

Laboratory **Research Testing & Calibration Laboratory (A Division of Metal Handicrafts Service Centre), Peetal Nagri, Rampur Road, Moradabad, Uttar Pradesh**

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

Certificate Number **TC-6683**

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Validity **26.12.2017 to 25.12.2019**

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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			
1.		Phosphorous (P)	IS 228 (Part 3): 1987 (RA 2012)	0.005 % to 0.5 %
		Silicon (S)	IS 228 (Part 8): 1989 (RA 2014)	0.05 % to 5.0 %
		Manganese (Mn)	IS 228 (Part 2): 1987 (RA 2014)	0.1 % to 3.0 %
		Sulphur (S)	IS 228 (Part 3): 1989 (RA 2014)	0.005 % to 0.3 %
		Nickel (Ni)	IS 228 (Part 5): 1987 (RA 2014) ASTM:E:1621:13 [ED-XRF-XDUL/XDU] ASTM:E:1479:16-ICP	0.05 % to 15 % 0.1 % to 15 % 0.001 % to 15 %
		Molybdenum (Mo)	IS 228 (Part 7): 1989 (RA 2012) ASTM:E-1621-13 [ED-XRF-XDAL/XDV]	0.2 % to 5 % 0.1 % to 5.0 %
		Chromium (Cr)	IS 228 (Part 6): 1987 (RA 2016) ASTM:E-1621-13 [ED-XRF-XDAL/XDV]	0.2 % to 15 % 0.1 % to 35 %
		Manganese (Mn)	ASTM E-350:12/ ASTM E-1621-13 [ED-XRF-XDAL/XDV]	0.001 % to 20 %
		Chromium (Cr)	ASTM E-1479:2016-ICP	0.001 % to 3.0 %
		Lead (Pb)	ASTM E-1479:2016-ICP	0.001 % to 0.5 %
		Cadmium (Cd)	ASTM E-1479:2016-ICP	0.001 % to 0.5 %
2.		Phosphorous (P)	IS 228 (Part 3): 1987 (RA 2012)	0.005 % to 0.4 %

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	Handicrafts / Metal Products	Silicon (S)	IS 228 (Part 8): 1989 (RA 2014)	0.05 % to 5.0 %
		Manganese (Mn)	ASTM:E:1621:13 [ED-XRF-XDUL/XDU]	0.1 % to 15.0 %
		Sulphur (S)	ASTM E-352:13 IS 228(P6):87/RA 14	0.01 % to 5.0%
		Chromium (Cr)	ASTM:E-1479:2016-ICP ASTM:E:1621:13 [ED-XRF-XDAL/XDV]	0.1 % to 40.0 % 0.1 % to 40.0 %
		Nickel (Ni)	ASTM:E-1479:16-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDU]	0.0001 % to 25.0 % 0.01 % to 40.0 %
		Molybdenum (Mo)	IS 228 (Part 7): 1989 (RA 2012) ASTM:E-1621-13 [ED-XRF-XDAL/XDV]	0.1 % to 5.0 % 0.1 % to 18.0 %
		Chromium (Cr)	ASTM E-1479:2016-ICP ASTM:E-1621-13 [ED-XRF-XDAL/XDV]	0.01 % to 30.0 % 0.1 % to 30.0 %
		Lead (Pb)	ASTM E-1479:2016-ICP	0.001 % to 0.5 %
		Cadmium (Cd)	ASTM E-1479:2016-ICP	0.001 % to 0.5 %
3.		Phosphorous (P)	IS 228 (Part 3): 1987 (RA 2012)	0.005 % to 0.4 %
		Silicon (S)	IS 228 (Part 8): 1989 (RA 2014)	0.05 % to 5.0 %
		Manganese (Mn)	ASTM:E:1621:13 [ED-XRF-XDUL/XDU]	0.1 % to 15.0 %
		Sulphur (S)	ASTM E-352:13 IS 228 (Part 6): 1987 (RA 2014)	0.01 % to 5.0 %
		Chromium (Cr)	ASTM:E-1479:2016-ICP ASTM:E:1621:13 [ED-XRF-XDAL/XDV]	0.1 % to 40.0 % 0.1 % to 40.0 %

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		Nickel (Ni)	ASTM:E:1479:16-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDU]	0.0001 % to 25.0 % 0.01 % to 40.0 %
		Molybdenum (Mo)	IS 228 (Part 7): 1989 (RA 2012) ASTM:E-1621:13 [ED-XRF-XDAL/XDV]	0.1 % to 5.0 % 0.1 % to 18.0 %
		Chromium (Cr)	ASTM E-1479:2016-ICP ASTM:E-1621 – 13 [ED-XRF-XDAL/XDV]	0.01 % to 30.0 % 0.1 % to 30.0 %
		Lead (Pb)	ASTM E-1479:2016-ICP	0.001 % to 0.5 %
		Cadmium (Cd)	ASTM E-1479:2016-ICP	0.001 % to 0.5 %
4.		Iron (Fe)	ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.10 % to 10.0 %
		Lead (Pb)	ASTM E-1479:2016-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.001 % to 8.0 % 0.10 % to 8.0 %
		Tin (Sn)	ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.10 % to 10.0 %
		Nickel (Ni)	ASTM E-1479:2016-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.001 % to 10.0 % 0.10 % to 30.0 %
		Manganese (Mn)	ASTM E-1479:2016-ICP	0.10 % to 10.0 %
		Zinc (Zn)	ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.10 % to 50.0 %
		Copper (Cu)	ASTM:E:1479:16-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	20.0 % to 99.99 % 20.0 % to 99.99 %
		Cadmium (Cd)	ASTM E-1479:2016-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.001 % to 10.0 % 0.10 % to 15.0 %
		Chromium (Cr)	ASTM E-1479:2016-ICP ASTM:E-1621:13 [ED-XRF-XDAL/XDV]	0.01 % to 3.0 % 0.10 % to 3.0 %

