

Laboratory National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) **Page 1 of 47**

Validity 21.05.2018 to 20.05.2020 **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
-----	----------------------------	-------------------------	---	--

CHEMICAL TESTING

LOCATION 1				
I.	BUILDING MATERIAL			
1.	Cement (OPC, PPC, Portland Slag Cement, Clinker White Cement)	SiO ₂	IS:4032-1985,RA 2014	15.0– 30%
		Loss on Ignition	IS:4032-1985,RA 2014	0.5 – 10 %
		Al ₂ O ₃	IS:4032-1985,RA 2014	0.5 – 10 %
		Fe ₂ O ₃	IS:4032-1985,RA 2014	0.2 – 10 %
		CaO	IS:4032-1985,RA 2014	30.0 – 70 %
		MgO	IS:4032-1985,RA 2014	0.5 – 10 %
		SO ₃	IS:4032-1985,RA 2014	0.1 – 10 %
		Insoluble Residue	IS:4032-1985,RA 2014	0.5 – 40 %
		Total Chloride	IS:4032:1985 RA 2014	0.005 – 0.5%
		Sodium Oxide (Na ₂ O)	IS:4032-1985,RA 2014	0.03 – 5 %
		Potassium Oxide (K ₂ O)	IS:4032-1985,RA 2014	0.03 – 5 %
2.	Pozollana Material (Fly Ash)	SiO ₂	IS:1727-1967,RA 2013	30 – 80 %
		Loss on Ignition	IS:1727-1967,RA 2013	0.5 – 10 %
		Moisture	IS:3812(Part-1)-2013	0.1 - 5 %
		Al ₂ O ₃	IS:1727-1967,RA 2013	0.5 – 20 %
		Fe ₂ O ₃	IS:1727-1967,RA 2013	0.5 – 10 %
		CaO	IS:1727-1967,RA 2013	0.5 – 5 %
		MgO	IS:1727-1967,RA 2013	0.5 – 7.5 %
		SO ₃	IS:1727-1967,RA 2013	0.1 – 6 %
		Total Chloride	IS:12423-1988,RA 2014/ IS:4032-1985,RA 2014	0.01 - 0.5 % 0.01 - 0.5 %
		Sodium Oxide (Na ₂ O)	IS:1727-1967,RA 2013/ IS:3812(Part -1) -2013	0.01– 3.0 % 0.01– 3.0 %
		Potassium Oxide (K ₂ O)	IS:1727-1967,RA 2013/ IS:3812(Part -1) -2013	0.03– 4.5 % 0.03 – 4.5 %

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 2 of 47

Validity 21.05.2018 to 20.05.2020 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
3.	Concrete Admixture (Admixture, Accelerator, Retarder)	pH	IS:9103-1999,RA 2013	1-12
		Dry Material content	IS:9103-1999,RA 2013	5-50 %
		Ash Content	IS:9103-1999,RA 2013	0.1-30 %
		Relative Density	IS:9103-1999,RA 2013	0.8-1.5
		Chloride ion content	IS:6925-1973,RA 2013, CI-4	0.001-0.5 %
		Colour	IS:9103-1999,RA 2013	Qualitative
4.	Hardened Concrete	Physical Appearance	IS:9103-1999,RA 2013	Qualitative
		Chloride	BS:1881(Part -124)-2015	0.005 – 0.5 %
		Sulphate	BS:1881(Part -124)-2015	0.01 – 10 %
		Sodium Oxide	BS:1881(Part -124)-2015	0.05 – 5 %
5.	Aggregate	Potassium Oxide	BS:1881(Part -124)-2015	0.05 – 5 %
		Chloride	BS EN 1744-1:2009 + A1:2012	0.005 – 0.5 %
6.	Micro Silica	Sulphate	BS EN 1744-1:2009 + A1:2012	0.01 – 10 %
		Moisture	IS:15388-2003,RA-2017	0.1 – 10.0 %
		Loss on Ignition	IS:1727-1967,RA 2013	0.5 – 10 %
		SiO ₂	IS:1727-1967,RA 2013	5.0 – 100.0 %
7.	Bentonite	Total Alkalis (Na ₂ O)	IS:1727-1967,RA 2013 IS:4032-1985,RA 2014	0.01 – 4.5 %
		pH	IS:6186 – 1996 RA-2010	5 – 14
8.	Soil	pH	IS:2720(Part -26)-1987,RA 2011	5 – 14
		Sulphate(as SO ₄)	IS:2720(Part -27)-1977,RA 2015	0.01 – 10 %
9.	Gypsum & its Products	Loss on ignition	IS:2547(Part -1)-1976,RA 2012	0.1 – 10.0 %
		Free Lime	IS:2547(Part -1)-1976,RA 2012	0.1 – 5.0 %
		Sulphuric anhydride (as SO ₃)	IS:1288-1982, RA 2010	30.0 – 50.0 %
		Calcium Oxide (as CaO)	IS:1288-1982, RA 2010	20.0 – 40.0 %
		Soluble magnesium (as MgO)	IS:2547(Part-1)-1976,RA 2012	0.05 – 1.0 %

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 3 of 47

Validity 21.05.2018 to 20.05.2020 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
		Soluble sodium (as Na ₂ O)	IS:2547(Part-1)-1976,RA 2012	0.03 – 0.5 %
II.	ORES & MINERALS			
1.	Lime Stone/ Dolomite	Loss on ignition	IS:1760(Part-1)-1991,RA 2016	0.5 – 50.0 %
		SiO ₂	IS:1760(Part-2)-1991,RA 2016	0.5 – 20.0 %
		Al ₂ O ₃	IS:1760(Part-3)-1992,RA 2016	0.2 – 2.0 %
		Fe ₂ O ₃	IS:1760(Part-3)-1992,RA 2016	0.2 – 2.0 %
		CaO	IS:1760(Part-3)-1992,RA 2016	0.5 – 55.0 %
		MgO	IS:1760(Part-3)-1992,RA 2016	0.2 – 30.0 %
		Cl	IS:1760(Part-5)-1991,RA 2016	0.002 – 0.1 %
2.	Iron Ore	SiO ₂	IS:1493(Part-1)-1981,RA 2016	0.5 – 20.0 %
		Al ₂ O ₃	IS:1493(Part-4)-1988,RA 2016	0.1 – 5.0 %
		Fe ₂ O ₃	IS:1493(Part-1)-1981,RA 2016	5.0 – 90.0 %
		TiO ₂	IS:1493(Part-3)-1987,RA 2016	0.01 – 5.0 %
		CaO	IS:1493(Part-3)-1987,RA 2016	0.01 – 5.0 %
		MgO	IS:1493(Part-3)-1987,RA 2016	0.01 – 5.0 %
3.	Quartzite	Loss on ignition	IS:1917(Part-1)-1991,RA-2016	0.1 – 1.0 %
		Na ₂ O	IS:1917(Part-2)-1991,RA-2016	0.01 - 2.0 %
		K ₂ O	IS:1917(Part-2)-1991,RA-2016	0.01 - 2.0 %
		SiO ₂	IS:1917(Part-3)-1992,RA-2016	50.0 – 99.5 %
		Al ₂ O ₃	IS:1917(Part-4)-1991,RA-2016	0.01 – 4.0 %
		Fe ₂ O ₃	IS:1917(Part-5)-1992,RA-2016	0.01 – 0.50 %
		CaO	IS:1917(Part-6)-1992,RA-2016	0.01 – 0.50 %
		MgO	IS:1917(Part-6)-1992,RA-2016	0.01 – 0.50 %
		TiO ₂	IS:1917(Part-7)-2001,RA-2016	0.005 – 0.20 %

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 4 of 47

Validity 21.05.2018 to 20.05.2020 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
III.	METALS & ALLOYS			
1.	Low Alloys Steel & Plain carbon Steel	Wet Method		
		Carbon	IS:228(P-1)-1987,RA 2012	0.050 – 2.50 %
		Sulphur	IS:228(P-9)-1989,RA 2014	0.010 - 0.50%
		Silicon	IS:228(P-8)-1989,RA 2014	0.10 - 2.00 %
		Manganese	IS:228(P-2)-1987,RA 2012	0.01 - 2.0 %
		Phosphorus	IS:228(P-3)-1987,RA 2012	0.010 - 0.50 %
		Nickel	IS:228(P-5)-1987,RA 2014	0.05 - 2.00 %
		Molybdenum	IS:228(P-7)-1990,RA 2012	0.10 - 1.00 %
		Chromium	IS:228(P-6)-1987,RA 2014	0.10 - 2.00 %
		Vanadium	ASTM E-350-2012 Cl.-239	0.006-0.15 %
		Copper	IS:228(P-15)-1992,RA 2014	0.05 - 2.0 %
			ASTM E350-2012 Cl.-279	0.004 - 0.50 %
		Aluminium	ASTM E-350 – 2012, Cl.-76	0.003 – 0.20 %
		Titanium	ASTM E-350 – 2012, Cl.-258	0.001 – 0.50 %
	Nitrogen	IS:228(P-19)-1998,RA 2016	0.001-0.05 %	
	Low Alloys Steel & Plain Carbon Steel	OES Method		
		Carbon	ASTM E-415-2017	0.020 - 1.10%
			IS:8811-1998,RA 2012	0.020 - 1.10%
		Sulphur	ASTM E-415-2017	0.002 - 0.080 %
			IS:8811-1998, RA 2012	0.005 – 0.08 %
		Silicon	ASTM E-415-2017	0.020 - 1.05 %
			IS:8811-1998, RA 2012	0.050 – 1.05 %
		Manganese	ASTM E-415-2017	0.10 – 2.00 %
			IS:8811-1998, RA 2012	0.10 – 2.00 %
		Phosphorus	ASTM E-415-2017	0.003 - 0.080 %
	IS:8811-1998, RA 2012		0.005 – 0.080%	
	Nickel	ASTM E-415-2017	0.030 – 1.65 %	
		IS:8811-1998, RA 2012	0.050 – 1.65 %	

