Laboratory	**National Test House (N.R.), Kamla Nehru Nagar, Ghaziabad Uttar Pradesh**			
Accreditation Standard	**ISO/IEC 17025: 2005**			
Discipline	**Chemical Testing**	**Issue Date**	**27.12.2013**	
Certificate Number	**T-0204**	**Valid Until**	**13.10.2015**	
Last Amended on	**-**	**Page**	**1 of 9**	

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. BUILDING MATERIALS				
1.	**Cement :** **33-Grade OPC** **43-Grade OPC** **53-Grade OPC** **SRPC-Cement,** **PPC-Cement (Fly Ash Based)** **PPC Cement (Calcined Clay based)** **Slag Cement,** **White Cement**	1. Lime content	IS 4032-1985, RA 2009	0.5 to 64%
		2. Iron oxide	Amend. No. 2, March 2010	0.3 to 15%
		3. Alumina		0.3 to 30%
		4. Sulphuric anhydride.		0.5 to 4%
		5. Magnesium oxide.		0.05 to 10%
		6. Chloride content		0.01 to 1%
		7. Insoluble residue		0.1 to 35%
		8. Loss on ignition		0.1 to 10%
		9. Sulphide sulphur		0.1 to 3%
		10. Silica content		0.3 to 70%
II. METALS & ALLOYS				
1.	**Metal** **a. Alloy Steel (Medium carbon alloy steel, Construction Steel/tool steel), Carbon Steel, Stainless Steel,** **b. Covered Electrodes IS:814-2004, IS:5206-1983, IS:395-1982** **c. IBR-Indian Boiler Regulation -1950**	1. Carbon	IS 228 Part 1 - 1987, RA 2008	0.03 to 0.55%
		2. Manganese	IS 228 Part 2 - 1987, RA 2008	0.05 to 2%
		3. Silicon	IS 228 Part 8 - 1989, RA 2009	0.01 to 2.0%
		4. Sulphur	IS 228 Part 9 - 1989, RA 2009	0.01 to 1.0%
		5. Phospourus	IS 228 Part 3 - 1987, RA 2008	0.01 to 1.0%
		6. Chromium	IS 228 Part 6 - 1987, RA 2009	0.60 to 20.0%
		7. Nickel	IS 228 Part 5 - 1987, RA 2009	0.80 to 22.0%
		8. Molybdenum	IS 228 Part 7 - 1989, RA 2009	0.10 to 3.0%
		9. Tungsten	IS 228 Part 16 - 1992, RA 2009	0.01 to 2.0%

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2.	**Aluminium Metal/Alloy**	1. Copper	IS 504 (Part 1 to 12) 2002	0.1 to 0.3 %
		2. Manganese		0.03 to 1.5%
		3. Silicon		0.025 to 1.3%
		4. Iron		0.35 to 0.95%
		5. Magnesium		0.1 to 1.8%
		6. Zinc		0.05 to 0.25%
		7. Titanium		0.05 to 0.20%
		8. Chromium		0.1 to 0.25%
3.	**Brass/Bronze**	1. Tin	IS 3685-1966, RA 2006	0.1 to 11%
		2. Zinc	IS 4027 (Part 1, 3, 5, 6, 8, 10,11)	0.1 to 6.0%
		3. Lead	As annexure	0.1 to 23%
		4. Nickel		0.1 to 2%
		5. Silicon		Min 0.5 %
		6. Antimony		Min 0.35%
		7. Iron		0.1 to 8.0%,
		8. Copper		8 to 80%
		9. Phosphorus		0 to 1%
		10. Arsenic		0 to 0.05%
		11. Aluminium		0.02 to 0.4%
III. METALLIC COATINGS & TREATMENT SOLUTIONS				
1.	**Galvanization Test**	1. Mass of zinc coating	IS 6745-1972, RA 2006 IS 4736-1986, RA 2006	Upto 600 gm/m2
		2. Uniformity of zinc coating	IS 4826-1979, RA 2006 IS 2633-1986, RA 2006 IS 4759-1996, RA 2006	Qualitative
2.	**Anodic Coating**	Thickness of anodic coating	IS 5523-1983, RA 2006 IS 1868-1996, RA 2006	1to 25 micron