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		Lead (Pb)	ASTM E-1479:2016-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.10 % to 5.0 % 0.10 % to 5.0 %
		Cadmium (Cd)	ASTM E-1479:2016-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.10 % to 5.0 % 0.10 % to 5.0 %
5.	Zinc & its Alloy & Zinc Based Handicrafts / Metal Products	Copper (Cu)	ASTM E:1277-08-ICP ASTM E:1479:11 ASTM E:1621:13 [ED-XRF-XDUL/XDV]	0.01 % to 10.0 % 0.01 % to 10.0 %
		Iron (Fe)	ASTM E:1621:13 [ED-XRF-XDUL/XDV] ASTM E:1277-14-ICP	0.10 % to 10.0 % 0.01 % to 10.0 %
		Lead (Pb)	ASTM E:1277-14-ICP ASTM E:1479:11 ASTM E:1613:12 ASTM E:1621:13 [ED-XRF-XDUL/XDV]	0.001 % to 10.0 % 0.001 % to 10.0 % 0.1 % to 10.0 %
		Tin (Sn)	ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.1 % to 6.0 %
		Cadmium (Cd)	ASTM E:1277-14-ICP ASTM E-1479:2016-ICP ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.001 % to 8.0 % 0.10 % to 8.0 %
		Aluminum (Al)	ASTM E:1277-14-ICP	0.05 % to 2.0 %
		Nickel (Ni)	ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	0.01 % to 10.0 %
		Zinc (Zn)	ASTM:E:1621:13 [ED-XRF-XDUL/XDV]	20.0 % to 99.9 %
6.		Copper (Cu)	ASTM E:306:17 ASTM E:34:11 [Photometric]	0.02 % to 20.0 %

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		Iron (Fe)	ASTM E:306:17 ASTM E:34:11 [Photometric]	0.03 % to 5.0 %
		Nickel (Ni)	ASTM E:306:17 ASTM E:34:11 [Photometric]	0.02 % to 5.0 %
		Magnesium (Mg)	ASTM E:306:17 ASTM E:34:11 [Photometric]	0.002 % to 2.0 %
		Silicon (Si)	ASTM E:306:17 ASTM E:34:11 [Photometric]	0.03 % to 10.0 %
		Lead (Pb)	ASTM E:306:17 ASTM E:1479:16 - ICP	0.002 % to 1.0 %
		Cadmium (Cd)	ASTM E:306:17 ASTM E:34:11 [Photometric]	0.002 % to 1.0 %
		Aluminum (Al)	ASTM E:306:17 ASTM E:34:11 [Photometric]	0.5 % to 99.99 %
7.	Metal & alloys - Solid/ Liquid & Powder / Handicrafts Products (X-Ray XDAL-XDV Spect, Al-U)	Silver, Gold, Cadmium, Cobalt, Chromium, Tin, Copper, Iron, Arsenic, Mercury, Iridium, Manganese, Molybdenum, Nickel, Lead, Platinum, Antimony, Titanium, Vanadium, Tungsten, Zinc & Zirconium	ASTM:E-1621:2013	0.1 % to 99.99 %

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II.	POLLUTION & ENVIRONMENT			
1.		pH value	IS 3025 (Part 11): 2014	1 to 14
		Alkalinity	IS 3025 (Part 23): 1986 (RA 2014)	5 mg/L to 1000 mg/L
		Acidity	IS 3025 (Part 10): 1984 (RA 2014)	5 mg/L to 1000 mg/L
		Turbidity	IS 3025 (Part 10): 1984 (RA 2014)	0.5 NTU to 100 NTU
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2014)	10 mg/L to 1000 mg/L
		Colour	IS 3025-5:2012	0.5 Hazen to 25 Hazen
		Odour	IS 3025-5:2012	Qualitative
		Total Chlorine	IS 3025 (Part 4): 2012	0.01 mg/L to 10 mg/L
		Cyanide	IS 3025 (Part 26): 1986 USEPA Pyridine Pyrazoine-2014	0.01 mg/L to 240 mg/L
		Fluoride	IS 3025 (Part 26): 1986 USEPA Spands Method-2014	0.02 mg/L to 100 mg/L
		Phenols	IS 3025 (Part 60): 2008 USEPA 4 Aminoniatipyrine-2013	0.005 mg/L to 200 mg/L
		Iodine	IS 3025 (Part 60): 2008 USEPA/DPD:2013	0.05 mg/L to 7 mg/L
		Nitrate	IS 3025 (Part 08)/ USEPA Cadmium Reduction-2012	0.5 mg/L to 100 mg/L
		Formaldehyde	IS 3025 (Part 34): 2008/ 2014 USEPA:MBTH:8110/ USEPA	5 µg/L to 500 µg/L
		Phosphate	USEPA 1.5 Diphenyiearbohdrazidee	0.1 mg/L to 125 mg/L