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 5 of 47

Validity 21.05.2018 to 20.05.2020 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
		Molybdenum	ASTM E-415-2017 IS:8811-1998, RA 2012	0.0008 – 0.25 % 0.010 – 0.25 %
		Chromium	ASTM E-415-2017 IS:8811-1998, RA 2012	0.01 – 2.00 % 0.05 – 2.00 %
		Vanadium	ASTM E-415-2017 IS:8811-1998, RA 2012	0.001 – 0.25 % 0.010 – 0.25%
		Copper	ASTM E-415-2017 IS:8811-1998, RA 2012	0.010 – 0.40 % 0.010 – 0.50 %
		Aluminium	ASTM E-415-2017 IS:8811-1998, RA 2012	0.001 – 0.085 % 0.005 – 0.085 %
		Titanium	ASTM E-415-2017 IS:8811-1998, RA 2012	0.0004–0.050 % 0.010 – 0.10 %
		Nitrogen	IS:228(P-23)-2003,RA 2013 ASTM E-415-2017	0.002 - 0.012 % 0.002 – 0.012%
		Boron	ASTM E-415-2017 IS:8811-1998,RA 2012	0.0005- 0.008% 0.005- 0.008%
		Niobium	ASTM E-415-2017	0.0005–0.055 %
		Cobalt	ASTM E-415-2017	0.010 – 0.050 %
		Tungsten	ASTM E-415-2017	0.008 – 0.045%
		Calcium	ASTM E-415-2017	0.008 – 0.045%
2.	Stainless Steel		Wet Method	
		Carbon	IS:228(P-1)-1987,RA 2012	0.050 – 2.50 %
		Silicon	IS:228(P-8)-1989,RA 2014	0.10 - 2.00 %
		Phosphorus	IS:228(P-3)-1987,RA 2012	0.010-0.50 %
		Nickel	IS:228(P-5)-1987,RA 2014	0.05 - 20.0 %
		Molybdenum	IS:228(P-7)-1990,RA 2012	0.10 - 5.0 %
		Chromium	IS:228(P-6)-1987,RA 2014	0.01 - 25.0 %
		Vanadium	ASTM E-353 – 2014, Cl.-221	0.006-0.15 %
		Copper	IS:228(P-15)-1992,RA 2014 ASTM E353 – 2014, Cl.-82	0.05 - 2.0 % 0.004 - 0.50 %

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 6 of 47

Validity 21.05.2018 to 20.05.2020 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	
	Stainless steel		OES Method		
		Carbon	ASTM E-1086-2014 IS:9879-1998,RA 2015	0.010 – 0.25% 0.010 – 0.25%	
		Sulphur	ASTM E-1086-2014 IS:9879-1998, RA 2015	0.002 – 0.050% 0.002 – 0.050%	
		Silicon	ASTM E-1086-2014 IS:9879-1998, RA 2015	0.10 - 1.15 % 0.10 - 1.15 %	
		Manganese	ASTM E-1086-2014 IS:9879-1998, RA 2015	0.10 – 2.50 % 0.10 – 2.50 %	
		Phosphorus	ASTM E-1086-2014 IS:9879-1998, RA 2015	0.003– 0.050 % 0.003– 0.050 %	
		Nickel	ASTM E-1086-2014 IS:9879-1998, RA 2015	0.10 – 12.00 % 2.00 – 12.00 %	
		Molybdenum	ASTM E-1086-2014 IS:9879-1998, RA 2015	0.10 - 3.05 % 0.10 - 3.00 %	
		Chromium	ASTM E-1086-2014 IS:9879-1998, RA 2015	14.0 - 25.0 % 5.00 - 20.0 %	
		Vanadium	ASTM E-1086-2014	0.02 - 0.08 %	
		Copper	ASTM E-1086-2014 IS:9879-1998, RA 2015	0.010 – 0.20 % 0.050 – 0.20 %	
		Niobium	ASTM E-1086-2014	0.001 - 1.10 %	
		Cobalt	ASTM E-1086-2014	0.015 – 0.050 %	
		Tungsten	ASTM E-1086-2014	0.001 – 0.035%	
3.		Cast Iron		Wet Method	
			Silicon	IS:12308(P-6)-1991,RA 2012	0.10 - 3.00 %
	Manganese		IS:12308(P-10)-1991,RA 2012	0.010 – 2.50 %	
	Phosphorus		IS:12308(P-5)-1991,RA 2012	0.010- 0.50 %	
	Nickel		IS:12308(P-7)-1991,RA 2012	0.05 - 2.00 %	
	Molybdenum		IS:12308(P-9)-1993,RA 2014	0.01 - 1.00 %	

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 7 of 47

Validity 21.05.2018 to 20.05.2020 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
		Chromium	IS:12308(P-8)-1997,RA 2012	0.10 - 2.00 %
		Vanadium	ASTM E-351 – 2013, Cl.-227	0.006 - 0.15 %
		Copper	IS:12308(P-12)-1992,RA 2012	0.01 – 0.50 %
			ASTM E351 – 2013 , Cl.-116	0.004 - 0.50 %
		Titanium	ASTM E-351 – 2013 , Cl.-246	0.006 – 0.35 %
	Cast Iron		OES Method	
		Carbon	ASTM E-1999-2011	1.90 – 3.80 %
		Sulphur	ASTM E-1999-2011	0.05– 0.080 %
		Silicon	ASTM E-1999-2011	1.10 – 2.50 %
		Manganese	ASTM E-1999-2011	0.10 – 2.00 %
		Phosphorus	ASTM E-1999-2011	0.040 – 0.12%
		Nickel	ASTM E-1999-2011	0.20 – 3.00%
		Molybdenum	ASTM E-1999-2011	0.030 – 0.40%
		Chromium	ASTM E-1999-2011	0.080 – 0.30%
		Vanadium	ASTM E-1999-2011	0.050 –0.20 %
		Copper	ASTM E-1999-2011	0.010 –1.70 %
		Titanium	ASTM E-1999-2011	0.005 – 0.10%
		Aluminium	ASTM E-1999-2011	0.005 – 0.12%
4.	Tool Steel, High Speed Steel		Wet Method	
		Carbon	IS:228(P-1)-1987,RA 2012	0.050 – 2.5 %
		Silicon	IS:228(P-8)-1989,RA 2014	0.10 - 1.00 %
			ASTM E 352 - 2013 CI 45	0.10 - 1.00 %
		Phosphorus	IS:228(P-3)-1987,RA 2012	0.010 - 0.050 %
		Nickel	IS:228(P-5)-1987,RA 2014	0.10 – 0.20 %
			ASTM E 352 – 2013, CI 144	0.10 – 4.00 %
		Molybdenum	IS:228(P-7)-1990,RA 2012	0.10 - 5.0 %
		Chromium	IS:228(P-6)-1987,RA 2014	0.10 - 5.00 %
			ASTM E 352 – 2013, CI 174	0.006 - 1.00 %
			ASTM E 352 – 2013, CI 184	0.10 – 14.00 %
	Copper	IS:228(P-15)-1992,RA 2014	0.05 – 0.10 %	