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3.	**Enamel Finishing/ Under Coating**	1. Drying Time	IS:101(All parts)	0 to 24 hrs
		2 .Colour	(As Annexure 1)	Qualitative
		3.Consistency	IS:5-2007	Qualitative
		4. Fineness of grind	IS:133-2004, RA 2009	10 to 100
		5. Finish	IS: 8662-2004, RA 2009	-
		6. Gloss 60º	IS 2932-2003, RA 2009	1 to 100
		7.Mass in kg/10L		Min. 8
		8.Fastness to Light		-
		9.Scratch hardness test		-
		10. Flexibility & adhesion test		-
		11. Resistance to water		-
		12. Flash point		Above 10°C
		13. Wet opacity		80 to 350
		14. Volume solids		Min. 30
		15. Accelerated storage stability test		-
		16. Freedom from yellowing		-
		17. Application properties		-
		18. Lead-restricted material.		Upto 5.0%
		19. Phthalic anhydride		Upto 25%
		20. Viscosity by ford cup		60 to 150 s
		21. Non Volatile Matter		10 to 50%
		22. Resistance to Acid /Alkali		Qualitative

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	IV. PAINTS & SURFACE COATINGS			
1.	**Ready Mixed Red Oxide Zinc Chrome Priming / Ready Mixed Paint Brushing, Finishing Semi-Gloss**	1. Application properties	IS: 101 (All Parts list as Annex)	NA
		2. Lead restriction test	IS:2074-1992, RA 2009	0 to 1%
		3. Consistency		0 to 180
		4. Resistance to salt spray	IS:104-1979, RA 2004	NA
		5. Water content		0.1% to 10%
		6. Drying time	IS:13607-1992, RA 2009	Upto 24 hrs
		7. Finish		NA
		8. Fineness of grind		1 to 50
		9. Gloss 45 & 600°C		1 to 30
		10. Colour		NA
		11. Mass in kg/10L		13.5 to 20
		12. Scratch hardness test		NA
		13. Volume solids		30 to 60
		14. Flexibility & adhesion test		NA
		15. Protection against corrosion under conditions of condensation		NA
		16. Flash point		10°C to 20°C
		17. Accelerated storage stability test		NA
		18. Pigment content		45 to 55%
		19. Pigment composition		
		a) Zinc Oxide		0 to 15%
		b)Chromic Anhydride		0 to 25%
		c) Iron Oxide		0 to 80%

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2.	**Aluminium Paint for General Purpose in Dual Container**	1. Application properties 2. Consistency 3. Residue on sieve 4. Drying time 5. Finish 6. Grease content 7. Settling properties 8. Volatile matter 9. Mass in kg/10L 10. Leafing value 11. Flexibility & adhesion test 12. Protection against corrosion under conditions of condensation 13. Flash point 14. Wet opacity	IS:2339-1963 RA-2009 Read with IS:101 (All Parts list as Annex 1)	NA 0.1 to 150 s 0.01 to3% 10 to 60 min NA 0.1% to 5% NA 1 to 60% 1.0 to 55 % Min 9 NA NA 25°C to 30°C -10 to +20 of approved sample
3.	**Varnish Medium for Aluminium Paint/ Varnish Gold, Varnish Finishing Interior**	1. Striping test 2. Resistance to water 3. Acid value 4. Scratch hardness test 5. Flash point 6. Drying time 7. Finish 8. Volatile matter 9. Flexibility & adhesion t 10.Viscosity	IS:642-1963 Reaffirmed- 2009 IS:198-1978 Reaffirmed- 2009 IS:337-1975 Reaffirmed- 2001 IS:101 pt. 9 sec. 1, 1993 RA 2004 IS: 101 pt. 9 sec.2,1993 RA 2004	NA NA 0.1 to 5% NA 30°C to 50°C 0.1 to 24 hrs NA 1 to 60% NA 0.1to 0.8 stokes

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4.	**Ready Mixed Paint Bituminous, Brushing, Alkali, Acid, Heat, Resistance**	1. Resistance to heat	IS:158-1981, RA 2004	NA
		2. Volatile matter	IS:101 (All parts list as Annex)	1to 60 %
		3. Consistency	IS: 9862-1981, RA 2009	NA
		4. Resistance to acid	IS: 159-1981, RA 2009	NA
		5. Water content		0.1 to 5%
		6. Drying time		0.1 to 12 hrs
		7. Wet opacity		NA
		8. Finish		NA
		9. Resistance to alkali		NA
		10. Resistance to chlorine		NA
		11. Colour		NA
		12. Mass in kg/10L		8 to 20 kg/10L
		13. Resistance to water		NA
		14. Flexibility & adhesion test		NA
		15. Protection against corrosion under conditions of condensation		NA
		16. Flash point		30°C to 50°C
		17. Stripping test		NA
		18. Freedom from Lead		NA
5.	**Black Japan Type A, B, C**	1. Resistance to heat	IS: 341-1973	Qualitative
		2. Volatile matter	IS:101-1990	1to 40%
		3. Consistency	(All parts list as Annex)	1 to 55%
		4. Resistance to kerosene		NA
		5. Ash content		0.1 to 5%
		6. Drying time		1 to 24 hrs
		7. Finish		Qualitative
		8. Reaction with white paint		Qualitative
		9. Flexibility & adhesion		Qualitative
		10. Scratch hardness		Qualitative
		11. Flash point		10°C to 50°C
		12. Stripping		Qualitative