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		Chromium Hexavalent	USEPA Oxidation ISO 11083:1984	0.05 mg/L to 200 mg/L
		Silica	IS 3025 (Part 35): 2008 (RA 2014) Silicomolybdate Method	5 mg/L to 100 mg/L
		Chloride	IS 3025 (Part 32): 1984 (RA 2014) USEPA	8 mg/L to 1000 mg/L
		Sulphate	IS 3025 (Part 24): 1986 (RA 2014) Gravimetric	10 mg/L to 2000 mg/L
		Conductivity	IS 3025 (Part 14): 1984 (RA 2013) Gravimetric	1 micro to 10000 micro mhos/cm (µmhos)
		Calcium	IS 3025 (Part 40): 1991 (RA 2014) EDTA BASE	1 mg/L to 1000 mg/L
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2013)	10 mg/L to 5000 mg/L
		Dissolved Oxygen	IS 3025 (Part 38): 1984 (RA 2014)	0.5 mg/L to 15.0 mg/L
		Na		0.10 mg/L to 100 mg/L
		K		0.10 mg/L to 100 mg/L
		Mg		0.10 mg/L to 1000 mg/L
		Mo		0.50 mg/L to 500 mg/L
		Fe		0.10 mg/L to 1000 mg/L
		Heavy Metals		
		Ni		0.1 mg/L to 200 mg/L
		Mo		0.05 mg/L to 200 mg/L
		Cu		0.01 mg/L to 200 mg/L
		Hg		0.001 mg/L to 200 mg/L
		As		0.05 mg/L to 200 mg/L
		Pb		0.05 mg/L to 200 mg/L
		Cd		0.05 mg/L to 200 mg/L
		Al		0.05 mg/L to 200 mg/L
		Cr		0.05 mg/L to 200 mg/L
		Zn		0.05 mg/L to 200 mg/L

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		Se		0.05 mg/L to 200 mg/L
		Ba		0.05 mg/L to 200 mg/L
III.	WATER			
1.	Surface Water	pH value	IS 3025 (Part 11): 2012	1 to 14
		Alkalinity	IS 3025 (Part 23): 1986 (RA 2014)	5 mg/L to 1000 mg/L
		Acidity	IS 3025 (Part 10): 1984 (RA 2012)	2 mg/L to 1000 mg/L
		Turbidity	IS 3025 (Part 10): 1984 (RA 2012)	5 NTU to 100 NTU
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2014)	10 mg/L to 1000 mg/L
		Odour	IS 3025 (Part 5): 2012	Qualitative
		Colour	IS 3025 (Part 4): 2012	0.5 Hazen to 25 Hazen
		Total Chlorine	IS 3025 (Part 26): 1986 USEPA Mercuric Thlocyanate-2014	0.1 mg/L to 10 mg/L
		Cyanide	IS 3025 (Part 27): 1986 USEPA Pyridine Pyrazoioine-2014	0.1 mg/L to 240 mg/L
		Fluoride	IS 3025 (Part 60): 2008 USEPA Spands Method-2013	0.02 mg/L to 100 mg/L
		Phenols	IS 3025 (Part 60): 2008 USEPA 4 Aminoniatipyrine-2013	0.5 mg/L to 200 mg/L
		Iodine	IS 3025 (Part 08): 2012 USEPA-DPD	0.05 mg/L to 7 mg/L
		Nitrate	IS 3025 (Part 34): 2008 USEPA Cadmium Reduction-2012	0.5 mg/L to 100 mg/L
		Formaldehyde	MBTH:8110/USEPA USEPA 1.5	5 µg/L to 500 µg/L

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		Phosphate	USEPA Diphenylcarbohydrazide	0.5 mg/L to 125 mg/L
		Chromium Hexavalent	USEPA Oxidation ISO 11083:1984	0.05 mg/L to 200 mg/L
		Silica	IS 3025 (Part 35): 2008 (RA 2014) Sillicomolybdate Method	5 mg/L to 100 mg/L
		Chloride	IS 3025 (Part 32): 1988 (RA 2014) USEPA	8 mg/L to 1000 mg/L
		Sulphate	IS 3025 (Part 24): 1986 (RA 2014) Gravimetric	10 mg/L to 2000 mg/L
		Conductivity	IS 3025 (Part 14): 1984 (RA 2013)	1 to 10000 micro mh os/cm (µmhos)
		Calcium	IS 3025 (Part 40): 1991 (RA 2014) EDTA BASE	1 mg/L to 1000 mg/L
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2013)	10 mg/L to 5000 mg/L
		Dissolved Oxygen	IS 3025 (Part 38): 1989 (RA 2014) HRDO/USEPA	0.5 mg/L to 15.0 mg/L
		Na		0.5 mg/L to 100 mg/L
		K		0.5 mg/L to 100 mg/L
		Mg		0.5 mg/L to 1000 mg/L
		Mn		0.5 mg/L to 500 mg/L
		Fe		0.5 mg/L to 1000 mg/L
		Heavy Metals		
		Ni		0.1 mg/L to 200 mg/L
		Mo		0.1 mg/L to 200 mg/L
		Cu		0.05 mg/L to 200 mg/L
		Hg		0.05 mg/L to 200 mg/L
		As		0.05 mg/L to 200 mg/L
		Pb		0.05 mg/L to 200 mg/L