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 8 of 47

Validity 21.05.2018 to 20.05.2020 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
			ASTM E 352 – 2013, CI 70	0.01 – 2.00 %
		Vanadium	ASTM E-352 – 2013, CI.-193	0.006 – 2.00 %
		Cobalt	ASTM E-352 – 2013, CI.-60	0.10 – 5.00 %
5.	Copper & its Alloys		Wet Method	
		Copper	IS:440-1964 RA 2012 CI-4.0 IS:3685-1966 RA 2012 CI-5.0 IS:4027(Part-1)-1987 RA 2012	50 - 100 %
		Aluminium	IS:440-1964 RA 2012 CI-4.0 IS:3685-1966 RA- 2012 CI-12.0 IS:4027(Part-9)-1991 RA 2012	0.005 - 2.00 %
		Lead	IS:440-1964 RA 2012 CI-9.0 IS:3685-1966 RA 2012 CI-5.0 IS:4027(Part-1)-1987 RA 2012	0.005 – 10.0 %
		Tin	IS:440-1964 RA 2012 CI-14.0 IS:3685-1966 RA 2012 CI-6.0 IS:4027(Part-5)-1987 RA 2012	0.001 – 10.0 %
		Iron	IS:440-1964 RA 2012 CI-8.0 IS:3685-1966 RA- 2012 CI-10.0 IS:4027(Part-8)-1991 RA 2012	0.01 – 5.0 %
		Nickel	IS:440-1964 RA 2012 CI-10.0 IS:3685-1966 RA 2012 CI-9.0 IS:4027(Part-4)-1987 RA 2012	0.01 – 10.0 %
		Antimony	IS:440-1964 RA 2012 CI-5.0 IS:4027(Part-7)-1990 RA 2012	0.005 – 1.0 %
		Arsenic	IS:440-1964, RA 2012 CI-5.0	0.010 – 0.50 %
		Bismuth	IS:440-1964, RA 2012 CI-7.0	0.05 – 0.20 %
		Manganese	IS:3685-1966, RA 2012 CI-7.0 IS:4027(Part-2)-1987, RA 2012	0.05 – 5.0 %
		Silicon	IS:3685-1966, RA 2012 CI-11.0 IS:4027(Part-10)-2000, RA 2012	0.005 – 0.50 %

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 9 of 47

Validity 21.05.2018 to 20.05.2020 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
		Zinc	IS:3685-1966RA- 2012 CI-13.0 IS:4027(Part-6)-1987,RA 2012	0.01 – 50.0 %
		Phosphorus	IS:440-1964,RA 2012 CI-14.0 IS:3685-1966,RA 2012 CI-6.0	0.01 – 0.50 %
	Copper & its Alloys		OES Method	
		Aluminium	BS EN 15079 – 2015	0.0005 – 0.10 %
		Lead	BS EN 15079 – 2015	0.001 – 6.70 %
		Tin	BS EN 15079 – 2015	0.001 – 5.0 %
		Iron	BS EN 15079 – 2015	0.001 – 0.50 %
		Nickel	BS EN 15079 - 2015	0.001 – 2.15 %
		Antimony	BS EN 15079 – 2015	0.0005 – 0.15 %
		Arsenic	BS EN 15079 – 2015	0.001 – 0.12 %
		Bismuth	BS EN 15079 – 2015	0.0005 – 0.06 %
		Manganese	BS EN 15079 – 2015	0.0005 – 0.10 %
		Silicon	BS EN 15079 – 2015	0.001 – 0.10 %
		Silver	BS EN 15079 – 2015	0.010 – 0.50 %
		Zinc	BS EN 15079 – 2015	0.0008 – 39.0 %
		Phosphorus	BS EN 15079 - 2015	0.050 – 0.30 %
6.	Aluminium & its Alloy		Wet Method	
		Silicon	IS:504(Part-1)-2002 RA-2012	0.050 – 10.0 %
		Titanium	IS:504(Part-11)-2002 RA-2012	0.010 – 1.0 %
		Magnesium	IS:504(Part-6)-2002 RA-2012	0.050 – 10 %
		Manganese	IS:504(Part-5)-2002 RA-2012	0.050 – 5.0 %
		Chromium	IS:504(Part-8)-2002 RA-2012	0.050 – 5.0 %
		Zinc	IS:504(Part-4)-2002 RA-2012	0.010 – 10 %
		Lead	IS:504(Part-1)-2002 RA-2012	0.0005 – 1.0 %
		Tin	IS:504(Part-9)-2002 RA-2012	0.010 – 1.0 %
		Iron	IS:504(Part-2)-2002 RA-2012	0.010 – 5.0 %
		Nickel	IS:504(Part-7)-2002 RA-2012	0.01 – 5.0 %
		Copper	IS:504(Part-3)-2002 RA-2012	0.010 – 5.0 %

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 10 of 47

Validity 21.05.2018 to 20.05.2020 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
		Vanadium	IS:504(Part-12)-2002 RA-2012	0.005 – 0.02 %
		Antimony	IS:504(Part-10)-2002 RA-2012	0.001 – 0.30 %
		Aluminium	ASTM E 35 -2002, CI 8	70 – 100 %
	Aluminium & its Alloy		OES Method	
		Silicon	ASTM E-1251-2017	0.060 – 12.0 %
			IS:11035-1984 RA-2012	0.40 – 1.30 %
		Titanium	ASTM E-1251-2017	0.020 – 0.20 %
			IS:11035-1984 RA-2012	0.010 – 0.30 %
		Magnesium	ASTM E-1251-2017	0.050 – 2.50 %
			IS:11035-1984 RA-2012	0.10 – 3.00 %
		Manganese	ASTM E-1251-2017	0.025 – 0.35 %
			IS:11035-1984 RA-2012	0.10 – 0.50 %
		Chromium	ASTM E-1251-2017	0.020 – 0.25 %
			IS:11035-1984 RA-2012	0.010 – 0.30 %
		Zinc	ASTM E-1251-2017	0.020 – 6.0 %
			IS:11035-1984 RA-2012	0.10 – 1.00 %
		Lead	ASTM E-1251-2017	0.004 – 0.10 %
		Tin	ASTM E-1251-2017	0.004 – 0.10 %
		Iron	ASTM E-1251-2017	0.10 – 1.00 %
			IS:11035-1984 RA-2012	0.10 – 1.00 %
		Nickel	ASTM E-1251-2017	0.004 – 0.10 %
	Copper	ASTM E-1251-2017	0.010 – 2.75 %	
		IS:11035-1984 RA-2012	0.10 – 3.00 %	
	Vanadium	ASTM E-1251-2017	0.005 – 0.050 %	
	Antimony	ASTM E-1251-2017	0.004 – 0.10 %	
IV.	METALLIC COATINGS & TREATMENT SOLUTIONS			
1.	Metallic Coatings (Ferrous & Non-Ferrous)	Anodic Coating	IS:5523-1983, RA- 2016	5-40 micron
		Powder Coating	IS:6012-1992 RA-2016	5.0 – 200 micron
		Zinc Coating	IS:6745-1972 RA-2016	20.0- 2000 g/m ²

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 11 of 47

Validity 21.05.2018 to 20.05.2020 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
		Uniformity of Zinc coating	IS:2633-1986 RA -2016	Qualitative
		Thickness of Zinc Coating	IS:1573-1986 RA -2016	1.0 – 250 micron
		Adhesion Test	IS:2629-1985 RA -2016	Qualitative
2.	Coating Material (Ferrous & Non Ferrous)	Salt Spray Test (Corrosion test)	ASTM B 117 - 2016	Qualitative
V.	WATER			
1.	Drinking Water & Packaged Drinking Water	Colour	IS:3025 (Part-4)-1983 RA 2017 Platinum Cobalt (visual)	1 – 50 Hazen Units
		Turbidity	IS:3025(Part-10)-1984 RA 2017	0.1 – 500 NTU
		Total Dissolved Solid	IS:3025(Part-16)-1984 RA 2017	1 – 25000 mg/l
		pH	IS:3025(Part-11)-1983 RA 2017	0.1 – 14.0
		Fluoride	IS:3025(Part-60)-2008/ APHA 4500-F ⁻	0.05 – 50 mg/l
		Chloride	IS:3025(Part-32)-1988 RA 2014	0.5 – 2000 mg/l
		Total Hardness (as CaCO ₃)	IS:3025(Part-21)-2009, RA 2014	5 – 5000 mg/l
		Total alkalinity as Calcium carbonate	IS:3025(Part-23)-1986, RA 2014	1 – 5000 mg/l
		Residual Free Chlorine	IS:3025(Part-26)-1986, RA 2014	0.1 – 10 mg/l
		Iron (Fe)	IS:3025(Part-53)-2003, RA 2014	0.1 – 100 mg/l
		Calcium (Ca)	IS:3025(Part-40)-1991, RA 2014	1 – 1000 mg/l
		Magnesium (Mg)	IS:3025(Part-46)-1994, RA 2014	1 – 1000 mg/l
		Arsenic (as As)	IS:3025(Part-37)-1988, RA 2014	0.001 – 50 mg/l
		Chromium (as Cr)	IS:3025(Part-52)-2003, RA 2014	0.01 – 50 mg/l
		Selenium (as Se)	IS:3025(Part-56)-2003, RA 2014	0.01 – 50 mg/l
		Copper (as Cu)	IS:3025(Part-42)-1994, RA 2014	0.01 – 100 mg/l