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	V. WATER			
1.	**Water for drinking Purpose as per IS:10500-1991 RA 2009; Water for Construction Purpose, as per IS:456-2000; Amd1, RA 2005 Packaged Drinking water IS 14543-2004, RA 2009 Packaged Natural Mineral Water IS: 13428-2005 RA 2009**	Colour	IS:3025 Pt.4-1983, RA 2006 Plt. Cobalt method	1.0 to 5.0 Hazen
		Odour	IS:3025 Pt.5-1983, RA 2006	Qualitative
		Taste	IS:3025 Pt.7 & 8-1984, RA 2006	Qualitative
		Turbidity, NTU	IS:3025 Pt.10-1984, RA 2006	0.1 to 9. 9 NTU 10 to 100 NTU
		pH	IS:3025 Pt.11-1984, RA2006	0.2 to 13.9
		Total Hardness	IS:3025 Pt.21-1983, RA 2006 EDTA Method	2 to 100 mg/l 100 to 1000 mg/l >1000 mg/l
		Iron	IS:3025 Pt.53-2003, RA 2009 Phenonthroline method EPA(ICP) method 200.5	0.2 to10 mg/l
2.	**Water for drinking purpose as per IS:10500-1991; RA 2009 Water for Construction Purpose, as per IS:456-2000; Amd1, RA 2005**	Chlorides	IS:3025 Pt.32-1988, RA 2009, Method Argentometric	2 to 100mg/l 100 to 1000mg/l
		Total Dissolved solids	IS:3025 Pt.16-1984, RA 2002	5 to 100 mg/l 100 to 1500 mg/l >1500 mg/l
		Calcium	IS:3025 Pt.40-1991 RA 2003, EDTA/ EPA(ICP)method 200.5	0.05 to 10 mg/l 10 to 100mg/l >100mg/l

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Magnesium	IS:3025 Pt.46-1994 RA 2003, EDTA/ EPA(ICP)method 200.5	0.05 to 10 mg/l 10 to 100mg/l >100mg/l
		Copper	IS:3025 Pt.42-1992 RA 2003, EPA(ICP) method 200.5	0.02 to 10mg/l
		Sulfates	IS:3025 Pt.24 -1986 RA 2003, Gravimetric	10 to 500 mg/l
		Fluoride	APHA 20th Ed 4500 C Ion selective method	0.12 mg/l 2 to 100 mg/l
		Cyanide	IS:3025 Pt.27–1986 RA 2009, Ion Selective electrode	0.01 to 0.12 mg/l 2 to 100 mg/l
		Chromium	EPA(ICP)method 200.5	0.02 to 10 mg/l
		Alkalinity	IS:3025 Pt.23–1986 RA 2009, Titrimetric	10 to 500mg/l
		Acidity	IS:3025 Pt.22–1986, RA 2009	10 to 500 mg/l
		Inorganic solids	IS:3025pt.18 –1984 RA 2006, Gravimetric	10 to 500 mg/l
		Organic solids	IS: 3025 Pt 18 1984, RA 2006	1 to 100mg/l
		Suspended solids	IS: 3025 Pt 1871984, RA 2006	1 to 100 mg/l

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		Manganese	EPA (ICP) method 200.5	0.01 to 10 mg/l
		Selenium	EPA (ICP) method 200.5	0.001 to 0.1 mg/l
		Arsenic	EPA (ICP) method 200.5	0.005 to 0.5 mg/l
		Lead	EPA (ICP) method 200.5	0.001 to 0.1 mg/l
		Cadmium	EPA (ICP) method 200.5	0.001 to 0.1 mg/l
		Zinc	EPA (ICP) method 200.5	1 to 10mg/l
		Boron/Borates	EPA (ICP) method 200.5	1 to 5 mg/l

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***NOTE**: The Laboratory has demonstrated competence for the stated scope for **WATER**. This however **does not fully cover** the specification requirements of **BIS for the Packaged Drinking Water as per IS 14543 and the Packaged Natural Mineral Water IS 13428.**