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		Cd		0.05 mg/L to 200 mg/L
		Al		0.05 mg/L to 200 mg/L
		Cr		0.05 mg/L to 200 mg/L
		Zn		0.05 mg/L to 200 mg/L
		Se		0.05 mg/L to 200 mg/L
		Ba		0.05 mg/L to 200 mg/L
2.	Ground Water	pH value	IS 3025 (Part 11): 2012	1 to14
		Alkalinity	IS 3025 (Part 23): 1986 (RA 2014)	1 mg/L to 1000 mg/L
		Acidity	IS 3025 (Part 10): 1984 (RA 2012)	1 mg/L to 1000 mg/L
		Turbidity	IS 3025 (Part 10): 1984 (RA 2012)	5 NTU to 100 NTU
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2014)	10 mg/L to 1000 mg/L
		Odour	IS 3025 (Part 5): 2012	Qualitative
		Colour	IS 3025 (Part 4): 2012	0.5 Hazen to 25 Hazen
		Total Chlorine	IS 3025 (Part 26): 1986 USEPA Mercuric Thlocyanate-2014	0.1 mg/L to10 mg/L
		Cyanide	IS 3025 (Part 27): 1986 USEPA Pyridine Pyrazoioine-2014	0.1 mg/L to 240 mg/L
		Fluoride	IS 3025 (Part 60): 2008 USEPA Spands Method-2013	0.02 mg/L to100 mg/L
		Phenols	IS 3025 (Part 60): 2008 USEPA 4 Aminoniatipyrine-2013	0.5 mg/L to 200 mg/L
		Iodine	IS 3025 (Part 08): 2012 USEPA-DPD	0.05 mg/L to 7 mg/L

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		Nitrate	IS 3025 (Part 34): 2008 USEPA-Cadmium Reduction-2012	0.5 mg/L to 100 mg/L
		Formaldehyde	MBTH:8110/USEPA USEPA 1.5	5 µg/L to 500 µg/L
		Phosphate	USEPA Diphenycarbohydrazide	0.5 mg/L to 125 mg/L
		Chromium Hexavalent	USEPA Oxidation ISO 11083:1984	0.05 mg/L to 200 mg/L
		Silica	IS 3025 (Part 35): 2008 (RA 2014) Silicomolybdate Method	5 mg/L to 100 mg/L
		Chloride	IS 3025 (Part 32): 1988 (RA 2014) USEPA	8 mg/L to 1000 mg/L
		Sulphate	IS 3025 (Part 24): 1986 (RA 2014) Gravimetric	10 mg/L to 2000 mg/L
		Conductivity	IS 3025 (Part 14): 1984 (RA 2013)	1 to 10000 micro mh os/cm (µmhos)
		Calcium	IS 3025 (Part 40): 1991 (RA 2014) EDTA BASE	1 mg/L to 1000 mg/L
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2012)	10 mg/L to 5000 mg/L
		Dissolved Oxygen	IS 3025 (Part 38): 1989 (RA 2014) HRDO/USEPA	0.5 mg/L to 15.0 mg/L
		Na		0.10 mg/L to 100 mg/L
		K		0.10 mg/L to 100 mg/L
		Mg		0.10 mg/L to 1000 mg/L
		Mn		0.05 mg/L to 500 mg/L
		Fe		0.1 mg/L to 1000 mg/L
		Heavy Metals		
		Ni		0.01 mg/L to 200 mg/L
		Mo		0.1 mg/L to 200 mg/L
		Cu		0.01 mg/L to 200 mg/L

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		Hg	[ED-XRF]	0.05 mg/L to 200 mg/L
		As	ASTM D:1976:2012	0.05 mg/L to 200 mg/L
		Pb	[ICP-OES]	0.05 mg/L to 200 mg/L
		Cd		0.05 mg/L to 200 mg/L
		Al		0.05 mg/L to 200 mg/L
		Cr		0.05 mg/L to 200 mg/L
		Zn		0.05 mg/L to 200 mg/L
		Se		0.05 mg/L to 200 mg/L
		Ba		0.05 mg/L to 200 mg/L
3.		pH value	IS 3025 (Part 11): 2012	1 to 14
		Alkalinity	IS 3025 (Part 23): 1986 (RA 2014)	1 mg/L to 1000 mg/L
		Acidity	IS 3025 (Part 10): 1984 (RA 2012)	1 mg/L to 1000 mg/L
		Turbidity	IS 3025 (Part 10): 1984 (RA 2012)	0.5 NTU to 100 NTU
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2014)	10 mg/L to 1000 mg/L
		Odour	IS 3025 (Part 5): 2012	Qualitative
		Colour	IS 3025 (Part 4): 2012	0.5 Hazen to 25 Hazen
		Total Chlorine	IS 3025 (Part 26): 1986 USEPA Mercuric Thlocyanate-2014	0.1 mg/L to 10 mg/L
		Cyanide	IS 3025 (Part 27): 1986 USEPA Pyridine Pyrazoioine-2014	0.01 mg/L to 240 mg/L
		Fluoride	IS 3025 (Part 60): 2008 USEPA Spands Method-2013	0.02 mg/L to 100 mg/L
		Phenols	IS 3025 (Part 60): 2008 USEPA 4 Aminoniatiopyrine-2013	0.005 mg/L to 200 mg/L