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 12 of 47

Validity 21.05.2018 to 20.05.2020 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
		Sulphate (as So ₄)	IS:3025(Part-24)-1986 RA 2014	1 – 500 mg/l
		Zinc (as Zn)	IS:3025(Part-49)-1986 RA 2014	0.20 – 50 mg/l
		Lead (as Pb)	IS:3025(Part-47)-1986 RA 2014	0.01 – 50 mg/l
		Cadmium (as Cd)	IS:3025(Part-41)-1986 RA 2014	0.01 – 50 mg/l
		Mercury (as Hg)	IS:3025(Part-48)-1986 RA 2014	0.001 – 50 mg/l
		Aluminium (as Al)	IS:3025(Part-55)-2003 RA 2014	0.01 – 50 mg/l
		Antimony(as Sb)	IS:15303-2003 RA 2014	0.001 – 50 mg/l
		Barium(as Ba)	IS:15302-2003, RA 2014	0.01 – 50 mg/l
		Manganese(as Mn)	IS:3025(Part-59)-2006 RA 2017	0.01 – 50 mg/l
		Silver(as Ag)	IS:13428-2005, RA 2014	0.01 – 50 mg/l
		Nitrate (as NO ₃)	IS:3025(Part-34)-1988,RA 2014	0.1 – 100 mg/l
		Nickel (as Ni)	IS:3025(Part-54)-2003 RA 2014	0.01 – 50 mg/l
		Molybdenum(as Mo)	APHA 3500	0.01 – 50 mg/l
		Sodium(as Na)	IS:3025(Part-45)-1993,RA 2014	1 – 2000 mg/l
		Potassium (as K)	IS:3025(Part-45)-1993,RA 2014	1 – 2000 mg/l
2.	Construction Water	Total Dissolved Solid	IS:3025(Part-16)-1984 RA 2017	1 – 10000 mg/l
		Organic Matter	IS:3025(Part-18)-1984 RA 2017	0.1 – 2000 mg/l
		Inorganic Matter	IS:3025(Part-18)-1984 RA 2017	0.1 – 20000 mg/l
		Alkalinity (Amount of 0.02N H ₂ SO ₄ required to Neutralize 100 ml Sample of water using Mixed Indicator, ml)	IS:3025(Part-23)-1986 RA 2014	0.1- to 50 ml
		Acidity (Amount of 0.02N NaOH required to using Phenolphthalein Indicator, ml)	IS:3025(Part-22)-1986 RA 2014	0.1- to 50 ml
		Total suspended solid	IS:3025(Part-17)-1984 RA 2017	0.1 – 5000 mg/l
		pH value	IS:3025(Part-11)-1983 RA 2017	4 to 12

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 13 of 47

Validity 21.05.2018 to 20.05.2020 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
		Chloride	IS:3025(Part-32)-1988 RA 2014	0.5 – 5000 mg/l
		Sulphate(as SO ₃)	IS:3025(Part-24)-1986 RA 2014	1 – 2000 mg/l
		Sodium	IS:3025(Part-45)-1993,RA 2014	1 – 2000 mg/l
		Potassium	IS:3025(Part-45)-1993,RA 2014	1 – 2000 mg/l
VI.	POLLUTION & ENVIRONMENT			
1.	Waste Water	Dissolved Oxygen	IS:3025(Part-38)-1989,RA 2014	1 – 15 mg/l
		BOD	IS:3025(Part-44)-1993,RA 2014	5 – 1000 mg/l
		COD	IS:3025(Part-58)-2006,RA 2017	5 – 5000 mg/l
		Oil & Grease	IS:3025(Part-39)-1991,RA 2014	5 – 1000 mg/l
		Phosphorus	IS:3025(Part-31)-1988,RA 2014	1 – 500 mg/l
		Nitrate Nitrogen	IS:3025(Part-34)-1988,RA 2014	0.1 – 1000 mg/l
		Sulphide	IS:3025(Part-29)-1986,RA 2014	1 – 1000 mg/l
		Calcium	IS:3025(Part-40)-1991,RA 2014	1 – 1000 mg/l
		Magnesium	IS:3025(Part-46)-1994,RA 2014	1 – 1000 mg/l
		Sodium	IS:3025(Part-45)-1993,RA 2014	1 – 2000 mg/l
		Potassium	IS:3025(Part-45)-1993,RA 2014	1 – 2000 mg/l
VII.	RUBBER & RUBBER PRODUCTS			
1.	Rubber	Ash Content (Filler)	ASTM D 297-2015 IS:3400(Part-22)-1984,RA 2013	0.1 – 50.0 %
		Polymer Identification	ASTM D 297-2015 ASTM D 3677 - 2015 IS:3400(Part-22)-1984,RA-2013	Qualitative
		Total Extract	IS:3400(Part-22)-1984,RA-2013 ASTM D 297-2015	1 – 30.0 %
		Alcoholic Potash Extract	IS:3400(Part-22)-1984,RA-2013 ASTM D 297-2015	0.01 – 1.0 %

Laboratory National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 14 of 47

Validity 21.05.2018 to 20.05.2020 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	
		Total Sulphur	IS:3400(Part-22)-1984,RA-2013 ASTM D 297-2015	0.01 – 1.0 %	
		Nitrogen	IS:3400(Part-22)-1984,RA-2013 ASTM D 297-2015	0.01 – 2.0 %	
		Carbon black Content	IS:3400(Part-22)-1984,RA-2013 ASTM D 297-2015	1 – 30.0 %	
		Rubber Polymer content	IS:3400(Part-22)-1984,RA-2013 ASTM D 297-2015	20 – 80 %	
VIII.	PLASTIC AND RESINS				
1.	Plastic & Polymers	Ash Content(Filler)	ASTM D 5630-2013	0.1 – 50.0 %	
		Glass Content	IS:10661-1983, RA-2008	1 – 50.0 %	
		Sulphated ash Content	IS:4985-2000, RA-2010	1.0-50.0 %	
		Carbon Black Content	IS:2530-1963, RA-2013	0.5-40.0 %	
		Carbon Black Dispersion	IS:2530-1963, RA-2013	Qualitative	
IX.	SOLID FUELS				
1.	Coal & Coke	Proximate Analysis			
		Moisture Content	IS:1350(Part-1)-1984,RA-2013	1- 50 %	
		Volatile Matter	IS:1350(Part-1)-1984,RA-2013	1 - 60 %	
		Ash Content	IS:1350(Part-1)-1984,RA-2013	1 - 80 %	
		Fixed Carbon (By Calculation)	IS:1350(Part-1)-1984,RA-2013	5 - 80 %	
		Total Sulphur	IS:1350(Part-III)-1969,RA-2010	0.01- 20.0 %	

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 15 of 47

Validity 21.05.2018 to 20.05.2020 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
X.	WOOD			
1.	Retention of Preservatives	Copper	IS:2753(Part-1)-1991,RA2010	1 – 25 kg/m ³
		Chromium	IS:2753(Part-1)-1991,RA2010	1 – 10 kg/m ³
		Arsenic	IS:2753(Part-1)-1991,RA2010	0.5 - 5 kg/m ³
		Zinc	IS:2753(Part-1)-1991,RA2010	1 – 30 kg/m ³
		Boron	IS:2753(Part-1)-1991,RA2010	1 – 20 kg/m ³
		Fuel Oil & Creosote	IS:2753(Part-1)-1991,RA2010	0.1 – 5 kg/m ³
XI.	PAINTS & SURFACE COATING			
1.	Thermo Plastic Paint	Binder Content	BS:3262(Part-1) -1989 ASTM D 4797 – 2017	5 – 30%
		Glass Beads Content	BS:3262(Part-1) -1989 ASTM D 4797 – 2017	10 – 40 %
		Softening Point	ASTM D 36-2014	50-150°C
		Titanium Dioxide	BS:3262(Part-1)-1989 ASTM D 4797 – 2017	1 – 20 %
		Drying time	IS:101(Part-3/Sec-1)-1988 RA 2012	5 Minutes – 30 Minutes
		Low temp. Cracking resistance test	BS:3262(Part-1)-1989	Qualitative
		Calcium Carbonate	BS:3262(Part-1)-1989	20.0- 50.0 %

Laboratory National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 16 of 47

Validity 21.05.2018 to 20.05.2020 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
-----	----------------------------	-------------------------	---	--

ELECTRICAL TESTING

LOCATION 1					
I.	CABLES & WIRES				
1.	PVC Insulated Cables for Working Voltage upto and Including 1100 Volts	Tests on Conductor			
		Annealing test (for Copper)	IS: 8130-2013 Cl.7.2.3 IS:10810 (P-1):1984, RA-2016	0.2-200%	
		Tensile test (for Aluminium)	IS: 8130-2013 Cl.7.2.1 IS:10810(P-2):1984, RA-2016	1-10000N LC-1N	
		Wrapping test (for Aluminium)	IS: 8130-2013 IS:10810(P-3):1984, RA-2016	Qualitative	
		Conductor Resistance tests	IS: 8130-2013 Cl.7.3 IS:10810(P-5):1984, RA-2016	0.2 $\mu\Omega$ -11 Ω LC-0.2 $\mu\Omega$	
		Persulphate test (Tinned copper conductor cable only)	IS: 694-2010, RA 2015 Cl.10.11 IS: 8130-2013 Cl.6.1.1 IS:10810(P-4):1984,RA-2016	Qualitative	
		Test for overall dimension, thickness of insulation & sheath	IS: 694-2010,RA-2015 Cl.9 IS:10810(P-6):1984,RA-2016	0.01-150mm LC-0.01mm 0.001-25mm LC-0.001mm	
		Physical test on insulation & sheath			
		Tensile strength Elongation at break	IS: 5831-1984, RA 2016 Cl.4.1 IS:10810(P-7):1984, RA.2016	1-10000N,LC-1N 2.5-650%	
		Loss of mass in air oven	Cl.4.1 of IS:5831:1984, RA2016 IS:10810(P-10):1984, RA2016	Up to200°C,LC-1°C, 0-200g LC-0.1mg	
		Ageing in air oven After ageing Tensile strength & Elongation at break	IS: 5831-1984, RA.2016 Cl.4.1 IS:10810 (P-11):1984, RA.2016	30-200°C LC-0.1°C 1-10000N,LC-1N 2.5-650%	

