alloy</b>	Copper	ASTM E 1251-2017	0.8 % to 5.5 %				
		Manganese	ASTM E 1251-2017	0.01 % to 0.3 %				
		Silicon	ASTM E 1251-2017	0.50 % to 16.0 %				
		Iron	ASTM E 1251-2017	0.8 % to 1.20 %				
		Magnesium	ASTM E 1251-2017	0.5 % to 3.5 %				
		Nickel	ASTM E 1251-2017	0.005 % to 2.0 %				
		Zinc	ASTM E 1251-2017	0.3 % to 6.0 %				
		Lead	ASTM E 1251-2017	0.07 % to 0.35 %				
		Titanium	ASTM E 1251-2017	0.1 % to 0.25 %				
		Tin	ASTM E 1251-2017	0.03 % to 0.30 %				
5.	<b>Copper base alloy</b>	Chromium	ASTM E 1251-2017	0.03 % to 0.25 %				
		Tin	DIN EN 15079-07: 2015	0.1 % to 7.0 %				
		Lead	DIN EN 15079-07: 2015	0.001 % to 8.0 %				
		Iron	DIN EN 15079-07: 2015	0.001 % to 0.1 %				
		Nickel	DIN EN 15079-07: 2015	0.01 % to 1.00 %				
		Aluminum	DIN EN 15079-07: 2015	0.01 % to 0.20 %				
		Silicon	DIN EN 15079-07: 2015	0.007 % to 0.060 %				
II.	<b>CORROSION TEST</b>	Zinc	DIN EN 15079-07: 2015	0.001 % to 42 %				
		1.	<b>All Metals &amp; Alloys/ Component</b>	Salt Spray Test	ASTM B-117-16 ISO 9227	Qualitative		
		III.	<b>RUBBER &amp; RUBBER PRODUCTS</b>	1.	<b>Rubber, NR, SBR, NBR, CR, IIR, Silicon, Acrylic Rubber</b>	Ash content	IS 3400 (Part 22-1984) (RA-2014)	0.5 % to 50 %
						Polymer Identification	IS 3400 (Part 22-1984) (RA-2014)	Qualitative
		IV.	<b>PLASTIC &amp; RESINS</b>	1.	<b>Plastic (Polymer)</b>	Polymer Identification of Nylon 6 and Nylon 66	SOP No. 49 Date of Issue:01.06.2015	Qualitative

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V.	<b>METALLIC COATINGS &amp; TREATMENT SOLUTIONS</b>			
1.	<b>Iron Base Products</b>	Mass of Tin Coating (Weight Loss Method)	IS 1327-1988 (RA-2006)	0.2 g/m <sup>2</sup> to 150 g/m <sup>2</sup>
		Identification of Coating Type	IS 1327-1988 (RA-2006)	Qualitative
		Mass of Zinc Coating (Stripping Method)	IS 6745-1972 (RA-2006)	50 g/m <sup>2</sup> to 1000 g/m <sup>2</sup>
		Identification of Coating Type	IS 6745-1972 (RA-2006)	Qualitative
		Weight of Phosphate Coating (Clause 6.3)	IS 3618-1966 (RA-2002)	0.3 g/m <sup>2</sup> to 25 g/m <sup>2</sup>
		Identification of Coating Type	IS 3618-1966 (RA-2002) Clause 6.2 (Visual Test)	Qualitative

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<b><u>MECHANICAL TESTING</u></b>				
<b>I. MECHANICAL PROPERTIES OF METALS</b>				
1.	<b>Ferrous, Non Ferrous Materials</b>	Tensile Test Yield Stress % Elongation % Reduction in area	IS 1608-2005/RA 2017 ASTM A 370:2017 ASTM E8/E8M : 2016	1 kN to 600 kN 1 kN to 600 kN 0.5% to 70% 0.5% to 75%
		Micro Vickers Hardness	ASTM E 384-2017	100 to 800 HV <sub>0.1</sub> 100 to 800 HV <sub>0.2</sub> 100 to 800 HV <sub>0.3</sub> 100 to 800 HV <sub>0.5</sub> 100 to 800 HV <sub>10</sub>
		Brinell Hardness	IS 1500( Part-1): 2013 ASTM E10-2017	50 to 550 HBW 10/3000
		Rockwell Hardness	IS 1586-Part 1-2012 (RA 2017) ASTM E18-17	20 to 88 HRA 20 to 100 HRBW 20 to 70 HRC
		Erickson Cupping	IS 10175 (Part I): 2012	Scale Reading: 2 mm to 20 mm Thickness:2.0 mm
		Millipore test on Engine parts fluid	SOP No. 27 Issue date 14.01.2015	Upto 10 mg max Particle size: X axis:1 to 200 Microns Y axis:1 to 150 Microns
<b>II. METALLOGRAPHY TEST</b>				
1.	<b>Ferrous, Non Ferrous Materials</b>	Micro Structural Analysis	ASM Handbook, Vol. 9:2004 ASTM E 407-2015 Sec-III, IV, V Reaf-2012	Magnification 100X to 1000X Qualitative
		Coating Thickness by Microscopic method	IS 3203-1982 (RA- 2014)	0.005 mm to 0.5 mm / 100 X

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2.	Cast Irons White/ Grey Iron Malleable Iron, Ductile Iron / Nodular / SG	Micro structure Analysis	ASTM A247-2017 ASM Handbook, Vol. 9:2004	Magnification 50X, 100X, 200X, 500X. Qualitative
3.	Ferrous Materials	Estimation of average grain size by Comparisons method	ASTM E 112-13	Magnification 100X ASM No. 1 to 12 Qualitative
		Effective Case Depth by Traverse Method	IS 6416-1988 (Rf 2012) IS 1501-2013 Part I & II	0.1 mm to 3.0 mm HV1
		Total Case Depth by Microscopic method	IS 6416-1988 (Rf 2012)	0.1 mm to 6.0 mm/ at 100X
		Determination of Depth of De- carburized Layer	ASTM E 1077-2014 IS 6396-2000 (2012) (Microscopic method)	0.01 mm to 1.0 mm/ 100X
III.	<b>RUBBER &amp; RUBBER PRODUCTS</b>			
1.	Rubber / Vulcanized Rubber	Tensile Strength	IS 3400-2012 (Part I)	5 Mpa to 30 Mpa
		% Elongation at Break		10 % to 500 %
		Shore A Hardness	IS 3400 (Part 23) :2002 (RA-2012 )	30 Shore A to 80 Shore A
IV.	<b>PAPER &amp; PAPER PRODUCTS</b>			
1.	Gaskets, Seals & Packings, Compressed Asbestos Fiber Jointing	Tensile strength	IS 2712 : 1998 (Annex H) (CI 8.10)(RA-1999)	10 Mpa to 500 Mpa
		Compressibility	IS 2712 : 1998 (Annex D)	6 % to 14 %
		Recovery	(CI 8.5) (RA-1999)	40 Minutes to 80 Minutes