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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
		Iodine	IS 3025 (Part 08): 2012 USEPA-DPD	0.05 mg/L to 7 mg/L
		Nitrate	IS 3025 (Part 34): 2008 USEPA-Cadmium Reduction-2012	0.5 mg/L to 100 mg/L
		Formaldehyde	MBTH:8110/USEPA USEPA 1.5	5 µg/L to 500 µg/L
		Phosphate	USEPA Diphenylcarbohydrazide	0.1 mg/L to 125 mg/L
		Chromium Hexavalent	USEPA Oxidation ISO 11083:1984	0.05 mg/L to 200 mg/L
		Silica	IS 3025 (Part 35): 2008 (RA 2014) Silicomolybdate Method	5 mg/L to 100 mg/L
		Chloride	IS 3025 (Part 32): 1988 (RA 2014) USEPA	8 mg/L to 1000 mg/L
		Sulphate	IS 3025 (Part 24): 1986 (RA 2014) Gravimetric	10 mg/L to 2000 mg/L
		Conductivity	IS 3025 (Part 14): 1984 (RA 2013)	1 to 10000 micro mhos/cm (µmhos)
		Calcium	IS 3025 (Part 40): 1991 (RA 2014) EDTA BASE	1 mg/L to 1000 mg/L
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2012)	10 mg/L to 5000 mg/L
		Dissolved Oxygen	IS 3025 (Part 38): 1989 (RA 2014) HRDO/USEPA	0.5 mg/L to 15.0 mg/L
		Na		0.10 mg/L to 100 mg/L
		K		0.10 mg/L to 100 mg/L
		Mg		0.10 mg/L to 1000 mg/L
		Mn		0.05 mg/L to 500 mg/L
		Fe		0.1 mg/L to 1000 mg/L
		Heavy Metals		
		Ni		0.01 mg/L to 200 mg/L

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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
		Mo	3000/US-EPA	0.05 mg/L to 200 mg/L
		Cu	ASTM D6052:97(2016)	0.01 mg/L to 200 mg/L
		Hg	[ED-XRF]	0.001 mg/L to 200 mg/L
		As	ASTM D:1976:2012	0.009 mg/L to 200 mg/L
		Pb	[ICP-OES]	0.007 mg/L to 200 mg/L
		Cd		0.005 mg/L to 200 mg/L
		Al		0.05 mg/L to 200 mg/L
		Cr		0.05 mg/L to 200 mg/L
		Zn		0.05 mg/L to 200 mg/L
		Se		0.05 mg/L to 200 mg/L
		Ba		0.1 mg/L to 200 mg/L
4.		pH value	IS 3025 (Part 11): 2014	1 to 14
		Alkalinity	IS 3025 (Part 23): 1986 (RA 2014)	5 mg/L to 1000 mg/L
		Acidity	IS 3025 (Part 10): 1984 (RA 2014)	2 mg/L to 1000 mg/L
		Turbidity	IS 3025 (Part 10): 1984 (RA 2014)	5 NTU to 100 NTU
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2014)	10 mg/L to 1000 mg/L
5.		pH value	IS 3025 (Part 11): 2014	1 to 14
		Alkalinity	IS 3025 (Part 23): 1986 (RA 2014)	5 mg/L to 1000 mg/L
		Acidity	IS 3025 (Part 10): 1984 (RA 2014)	2 mg/L to 1000 mg/L
		Turbidity	IS 3025 (Part 10): 1984 (RA 2014)	5 NTU to 100 NTU
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2014)	10 mg/L to 1000 mg/L
		Colour	IS 3025 (Part 5): 2012	0.5 Hazen to 25 Hazen
		Total Chlorine	IS 3025 (Part 4): 2012	0.1 mg/L to 15 mg/L

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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
		Cyanide	IS 3025 (Part 26): 1986 USEPA Pyridine Pyrazaoine-2014	0.1 mg/L to 240 mg/L
		Fluoride	IS 3025 (Part 26): 1986 USEPA Spands Method-2014	0.02 mg/L to 100 mg/L
		Phenols	IS 3025 (Part 60): 2008 USEPA 4 Aminoniatipyrine-2013	0.5 mg/L to 200 mg/L
		Iodine	IS 3025 (Part 60): 2008 USEPA DPD:2013	0.5 mg/L to 7 mg/L
		Nitrate	IS 3025 (Part 08)/ USEPA - Cadmium Reduction-2012	0.5 mg/L to 100 mg/L
		Formaldehyde	IS 3025 (Part 34): 2008 (RA 2014) USEPA: MBTH: 8110/USEPA	5 µg/L to 500 µg/L
		Phosphate	USEPA 1.5 Diphenylarsobenzidine	0.5 mg/L to 125 mg/L
		Chromium Hexavalent	USEPA Oxidation	0.02 mg/L to 200 mg/L
		Silica	IS 3025 (Part 35): 2008 (RA 2014) Silicomolybdate Method	5 mg/L to 100 mg/L
		Chloride	IS 3025 (Part 32): 1984 (RA 2014) USEPA	8 mg/l to 1000 mg/L
		Sulphate	IS 3025 (Part 24): 1986 (RA 2014) Gravimetric	10 mg/L to 2000 mg/L
		Conductivity	IS 3025 (Part 14): 1984 (RA 2013) Gravimetric	1 to 10000 micro mh os/cm (µmhos)
		Calcium	IS 3025 (Part 40): 1991 (RA 2014) EDTA BASE	1 mg/L to 1000 mg/L
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2013)	10 mg/L to 5000 mg/L