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 17 of 47

Validity 21.05.2018 to 20.05.2020 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
		Shrinkage tests	IS: 5831-1984, RA.2016 Cl.4.1 IS:10810(P-12):1984, RA-2016	Upto250°C,LC-0.1°C, 0.01-150mm, LC-0.01mm
		Heat shock tests	IS 5831:1984, RA.2016 Cl.4.1 IS 10810(P-14):1984, RA-2016	(Qualitative) Up to200°C LC-1°C
		Hot deformation tests	IS 5831:1984, RA.2016 Cl.4.1 IS:10810(P-15):1984, RA.2016	Up to250°C LC-0.1°C
		Thermal stability test	IS 5831:1984,RA 2016 Cl.4.1 IS 10810(Part-60):1988,RA 2016	30-200 °C LC 0.1 °C
		Cold bend test	IS 5831-1984, RA.2016 Cl.4.1 IS 10810(P-20):1984,RA-2016	(Qualitative) -50°C to +50°C
		Cold impact test	IS 5831:1984, RA.2016 Cl.4.1 IS 10810(P-21) :1984, RA.2016	(Qualitative) -50°C to +50°C
		Flammability test	IS 694:2010, RA.2015 Cl.10.4 IS 10810(P-53):1984,RA-2016	0.01-1000mm LC 0.01mm 0-60sec LC 1sec
		Oxygen index test	S 694:2010, RA.2015 Cl.10.5 IS 10810 (P-58):1998, RA.2013	1Sec-10 min LC -1sec
		HCL test	IS 694:2010 , RA.2015 Cl.10.6 IS 10810 (P-59):1988,RA-2010	0-100°C
		Temperature Index test	IS 694:2010 , RA.2015 Cl. 10.7 IS 10810 (P-64):2003, RA.2013	1-100 %
		Smoke Density test	IS 694:2010, RA.2015 Cl.10.8 IS:13360(P-6/S-9):2001, RA 2013	1-35°C LC-1°C
		Insulation Resistance Test	IS: 5831-1984, RA.2016 Cl.4.1 IS:10810(P-43):1984,RA-2016	1M ohm- 100M ohms X 10 ⁵ (At 500Volts DC)
		High voltage test (water immersion AC & DC test)	IS: 694:2010 ,RA-2015 Cl.10.1 IS:10810(P-45):1984,RA-2016	0-10 kV, LC=0.2 kV

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 18 of 47

Validity 21.05.2018 to 20.05.2020 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
		A.C. High voltage test at room temp.	IS 694:2010, RA.2015 Cl.10.2 IS:10810(P-45):1984, RA-2016	0-5/10 kV, LC-0.1/ 0.2kV
		Additional ageing test (Outdoor Use cable Only) Category 02 type	IS 694:2010, RA.2015 Cl.10.9 IS:10810(P-45):1984, RA-2016	0-5/10 kV, LC-0.1/ 0.2kV
2.	PVC Insulated Cables for Working Voltage upto and including 1100 Volts	Tests on conductor		
		Annealing test (for copper)	IS: 8130-2013, Cl.7.2.3 IS:10810(P-1):1984,RA-2016	0.2-200%
		Tensile test (for Aluminium)	IS: 8130-2013 Cl.7.2.1 IS 10810(P-2):1984,RA-2016	1-10000N LC-1N
		Wrapping test (for Aluminium)	IS 8130:2013, IS10810(P-3):1984, RA.2016	Qualitative
		Conductor Resistance tests	IS: 8130-2013, Cl.7.3 IS:10810(P-5)1984, RA.2016	0.02-100 ohms LC-0.02 ohms
		Test on Armouring wire and strip		
		Dimensions Diameter	IS 1554(P-1):1988, RA.2010 Cl.13.3 IS 10810(P-36):1984, RA-2016	0.01-150mm LC-0.01mm
		Tensile strength test	IS 1554(P-1):1988,RA.2010 Cl.13.6(a) IS 10810(P-37):1984, RA-2016	1-10000N LC-1N
		Elongation at break	IS 1554(P-1):1988,RA.2010 Cl.13.6(b) IS 10810(P-37):1984, RA-2016	0.2-200%
		Torsion test for round wire	IS 1554(P-1):1988,RA.2010 Cl.13.6(c) IS 10810(P-38):1984, RA-2016	Number of Turn By Counter
		Winding Test for Formed Wire	IS 1554(P-1):1988,RA.2010 Cl.13.6(d) IS 10810(P-39):1984, RA-2016	Qualitative

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 19 of 47

Validity 21.05.2018 to 20.05.2020 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
		Uniformity of Zinc coating	IS 1554(P-1):1988, RA.2010 Cl.13.6(e) IS 10810(P-40):1984, RA-2016	Qualitative
		Mass of Zinc coating	IS 1554(P-1):1988, RA.2010 Cl.13.6(f) IS 10810(P-41):1984, RA-2011	20-750gm/m ²
		Resistivity Test	IS 1554(P-1): 1988, RA.2010 Cl.13.6(g) IS 10810(P-42):1984, RA-2016	0.02-100 ohm-cm LC-0.02 ohm-cm
		Physical test on insulation & sheath		
		Test for overall dimension, Thickness of insulation & sheath	IS:1554:1988, RA.2010 Cl.10.13,14 IS:10810(P-6):1984, RA-2016	0.01-150mm LC0.01mm 0.001-25mm LC 0.001mm
		Tensile strength Elongation at break	IS: 5831:1984, RA.2016 Cl.4.1 IS:10810(P-7)1984, RA.2016	1-10000N,LC-1N 2.5-650%
		Ageing in air oven After ageing Tensile strength Elongation at break	IS: 5831:1984, RA.2016 Cl.4.1 IS:10810 (P-11):1984, RA.2016	up to200°C, LC-0.1°C 1-10000N,LC-1N 2.5-650%
		Shrinkage tests	IS: 5831:1984, RA.2016 Cl.4.1 IS:10810(P-12):1984, RA-2016	up to200°C, LC-1°C 01, 50mm, LC-0.1mm
		Hot deformation tests	IS: 5831:1984, RA-2016 Cl.4.1 IS:10810(P-15):1984, RA.2016	0-100%
		Loss of mass in air oven	IS: 5831:1984, RA.2016 Cl.4.1 IS:10810(P-10):1984, RA-2016	up to200°C, LC-1°C, 0-200g LC-0.01mg
		Heat shock tests	IS: 5831-1984, RA.2016 Cl.4.1 IS:10810(P-14):1984, RA-2016	(Qualitative) up to200°C LC-0.1°C
		Insulation resistance test	IS: 5831:1984, RA.2016 Cl.4.1 IS:10810(P-43):1984, RA-2016	1M ohms- 100M ohms X 10 ⁵ (At 500Volts DC)

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 20 of 47

Validity 21.05.2018 to 20.05.2020 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
		High voltage (water immersion AC test)	IS 1554:1988, RA.2010 Cl.16.3.1 IS:10810:(P-45):1984, RA-2016	0.-10 kV, LC=0.2 kV
		High voltage (water immersion DC test)	IS: 1554:1988, RA.2010 Cl.16.3.2 IS:10810 (P-45)-1984, RA-2016	1-3 kV, LC=0.01kV
		A.C. High voltage at room temp.	IS: 1554:1988, RA.2010 Cl.16.2 IS:10810(P-45):1984, RA-2016	0-5/10 kV, LC=0.1/ 0.2kV
		Flammability test	IS: 1554:1988, RA.2010 Cl.16.5 IS:10810(P-53):1984, RA-2016	0-600mm LC 0.1mm
		Cold bend test	IS:5831-1984, RA.2016 IS:10810(P-20):1984, RA-2016	(Qualitative) -50°C to+50°C
		Cold impact test	IS:5831-1984, RA-2016 IS:10810(P-21):1984, RA-2016	(Qualitative) -50°C to+50°C
		Thermal stability test	IS 5831:1984, RA-2016 Cl.4.1 IS:10810(P-14):1984, RA-2015	30-200°C LC-0.1°C
		HCL test	IS1554:1988, RA.2010 Cl.10.8 IS 10810 (P-59):1988,RA-2015	0-100°C
		Oxygen index test	IS 1554:1988, RA.2010 Cl.16.5 IS: 10810(P-58):1998, RA-2014	1Sec-10 min LC – 1sec
		Flame Retardant test on Single Cable	IS 1554:1988, RA.2010 Cl. 16.6 IS 10810 (P-61):1988, RA-2015	1Sec-40 min
		Flame Retardant test on bunched Cable	IS 1554:1988, RA.2010 Cl.16.7 IS 10810 (P-62):1993, RA-2014	Qualitative
		Temperature Index	IS 1554:1988, RA.2010 Cl 16.10 IS 10810 (P-64):2003, RA-2013	0-200°C
		Smoke Density	IS:1554:1988, RA.2010 Cl.16.11 IS 10810(P-63):1993, RA-2013	0-100°C

