Laboratory	**RITES Eastern Region Laboratory, QA-Division, 56, C. R. Avenue, (3rd Floor), Kolkata, West Bengal**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Chemical Testing**	**Issue Date**	**23.02.2015**
Certificate Number	**T-0485**	**Valid Until**	**22.02.2017**
Last Amended on	**-**	**Page**	**1 of 4**

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	**METALS AND ALLOYS**			
1.	**Steels Products Including Steel casting**	**Wet Analysis**		
		Carbon	IS 228 (Part 1): 1987	0.05 % to 2.5 %
		Manganese	IS 228 (Part 2): 1987	0.1 % to 1.5 %
		Silicon	IS 228 (Part 8): 1989	0.05 % to 5 %
		Sulphur	IS 228 (Part 9): 1989	0.01 % to 0.25 %
		Phosphorous	IS 228 (Part 3): 1987	0.01 % to 0.5 %
		Nickel	IS 228 (Part 5): 1987	0.1 % to 12.0 %
		Chromium	IS 228 (Part 6): 1987	0.1 % to 20.0 %
		Copper	IS 228 (Part 15): 1992	0.05 % to 5 %
	Steels Products Including Steel casting Plain Carbon, Low Alloy steel, High Alloy Steel	**Spectrographic Analysis**		
		Carbon	ASTM E 415-14	0.05 % to 1.3 %
		Manganese	IS 8811: 1998 (RA 2012)	0.05 % to 2.0 %
		Silicon		0.05 % to 2.0 %
		Sulphur		0.005 % to 0.10 %
		Phosphorous		0.005 % to 0.10 %
		Nickel		0.05 % to 4.50 %
		Chromium		0.05 % to 4.00 %
		Copper		0.05 % to 0.50 %
		Vanadium		0.05 % to 0.30 %
		Molybdenum		0.05 % to 1.0 %
		Carbon	ASTM E 1086-14	0.03 % to 1.15 %
		Manganese	IS 9879: 1998 (RA 2010)	0.4 % to 14.0 %
		Silicon		0.3 % to 1.0 %
		Sulphur		0.005 % to 0.10 %
		Phosphorous		0.005 % to 0.10 %
		Nickel		0.2 % to 11.00 %
		Chromium		0.2 % to 23.0 %
		Titanium		0.05 % to 0.50 %
		Molybdenum		0.05 % to 3.0 %

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2.	**Cast iron MCI, and SGCI**	**Wet Analysis**		
		Carbon	IS 12308 (Part 11): 1991	1.5 % to 4.5 %
		Manganese	IS 12308 (Part 10): 1991	0.1 % to 7.0 %
		Silicon	IS 12308 (Part 6): 1991	0.1 % to 6.0 %
		Phosphorous	IS 12308 (Part 5): 1991	0.01 % to 0.5 %
		Nickel	IS 12308 (Part 7): 1991	0.5 % to 16.0 %
		Chromium	IS 12308 (Part 8): 1997	0.1 % to 14.0 %
3.	**Copper & Copper Base Alloys**	Tin	IS 4027 (Part 5): 1987	0.50 % to 12.0 %
		Lead	IS 3187: 1965	0.50 % to 23.0 %
		Manganese	IS 3187: 1965	0.10 % to 3.0 %
		Nickel	IS 3685: 1966	0.10 % to 5.0 %
		Iron	IS 4027 (Part 8): 1991	0.50 % to 6.0 %
		Phosphorus	IS 4027 (Part 3): 1987	0.02 % to 1.0 %
		Zinc	IS 4027: 1967	0.50 % to 8.0 %
		Copper	IS 7212: 1974, IS 4027 (Part 1): 1987	50.0 % to 99.95 %
		Spectrographic Analysis		
		Tin	BS EN 15079: 2007	0.10 % to 14.0 %
		Lead		0.10 % to 22.0 %
		Phosphorus		0.10 % to 1.0 %
		Iron		0.10 % to 5. 0 %
		Manganese		0.10 % to 5.0 %
		Nickel		0.10 % to 5.0 %
		Zinc		0.10 % to 40.0 %
		Silicon		0.10 % to 5.0 %
		Aluminium		0.10 % to 12.0 %
4	**Aluminum & Aluminum Base Alloys**	**Wet Analysis**		
		Silicon	IS 504 (Part 1): 2002	0.3 % to 13.0 %
		Iron	IS 504 (Part 2): 2002	0.05 % to 2.0 %
		Copper	IS 504 (Part 3): 2002	0.05 % to 2.0 %
		Zinc	IS 504 (Part 4): 2002	0.05 % to 5.0 %
		Manganese	IS 504 (Part 5): 2002	0.05 % to 3.0 %

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	Aluminum & Aluminum Base Alloys	**Spectrographic Analysis**		
		Silicon	ASTM E 1251- 11	0.01 % to 14.0 %
		Iron	IS 11035: 1984 (RA 2000)	0.01 % to 1.0 %
		Copper		0.01 % to 5.0 %
		Manganese		0.01 % to 2.0 %
		Magnesium		0.01 % to 2.0 %
		Zinc		0.01 % to 2.0 %
		Nickel		0.01 % to 2.0 %
		Titanium		0.01 % to 0.50 %
II.	**RUBBER & SYNTHETIC RUBBER**			
1.	**Rubber**	Identification of Rubber (Natural/Synthetic)	IS 3400 (Part 22): 1984	Qualitative
		Volume Swelling	IS 3400 (Part 6): 1983	(-) 25 % to 100 %
III.	**TEXTILE & TEXTILE AUXILIARIES**			
1.	**Textiles**	Dimensional change	IS 2977: 1989	(-) 20 % to 20 %
		Water Soluble Matter	IS 3456: 1966	0.1 % to 5 %
		Ash Content	IS 199: 1989	0.1 % to 5 %
		Wool Content	IS 8476: 1977	1 % to 100 %
		Scouring Loss (Mild Method)	IS 1383: 1977	0.1 % to 10 %
		Total Size	IS 199: 1989	0.1 % to 5 %
		Fatty Matter	IS 199: 1989	0.1 % to 5 %
		Starch	IS 199: 1989	0.1 % to 5 %
		Identification of Fiber	IS 667: 1981	Qualitative (Present/Absent)
		Colour Fastness to Washing	IS/ISO 105: C10/2006 (Test - A1)	Grade 1 to 5

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IV.	**PAINTS AND SURFACE COATING**			
1.	**Paints**	Pigment for Ready mixed Paints	IS 101 (Part 8/Sec.2): 1990	1 % to 85 %
		Non-volatile for Ready mixed & Synthetic Paints	IS 101 (Part 8/Sec.2): 1990	15 % to 65 %
2.	**Paints (Synthetic Enamel)**	Phthalic content	IS 101 (Part 8/Sec.4): 1993	10 % to 30 %
V.	**METALLIC COATINGS AND TREATMENT SOLUTIONS**			
1.	**Zinc Coated Iron and Steel Articles**	Mass Test	IS 6745: 1972	50 g/m^2 to 1500 g/m^2
		Dip Test	IS 2633: 1986	1 µm to 600 µm
2.	**Tin Coating on Iron Steel Nickel Alloys Copper and Copper Alloys**	Thickness of Tin Coating	IS 1359: 1992	15 µm to 100 µm
3.	**Lead Coating on Aluminum**	Thickness of Lead Coating	IS 6848:1979	10 µm to100 µm

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