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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
		Dissolved Oxygen	IS 3025 (Part 38): 1989 (RA 2014)	0.5 mg/L to 15.0 mg/L
		Na		0.50 mg/L to 100 mg/L
		K		0.50 mg/L to 100 mg/L
		Mg		0.50 mg/L to 1000 mg/L
		Mo		0.50 mg/L to 500 mg/L
		Fe		0.5 mg/L to 1000 mg/L
		Heavy Metals		
		Ni		0.1 mg/L to 200 mg/L
		Mo		0.1 mg/L to 200 mg/L
		Cu		0.1 mg/L to 200 mg/L
		Hg		0.05 mg/L to 200 mg/L
		As		0.05 mg/L to 200 mg/L
		Pb		0.05 mg/L to 200 mg/L
		Cd		0.05 mg/L to 200 mg/L
		Al		0.05 mg/L to 200 mg/L
		Cr		0.05 mg/L to 200 mg/L
		Zn		0.05 mg/L to 200 mg/L
		Se		0.05 mg/L to 200 mg/L
		Ba		0.05 mg/L to 200 mg/L
6.		pH value	IS 3025 (Part 11): 2014	1 to 14
		Alkalinity	IS 3025 (Part 23): 1986 (RA 2014)	5 mg/L to 1000 mg/L
		Acidity	IS 3025 (Part 10): 1984 (RA 2014)	2 mg/L to 100 mg/L
		Turbidity	IS 3025 (Part 10): 1984 (RA 2014)	5 NTU to 100 NTU
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2014)	10 mg/L to 1000 mg/L
		Colour	IS 3025 (Part 5): 2012	0.5 Hazen to 25 Hazen
		Total Chlorine	IS 3025 (Part 4): 2012	0.1 mg/L to 15 mg/L

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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
		Cyanide	IS 3025 (Part 26): 1986 USEPA Pyridine Pyrazaoine-2014	0.1 mg/L to 240 mg/L
		Fluoride	IS 3025 (Part 26): 1986 USEPA Spands Method-2014	0.02 mg/L to 100 mg/L
		Phenols	IS 3025 (Part 60): 2008 USEPA 4 Aminoniatiptyrine-2013	0.5 mg/L to 200 mg/L
		Iodine	IS 3025 (Part 60): 2008 USEPA-DPD:2013	0.5 mg/L to 7 mg/L
		Nitrate	IS 3025 (Part 08)/ USEPA - Cadmium Reduction-2012	0.5 mg/L to 100 mg/L
		Formaldehyde	IS 3025 (Part 34): 2008 (RA 2014) USEPA: MBTH: 8110/ USEPA	5 µg/L to 500 µg/L
		Phosphate	USEPA 1.5 Diphenyiearbohrazidee	0.5 mg/L to 125 mg/L
		Chromium Hexavalent	USEPA Oxidation	0.02 mg/L to 200 mg/L
		Silica	IS 3025 (Part 35): 2008 (RA 2014) Silicomolybdate Method	5 mg/L to 100 mg/L
		Chloride	IS 3025 (Part 32): 1984 (RA 2014) USEPA	8 mg/L to 1000 mg/L
		Sulphate	IS 3025 (Part 24): 1986 (RA 2014) Gravimetric	10 mg/L to 2000 mg/L
		Conductivity	IS 3025 (Part 14): 1984 (RA 2013) Gravimetric	1 to10000 micro mh os/cm (µmhos)
		Calcium	IS 3025 (Part 40): 1991 (RA 2014) EDTA BASE	1 mg/L to 1000 mg/L
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2013)	10 mg/L to 5000 mg/L

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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
		Dissolved Oxygen	IS 3025 (Part 38): 1989 (RA 2014)	0.5 mg/L to 15.0 mg/L
		Na		0.50 mg/L to 100 mg/L
		K		0.50 mg/L to 100 mg/L
		Mg		0.50 mg/L to 1000 mg/L
		Mo		0.50 mg/L to 500 mg/L
		Fe		0.5 mg/L to 1000 mg/L
		Heavy Metals		
		Ni		0.1 mg/L to 200 mg/L
		Mo		0.1 mg/L to 200 mg/L
		Cu		0.10 mg/L to 200 mg/L
		Hg		0.05 mg/L to 200 mg/L
		As		0.05 mg/L to 200 mg/L
		Pb		0.05 mg/L to 200 mg/L
		Cd		0.05 mg/L to 200 mg/L
		Al		0.05 mg/L to 200 mg/L
		Cr		0.05 mg/L to 200 mg/L
		Zn		0.05 mg/L to 200 mg/L
		Se		0.05 mg/L to 200 mg/L
		Ba		0.05 mg/L to 200 mg/L
7.		pH value	IS 3025 (Part 11): 2014	1 to 14
		Alkalinity	IS 3025 (Part 23): 1986 (RA 2014)	5 mg/L to 1000 mg/L
		Acidity	IS 3025 (Part 10): 1984 (RA 2014)	2 mg/L to 1000 mg/L
		Turbidity	IS 3025 (Part 10): 1984 (RA 2014)	5 NTU to 100 NTU
		Total Hardness	IS 3025 (Part 21): 1983 (RA 2014)	10 mg/L to 1000 mg/L
		Colour	IS 3025 (Part 5): 2012	0.5 Hazen to 25 Hazen
		Total Chlorine	IS 3025 (Part 4): 2012	0.1 mg/L to 15 mg/L