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 21 of 47

Validity 21.05.2018 to 20.05.2020 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
3.	Cross Linked Polyethylene Insulated PVC Sheathed Cables for Working voltage including 1100 volts	Tests on conductor		
		Annealing test (for copper)	IS: 8130:2013 Cl.6.2.3 IS:10810(P-1):1984,RA-2016	0.2-200%
		Tensile test (for Aluminium)	IS: 8130:2013 Cl.6.2.1 IS:10810(P-2)1984,RA-2016	1-10000N LC-1N
		Wrapping test (for Aluminium)	IS: 8130-1984:2013 IS:10810(P-3)1984,RA-2016	Qualitative
		Conductor Resistance tests	IS: 8130:2013 Cl.6.3 IS:10810(P-5)1984,RA-2016	0.2 micro ohms to 11ohms
		Test on Armouring wire and strip		
		Dimensions Diameter, mm	IS 7098(P-1):1988, RA-2015 Cl.13.3 IS 10810(P-36):1984, RA-2016	0.01-150mm LC-0.01mm
		Tensile strength test	IS 7098(P-1): 1988, RA-2015 Cl.13.6(a) IS 10810(P-37):1984, RA-2016	1-10000N LC-1N
		Elongation at break	IS 7098(P-1):1988, RA-2015 Cl.13.6(b) IS 10810(P-37):1984, RA-2016	0.2-200%
		Torsion test for round wire	IS 7098(P-1):1988 RA-2015 Cl.13.6(c) IS 10810(P-38):1984, RA-2016	Number of Turn By Counter
		Winding Test For Formed Wire	IS 7098(P-1):1988 RA-2015 Cl.13.6(d) IS 10810(P-39):1984, RA-2016	Qualitative
		Uniformity Of Zinc coating	IS 7098(P-1):1988 RA-2015 Cl.13.6(e) IS 10810(P-40):1984, RA-2016	Qualitative
		Mass of Zinc coating	IS 7098(P-1):1988 RA 2015 Cl.(f) IS 10810(P-41):1984, RA-2016	20-750gm/m ²

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 22 of 47

Validity 21.05.2018 to 20.05.2020 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
		Resistivity	IS 7098(P-1):1988 RA-2015 Cl.13.6 (g) IS 10810(P-42):1984, RA-2016	0.02-100 ohm-cm LC-0.02 ohm-cm
		Physical test on insulation		
		Test for Thickness of insulation & sheath	IS 7098(P-1):1988, RA-2015 Cl.9.12 &14 Table 2 IS:10810(P-6):1984, RA-2016	0.01-150mm LC-0.01mm 0.001-25mm LC-0.001mm
		Tensile strength Elongation at break	IS:7098(P-1):1988, RA-2015 Table 1 IS:10810(P-7)1984, RA-2016	1-10000N,LC-1N 2.5-650%
		Ageing in air oven After ageing Tensile strength Elongation at break	IS:7098 (P-1):1988 RA-2015 Table 1 IS:10810 (P-11):1984, RA-2016	up to200°C, LC-0.1°C 1-10000N,LC-1N 2.5-650%
		Hot Set Test	IS 7098(P-I):1988, RA-2015 Table –I IS 10810(P-30):1984, RA-2016	up to200°C LC -0.1°C 1-100mm,LC1mm
		Shrinkage test	IS:7098(P-1):1988, RA-2015 Table 1 IS:10810(P-12):1984, RA-2016	up to200°C, LC-1°C 0.1-150mm LC-0.1mm
		Water absorption Test	Table–1of IS 7098 (P-I):1988, RA-2015 IS:10810(P-33):1984,RA-2016	up to200°C,LC-1°C, 0-200g,LC-0.01mg
		Physical test on Outer Sheath		
		Tensile strength Elongation at break	IS: 5831-1984, RA-2016 Cl.4.1 IS:10810(P-7)1984, RA-2016	1-10000N,LC-1N 2.5-650%
		After ageing Tensile strength Elongation at break	IS: 5831-1984, RA-2016 Cl.4.1 IS:10810 (P-11):1984, RA-2016	up to200°C, LC-0.1°C 1-10000N,LC-1N 2.5-650%

Laboratory National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 23 of 47

Validity 21.05.2018 to 20.05.2020 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
		Loss of mass in air oven	IS: 5831-1984, RA-2016 Cl.4.1 IS:10810 (P-10):1984, RA-2016	Up to200°C LC-1°C, 0-200g, LC-0.01mg
		Shrinkage test	IS: 5831-1984, RA-2016 Cl.4.1 IS:10810(P-12)-1984, RA-2016	Up to200°C LC-1°C , 0-150mm,LC-0.1mm
		Hot deformation tests	IS:5831:1984, RA-2016 Cl.4.1 IS:10810(P-15) 1984, RA-2016	Up to 200°C LC-0.1°C
		Heat shock tests	IS: 5831-1984, RA-2016 Cl.4.1 IS:10810 (P-14):1984, RA-2016	(Qualitative) Up to200°C LC-0.1°C
		Thermal stability test	IS: 5831:1984, RA-2016 Cl.4.1 IS:10810 (P-14) 1984, RA-2016	30 -200°C LC-0.1°C
		Insulation resistance test	IS: 5831:1984, RA-2016 Cl.4.1 IS:10810(P-43):1984, RA-2016	1M ohms- 100M ohms X 10 ⁵ (500Volts DC)
		High voltage test (AC) (Room Temp.)	IS 7098(P-1):1988, RA-2015 Cl.16.2 IS:10810(P-45):1984, RA-2016	0.2-10 kV, LC=0.2 kV
		Flammability test	IS: 7098(P-1):1988, RA-2015 Cl.16.5 IS:10810(P-53):1984, RA-2016	0-600mm LC-0.1mm
		Cold bend test (outer Sheath)	IS:5831:1984, RA-2016 IS:10810(P-20):1984, RA-2016	(Qualitative) -50°C to+50°C
		Cold impact test(outer sheath)	IS:5831:1984, RA-2016 IS:10810(P-21):1984, RA-2016	(Qualitative) -50°C to+50°C
		HCL test	IS:7098(P-1):1988, RA-2015 Cl.10.8 IS 10810 (P-59):1988,RA-2015	0-100°C
		Oxygen index test	IS:7098(P-1):1988, RA-2015 Cl.16.5 IS: 10810(P-58):1998, RA-2014	1Sec-10 min LC – 1sec

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 24 of 47

Validity 21.05.2018 to 20.05.2020 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
		Flame Retardant test on Single Cable	IS:7098(P-1):1988, RA-2015 Cl. 16.6 IS 10810 (P-61):1988, RA-2015	1Sec-40 min
		Flame Retardant test on bunched Cable	IS:7098(P-1):1988, RA-2015 Cl.16.7 IS 10810 (P-62):1993, RA-2014	Qualitative
		Temperature Index	IS:7098(P-1):1988, RA-2015 Cl. 16.10 IS 10810 (P-64):2003, RA-2013	0-200°C
		Smoke Density	IS:7098(P-1):1988, RA-2015 Cl.16.11 IS 10810(P-63):1993, RA-2013	0-100°C
4.	Ariel Bunch Cable	Tensile test for conductor	IS 8130:2013, Cl.7.1, IS 10810 (P-2):1984, RA.2016	0 to 10000N, LC:1N
		Wrapping test	IS 8130:2013, Cl.7.2 IS 10810 (P-3):1984, RA.2016	Qualitative
		Conductor resistance test	IS 8130:2013, Cl.7.3 IS 10810 (P-5):1984, RA.2016 IS 14255:1995, RA.2015	0.2mΩ to 100Ω LC: 0.02mΩ
		Breaking load test	IS 8130:2013, Cl.7.3 IS 10810 (P-7):1984, RA.2016 IS 14255:1995, RA.2015	0 to 10000N, LC:1N
		Elongation test	IS 8130:2013, Cl.7.3 IS 10810 (P-7):1984, RA.2016 IS 14255:1995, RA.2015	0.2 to 200%
		Tensile Strength & elongation at Break	IS 14255:1995, RA.2015 IS 10810(P-7):1984, RA.2016	0 to 10000N LC: 1N
		Ageing in air oven Tensile strength (after ageing tensile strength & Elongation)	IS 14255:1995, RA.2015 IS 10810(P-11):1984, RA.2016	0 to 200°C LC: 0.1°C 0 to 10000N LC: 1N

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 25 of 47

Validity 21.05.2018 to 20.05.2020 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
		Hot Set test	IS 14255:1995, RA.2015 IS 10810(P-30):1984, RA.2016	0 to 200°C LC: 0.1°C
		Shrinkage test	IS 14255:1995, RA.2015 IS 10810(P-12):1984, RA.2016	0 to 200°C LC: 0.1°C 0 to 300mm LC: 0.05mm
		Water absorption (Gravimetric)	IS 14255:1995, RA.2015 IS 10810(P-33):1984, RA.2016	0 to 200°C LC: 0.1°C 0 to 200gm LC: 0.1gm
		Test for PE Insulation	IS 14255:1995, RA.2015	0.01 to 30 gms/10min
		Melt flow Index	IS 10810(P-23):1984, RA.2016	
		Vicat softening point	IS 14255:1995, RA.2015 IS 10810(P-22):1984, RA.2061	30 to 200°C
		Carbon Black content	IS 14255:1995, RA.2015 IS 10810(P-32):1984, RA.2016	0.5 – 40.0 %
		Environment stress cracking	IS 14255:1995, RA.2015 IS 10810(P-29):1984, RA.2016	0 to 250°C LC: 1°C
		Thickness of insulation	IS 14255:1995, RA. 2015 IS 10810(P-6):1984, RA.2016	0 to 150mm LC: 0.01mm 0 to 25mm LC:0.001mm
		Insulation resistance test	IS 14255:1995, RA.2015 IS 10810(P-43):1984, RA.2016	1 to 100 x 10 ⁵ Ω LC: 500V DC
		High Voltage test	IS 14255:1995, RA.2015 IS 10810(P-45):1984, RA.2015	0 to 10kV, LC: 0.2kV 0 to 5kV, LC: 0.1kV
II.	WIRING ACCESSORIES			
1.	Rigid plain Conduits of Insulating Material	Dimension	IS 9537(P-3):1983, RA-2007 Cl.7	0.01-150mm LC 0.01mm
		Bending Test	IS 9537(P-3):1983,RA-2007 Cl.9.2	16, 20 and 25mm

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 26 of 47

Validity 21.05.2018 to 20.05.2020 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
		Compression test	IS 9537(P-3):1983, RA-2007 Cl. 9.3	125N, 320N, 750N, 1250N, 4000N
		Impact Test	IS 9537(P-3):1983, RA-2007 Cl. 9.4	Qualitative
		Collapse test	IS 9537(P-3):1983, RA-2007 Cl. 9.5	16, 20 and 25mm
		Resistance to Heat	IS 9537(P-3):1983, RA-2007 Cl. 10	0.1-300°C LC-0.1°C
		Resistance to Burning	IS 9537(P-3):1983 RA-2007 Cl. 11	0.01-1000mm LC 0.01mm
		Electrical Characteristics		
		Electrical Strength	IS 9537 (P-I):1980, RA-2015 Cl. 12.1.1	0.1-5 kV LC-0.1kV
		Insulation Resistance	IS 9537 (P-I):1980, RA-2015 Cl. 12.1.2	1M ohms- 100M ohms X 10 ⁵ (500Volts DC)
2.	M.S. Conduit Pipe	Dimension	IS 9537(P-2):1981, RA-2017 Cl.6	0.01-150mm LC 0.01mm
		Bending Test	IS 9537(P-2):1981, RA-2017 Cl.9	16, 20 and 25 mm
		Compression test	IS 9537(P-1): 1981, RA-2017 Cl. 9.3	125N, 320N, 750N, 1250N,

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 27 of 47

Validity 21.05.2018 to 20.05.2020 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
-----	----------------------------	-------------------------	---	--

MECHANICAL TESTING

LOCATION 1				
I.	BUILDINGS MATERIALS			
1.	Cement OPC PSC PPC	Setting time (a) Initial (b) Final	IS: 4031(P-5):1988, RA-2014	10-150 Min 150-600 Min
		Soundness (a) Lechatlier (b) Autoclave	IS:4031(P-3):1988, RA-2014	0.5-10 mm -0.05-2.0%
		Compressive Strength (a) 24 ± ½ Hrs (b) 72 ± 1Hrs (c) 168 ± 2Hrs (d) 678 ± 4Hrs	IS 4031(P-6):1988, RA-2014	5-70 Mpa
		Fineness Blain's Method	IS:4031(P-2):1999, RA-2013	100-600 m ² /kg
		Consistency	IS:4031(P-4):1988, RA- 2014	20-50%
		Drying shrinkage (for PPC)	IS 4031(P-10):1988, RA-2014	0.01-1.0 %
		Density	IS:4031(P-11):1988 RA- 2014	2 – 3.5 g/cc
		2.	Fly Ash	Fineness (a) Blain Method
Residue 45 micron (Wet Sieving)	IS:1727:1967,RA- 2013			0-100%
Lime Reactivity	IS:1727:1967, RA- 2013			2-20 N/mm ²
Compressive strength	IS:1727:1967, RA- 2013			5- 40 N/mm ²

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 28 of 47

Validity 21.05.2018 to 20.05.2020 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
		Soundness Autoclave expansion	IS:1727:1967, RA- 2013	-0.05-2.0%
		Specific Gravity	IS:1727:1967, RA-2013	1 - 3
3.	Brick Burnt Clay Brick Fly Ash Brick Fly Ash Lime Brick	Dimension (a) Length (b) Width (c) Height	IS:13757:1993, RA- 2011 IS: 12894:2002, RA-2012 IS: 1077 :1992, RA- 2011	Upto 5000mm Upto 3000mm Upto 2000mm
		Water absorption	IS:3495(P-2):1992 RA- 2011	1-50%
		Efflorescence	IS:3495(P-3):1992, RA- 2011	Qualitative
		Compressive strength	IS:3495(P-1):1992, RA- 2011	40 to 400 kg/cm ²
4.	Coarse Aggregate	Flakiness Index	IS:2386 (P-1):1963 RA-2016	10-60%
		Deleterious Materials	IS:2386(P-1&2): 1963 RA-2016	0.1-10%
		Bulk Density	IS:2386 (P-3):1963 RA-2016	1.0-3.0 kg/l
		Specific Gravity	IS:2836(P-3) RA- 2016	2-3
		Alkali Aggregate Reactivity 1.Reduction in alkalinity 2.Total Dissolved Silica	IS: 2386 (P-7)/1963 RA-2016 (Cl. 3.9) (Cl. 3.8)	1.0 to 50 milimole/l 1.0 to 50 milimole/l
		Water absorption	IS: 2386 (Part-3):1963 RA-2016	0.2-5%
		Crushing Value	IS:2386(P-4):1963, RA-2016	10-60%
		Impact value	IS:2386(P-4):1963, RA-2016	10-60%
		Los Angeles Abrasion Value	IS:2386(P-4):1963RA-2016	10-60%
		10% fine value	IS:2386(P-4):1963 RA-2016 BS 812(P-111)-1990	5-50 Tonnes
		Soundness	IS:2386(P-5):1963 RA-2016	1-15%
		Sieve Analysis (IS Sieve Size, mm 80, 63, 40, 20, 16, 12.5, 10.0, 4.75, 2.36)	IS:2386(P-1):1963 RA-2016	0-100%
		Elongation Index	IS:2386 (P-1):1963 reaff.2016	10-60%

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 29 of 47

Validity 21.05.2018 to 20.05.2020 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
5.	Fine Aggregate	Organic Impurities test	IS:2386(P-2):1963 RA-2016	Qualitative
		Water absorption	IS: 2386 (Part-3): 1963RA-2016	0.2-5%
		Deleterious Materials	IS:2386(P-1&2):1963RA-2016	0.1-25%
		Bulk Density	IS:2386 (P-3):1963 RA-2016	1.0-3.0 kg/l
		Alkali Aggregate Reactivity 1.Reduction in alkalinity 2.Total Dissolved Silica	IS: 2386 (P-7)/1963 RA-2016 (Cl. 3.9) (Cl. 3.8)	1.0 to 50 milimole/l 1.0 to 50 milimole/l
		Soundness	IS:2386(P-5):1963 RA-2016	1-15%
		Sieve Analysis (IS Sieve Size, mm 10, 4.75, 2.36, 1.18, 0.600, 0.300, 0.150)	IS:2386(P-1):1963 RA-2016	0-100%
		Specific Gravity	IS:2386(P-3) RA- 2016	2-3
6.	Bentonite	Free Swell Index	IS:2720(P-40) 1977 RA-2011	10-700%
		Liquid limit	IS: 2720(P-5):1985, RA- 2015	200-500%
		Density	IS 2720(Part-3):1980, RA-2011	0.95-1.5gm/cc
		Sand Content	IS:6186:1986 RA 2010	0-20%
		Marsh cone Viscosity	ASTM D6910-2009	10-200 Seconds
		Gel formation index	IS 6186:1986, RA.: 2010	Qualitative
7.	Concrete Cube Core Beam	Compressive strength	IS:516:1959, RA 2013	5-100N/mm ²
		Drying Shrinkage	BS 1881 (Part-5):1970	0.001-1 %
		Moisture Movement	BS 1881(Part-5):1970	0.001-1 %
		Water Permeability Test	DIN 1048(Part-5)-2017	2 – 20 mm
		Rapid Chloride Ion Permeability Test	ASTMC 1202:2017	50-4000 Coulombs
		Water absorption	BS 1881(P-5):1970	0.1-15%
		Flexural Strength	IS: 516:1959 RA- 2013	2-10 N/mm ²
		Split Tensile Strength	IS : 5816:1999 RA- 2013	1-10 N/mm ²
8.	Concrete	Air content	IS:1199:1959 RA- 2013	0.5-5%