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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
		Cyanide	IS 3025 (Part 26): 1986 USEPA Pyridine Pyrazaoine-2014	0.1 mg/L to 240 mg/L
		Fluoride	IS 3025 (Part 26): 1986 USEPA Spands Method-2014	0.02 mg/L to 100 mg/L
		Phenols	IS 3025 (Part 60): 2008 USEPA 4, Aminoniatiptyrine-2013	0.5 mg/L to 200 mg/L
		Iodine	IS 3025 (Part 60): 2008 USEPA-DPD:2013	0.5 mg/L to 7 mg/L
		Nitrate	IS 3025 (Part 08)/ USEPA - Cadmium Reduction-2012	0.5 mg/L to 100 mg/L
		Formaldehyde	IS 3025 (Part 34): 2008 (RA 2014) USEPA:MBTH:8110/USEPA	5 µg/L to 500 µg/L
		Phosphate	USEPA 1.5 Diphenyiearbohrazidee	0.5 mg/L to 125 mg/L
		Chromium Hexavalent	USEPA Oxidation	0.02 mg/L to 200 mg/L
		Silica	IS 3025 (Part 35): 2008 (RA 2014) Silicomolybdate Method	5 mg/L to 100 mg/L
		Chloride	IS 3025 (Part 32): 1984 (RA 2014) USEPA	8 mg/L to 1000 mg/L
		Sulphate	IS 3025 (Part 24): 1986 (RA 2014) Gravimetric	10 to 2000 mg/L
		Conductivity	IS 3025 (Part 14): 1984 (RA 2013) Gravimetric	1 to10000 micro mh os/cm(µmh os)
		Calcium	IS 3025 (Part 40): 1991 (RA 2014) EDTA BASE	1 mg/L to 1000 mg/L
		Total Dissolved Solids	IS 3025 (Part 16): 1984 (RA 2013)	10 mg/L to 5000 mg/L

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		Dissolved Oxygen	IS 3025 (Part 38): 1989 (RA 2014)	0.5 mg/L to 15.0 mg/L
		Na		0.50 mg/L to 100 mg/L
		K		0.50 mg/L to 100 mg/L
		Mg		0.50 mg/L to 1000 mg/L
		Mo		0.50 mg/L to 500 mg/L
		Fe		0.5 mg/L to 1000 mg/L
		Heavy Metals		
		Ni		0.1 mg/L to 200 mg/L
		Mo		0.1 mg/L to 200 mg/L
		Cu		0.1 mg/L to 200 mg/L
		Hg		0.05 mg/L to 200 mg/L
		As		0.05 mg/L to 200 mg/L
		Pb		0.05 mg/L to 200 mg/L
		Cd		0.05 mg/L to 200 mg/L
		Al		0.05 mg/L to 200 mg/L
		Cr		0.05 mg/L to 200 mg/L
		Zn		0.05 mg/L to 200 mg/L
		Se		0.05 mg/L to 200 mg/L
		Ba		0.05 mg/L to 200 mg/L
IV.	HAZARDUS & RESTRICTED CHEMICALS			
1.		Aluminum		40 mg/kg to 1000 mg/kg
		Antimony		10 mg/kg to 1000 mg/kg
		Arsenic		2 mg/kg to 1000 mg/kg
		Barium		50 mg/kg to 1000 mg/kg
		Boron		50 mg/kg to 1000 mg/kg
		Cadmium		5 mg/kg to 1000 mg/kg
		Chromium		0.1 mg/kg to 800 mg/kg
		Chromium VI		0.01 mg/kg to 500 mg/kg
		Cobalt		5 mg/kg to 1000 mg/kg
		Copper		20 mg/kg to 1000 mg/kg

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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
		Lead		5 mg/kg to 1000 mg/kg
		Manganese		40 mg/kg to 1000 mg/kg
		Mercury		5 mg/kg to 1000 mg/kg
		Nickel		5 mg/kg to 1000 mg/kg
		Selenium		10 mg/kg to 1000 mg/kg
		Strontium		50 mg/kg to 1000 mg/kg
		Tin		5 mg/kg to 1000 mg/kg
		Zinc		40 mg/kg to 1000 mg/kg
2.		Lead	IEC62321:2013	0.002 % to 5.0 %
		Cadmium	ASTM:E-1613:2012	0.001 % to 0.05 %
		Mercury	ASTM:E-1621:2013	0.0010 % to 0.15 %
		Hexavalent- Chromium	2011/65/EU US:EPA Methods 3052	0.0010 % to 0.15 %
		Total Bromine	X-Ray Screening based on IEC62321:2013	0.005 % to 0.20 %
		Leachable Lead		0.03 mg/L to 150.0 mg/L
		Leachable Cadmium (Leaching Test)		0.03 mg/L to 150.0 mg/L
		Leachable Lead		0.03 mg/L to 150.0 mg/L
		Leachable Cadmium		0.03 mg/L to 150.0 mg/L
		Leachable Nickel		0.03 mg/L to 150.0 mg/L
		Leachable Chromium		0.03 mg/L to 150.0 mg/L
		Total Lead in Children Metal Products Including children metal jewelry	US:CPSC-CH-E1001-08.3 US:CPSC-CH-E1001-08.2 US:CPSC-CH-E1001-8.1	0.0010 % to 10 %
		Total Lead in Non Metal Children Products	US:CPSC-CH-E1002-08.3 US:CPSC-CH-E1002-08.2 US:CPSC-CH-E1002-08.1 ASTM F-2853 – 10(2015)	0.0010 % to 10 %

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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
V.	METALLIC COATING & TREATMENT SOLUTION			
		Silver Coating		0.01 µm to 50 µm
		Nickel Coating		0.01 µm to 35 µm
		Copper Coating		0.01 µm to 35 µm
		Zinc Coating		0.01 µm to 45 µm
		Cadmium Coating		0.01 µm to 75 µm
		Gold Coating		0.01 µm to 8 µm
		Tin Coating		0.02 µm to 90 µm
		Chromium Coating		0.01 µm to 28 µm
		Brass Coating		0.01 µm to 35 µm
2.	Metal Finishing Materials Electroplating Bath, & salt			
a.	Silver Cyanide	Ag – Content Potassium Cyanide	Issue No. RTCL/EP-01 Dated 21.05.2015 (Canning Handbook Surface Finishing Technology)	0.5 g/L to 100 g/L 0.5 g/L to 250 g/L
b.	Zinc Cyanide	Zn – Content Cyanide NaOH	Issue No. RTCL / EP – 01 Dated 21.05.2015	0.5 g/L to 100 g/L 0.5 g/L to 200 g/L 0.5 g/L to 100 g/L
c.	Copper Cyanide	Cu - Content Free - Cyanide	Issue No. RTCL / EP – 01 Dated 21.05.2015	0.5 g/L to 100 g/L 0.5 g/L to 100 g/L
d.	Acid Copper	Cu - Content Sulphuric Acid	Issue No. RTCL / EP – 01 Dated 21.05.2015	0.5 g/L to 50 g/L 0.5 g/L to 100 g/L
e.	Nickel Solution (Ni)	Ni –Metal Ni - Sulphate Ni - Chloride Boric Acid	Issue No. RTCL / EP – 01 Dated 21.05.2015	0.5 g/L to 100 g/L 0.5 g/L to 350 g/L 0.5 g/L to 250 g/L 0.5 g/L to 75.0 g/L
f.	Brass Solution	Cyanide Copper (Cu)- Metal Zinc (Zn) - Metal	Issue No. RTCL / EP – 01 Dated 21.05.2015	0.5 g/L to 100 g/L 0.5 g/L to 75 g/L 0.5 g/L to 50 g/L
g.	Gold Solution	Cyanide Gold (Au)- Metal	Issue No. RTCL /EP-01 Dated 21.05.2015	0.5 g/L to 20 g/L 0.5 g/L to 5 g/L

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VI.	PAINT & SURFACE COATING			
1.		Pencil Hardness	IS 101 (Part 5 & Part 1): 1988 (RA 2009)	Qualitative
		Gloss	IS 101 (Part 4 & Part 4): 1988 (RA 2009)	1 GU to 100 GU
		Resistance to Acid	IS 2932:2014	Qualitative
		Resistance to Alkali	IS 2932:2014	Qualitative
		Resistance to Heat	IS 101 (Part 7 & Part 3): 1990 (RA 2011)	Qualitative
		Resistance to Humidity	IS 101 (Part 6 & Part 1): 1988 (RA 2010)	Qualitative
		Resistance to Corrosion (Salt Spray Test / Corrosion Test)	ASTM- B-117:11 G-85 Mod. 2016 ISO 9227:2012 IS 2074:1992	Qualitative
2.		Resistance to Rubbing	IS: 427: 2013	Qualitative
		Aluminum		40 mg/kg to 1000 mg/kg
		Antimony		10 mg/kg to 1000 mg/kg
		Arsenic		2 mg/kg to 1000 mg/kg
		Barium		50 mg/kg to 1000 mg/kg
		Boron		50 mg/kg to 1000 mg/kg
		Cadmium		5 mg/kg to 1000 mg/kg
		Chromium		0.1 mg/kg to 800 mg/kg
		Chromium VI		0.01 mg/kg to 500 mg/kg
		Cobalt		5 mg/kg to 1000 mg/kg
		Copper		20 mg/kg to 1000 mg/kg
		Lead		5 mg/kg to 1000 mg/kg
		Manganese		40 mg/kg to 1000 mg/kg
		Mercury		5 mg/kg to 1000 mg/kg
		Nickel		5 mg/kg to 1000 mg/kg
		Selenium		10 mg/kg to 1000 mg/kg
		Strontium		50 mg/kg to 1000 mg/kg

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		Tin		5 mg/kg to 1000 mg/kg
		Zinc		40 mg/kg to 1000 mg/kg
3.		Powder Coating	ASTM –B-499:96/14	0.1 µms to 500 µms
		Paint Coating	ASTM –B-499:96/14	0.1 µms to 500 µms
		Lacquer Coating	ASTM –B-499:96/14	0.1 µms to 500 µms
4.		Total Toxic Metals		10 mg/kg to 25000 mg/kg
		Pb, Cd, As, & Cr		10 mg/kg to 25000 mg/kg
VII.	CORROSION TEST			
1.	Salt Spray Test	Resistance to Corrosion (Salt Spray Test / Corrosion Test)	ASTM- B-117:11 G-85 Mod. 2016 ISO 9227:12, IS 2074:92	Qualitative