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 30 of 47

Validity 21.05.2018 to 20.05.2020 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
	Admixture	Water content	IS:1199:1959 RA- 2013	0.5-80%
		Bleeding Test	IS:9103:1999RA-2013(Annex d)	0.5-10%
		Compressive Strength	IS :516:1959, RA- 2013	5- 50 N/mm ²
		Flexural Strength	IS :516:1959, RA- 2013	2- 15 N/mm ²
		Setting time (Initial and Final)	IS:8142:1976, RA- 2011	150-800 minutes
9.	Blocks (Hollow & Solid)	Block Density	IS:2185(P-1&3): 2005, RA-2010	500-2500Kg/m ³
		Compressive Strength	IS:6441(P-5):1972, RA-2011 IS:2185(P-1): 2005, RA-2010	2.0 to 30 N/mm ²
		Water absorption	IS:6441(P-4):1972, RA-2011 IS:2185(P-1): 2005, RA--2010	2 to 20%
		Dimension Length Width Thickness	IS:2185 (P-1, 3 & 4):2008, RA-2010	200-600mm 200-400mm 20-400mm
		Drying shrinkage	IS:6441(P-2):1972, RA: 2011 IS 2185(Part-1):2015, RA- 2010	0.001 to 0.5mm
10.	Pre Cast Concrete Paver Blocks	Compressive Strength	IS:15658:2006, RA--2016	10 to 100 N/mm ²
		Water absorption	IS:15658:2006, RA -2016	2 to 20%
		Dimension Length Width Thickness	IS:15658:2006, RA -2016	200-600mm 200-400mm 20-200mm
		Abrasion Resistance (Abrasive wear)	IS:15658:2006, RA -2016	500 to 2500 mm ³
11.	Cement concrete Tiles	Thickness of wearing Layer	IS:1237:2012, RA:2016 IS:13801:2013	1.0 to 25mm
		Wet Transverse Strength	IS:1237:2012, RA:2016 IS:13801:2013	1.0 to 20 N/mm ²
		Water absorption	IS:13801:2013	2 to 20%

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 31 of 47

Validity 21.05.2018 to 20.05.2020 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
			IS:1237:2012, RA:2016	
		Dimension Length Width Thickness	IS:1237:2012, RA:2016 IS:13801:2013	200-600mm 200-400mm 15-60mm
		Abrasion Resistance	IS:1237:2012, RA:2016 IS:13801:2013	0.5 to 25 mm
12.	Stone	Specific Gravity	IS:1122:1974 RA- 2013	1.5-3.5
		Compressive Strength	IS:1121(P-1):2013	50 to 5000 Kg/cm ²
		Moisture/Water absorption	IS:1124:1974 RA:2013	0.1-10%
		Scratch Hardness	IS:13630 (P-13):2006, RA:2017	1-9 Mohs
		Transverse Strength	IS : 1121(P-2):2013	5 to 50 N/mm ²
		Durability	IS: 1126:2013	Qualitative
		Dry density	IS:13030:1991 RA- 2010	1.0 to 3.5
		Moisture content	IS:13030:1991 RA- 2010	0.01 to 1.0%
		Porosity (True & apparent)	IS:1124:1974 RA- 2013	0.5 to 4.0%
		Tensile strength	IS:1121(P-3):2012	20 to 250 kg/cm ²
		Resistance to wear	IS:1706:1972 RA- 2013	0.1 to 10.0mm
13.	Gypsum Building Plaster	Setting time (a) Plaster sand mixture (b) Neat plaster	IS: 2542(P-1/sec 3):1978 RA-2012	10-200 Min 10-400 min
		Soundness	IS:2542(P-1/sec 6):1978 RA- 2012	Qualitative
		Transverse Strength	IS:2542(P-1/sec4):1978 RA- 2012	5-70 Kg/cm ²
		Mechanical resistance of set neat plaster	IS:2542(P-1/sec7):1978 RA- 2012	0.1-10mm

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 32 of 47

Validity 21.05.2018 to 20.05.2020 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
		Residue on 150 micron	IS:2542(P-1/sec 8):1978RA-2012	0.5 to 20%
		Expansion on setting	IS:2542(P-1/sec 9):1978RA-2012	0.01 to 5%
		Normal Consistency	IS:2542(P-1/sec 1):1978RA-2012	0.5 to 80%
14.	Micro silica	Sieve analysis at 45 micron	IS:1727:1967, RA- 2013	0-25%
		Compressive strength	IS:1727:1967, RA- 2013	0.5 to 60 N/mm ²
15.	Ceramic Products Glazed Tile Unglazed Tile Vitrified Tile	Dimension & Surface Quality	IS:13630 (P-1):2006, RA- 2017	100-1500mm
		Thermal shock	IS:13630 (P-5):2006, RA- 2017	Qualitative
		Planeness/straightness	IS:13630 (P-1):2006, RA- 2017	0.01-0.5mm
		Squareness	IS:13630 (P-1):2006, RA- 2017	0.01-0.5mm
		Crazing Resistance	IS:13630 (P-9):2006, RA- 2017	Qualitative
		Water absorption	IS:13630 (P-2):2006, RA- 2017	0.01-30%
		Modulus of rupture	IS:13630 (P-6):2006, RA- 2017	5 to 70 N/mm ²
		Breaking Strength	IS 13630 (Part-6):2006, RA- 2017	50 – 5000N
		Scratch Hardness	IS 13630 (Part-13):2006, RA- 2017	1-9 Mohs
		Resistance to staining	IS 13630 (Part-8):2006, RA - 2017	Qualitative
		Resistance to house Hold chemical	IS 13630 (Part-8):2006, RA- 2017	Qualitative
		Resistance to acid/alkali	IS 13630 (Part-8):2006, RA- 2017	Qualitative
16.	Bitumen	Penetration	IS: 1203:1978 RA- 2009	10-300 (1/10 mm)
		Softening Point	IS :1205:1978 RA -2009	10-200°C
		Ductility	IS :1208:1978 RA -2009	1.0-100cm
		Specific Gravity	IS :1202:1978 RA- 2009	0.5-2.0

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 33 of 47

Validity 21.05.2018 to 20.05.2020 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
		Solubility in trichloroethylene	IS:1216:1978 RA -2009	50 to 100%
		Flash point	IS :1209:1978 RA -2009	100 to 400°C
17.	Rubber modified Bitumen CRMB PMB NRMB	Penetration	IS: 1203:1978 RA- 2009	10-300 (1/10 mm)
		Softening Point	IS :1205:1978 RA- 2009	10-200°C
		Elastic recovery of half thread in ductilometer	IS 15462:2004, RA.: 2009	10-100%
		Elastic recovery of half thread in ductilometer after thin film oven	IS 15462:2004, RA.: 2009	10-100%
		Specific Gravity	IS :1202:1978, RA 2009	0.5-2.0
		Solubility in trichloroethylene	IS:1216:1978 RA 2009	50 to 100%
		Flash point	IS :1209:1978 RA 2009	100 to 400°C
		18.	Water Proofing Membrane	Tensile strength, L&T direction
Elongation L&T direction	ASTM D 146-2004			0.5 to 200%
Tear strength, L&T direction	ASTM D 4073-2006			0.5 to 1000 N/mm
Low Temp. flexibility	ASTM D 5147-2014			Qualitative
Water absorption	ASTM D 5147-2014			0.1 to 5%
II.	SOIL AND ROCK			
1.	Soil	Proctor test (Light Compaction) MDD OMC	IS: 2720(P-7):1980 RA-2011	0.7-2.5 g/cc 1 to 30%
		Proctor test (Heavy Compaction)	IS: 2720(P-8):1983 RA-2015	

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 34 of 47

Validity 21.05.2018 to 20.05.2020 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
		MDD OMC		0.7-2.5 g/cc 1 to 30%
		Liquid limit	IS: 2720(P-5):1985,RA- 2015	1-50%
		Plastic limit	IS: 2720(P-5):1985 RA- 2015	1-50%
		CBR Value (Lab)	IS:2720(P-16):1987 RA- 2015	5-80%
		Direct shear test Cohesion intercept C Value Internal friction ϕ value	IS:2720(P-13):1986 RA- 2011	0-0.5kg/cm ² 5-50 degree
		Moisture Content	IS 2720(Part-2):1973 RA-2015	0.25-50%
		Specific Gravity	IS 2720(Part-3/Sec.1):1980 RA- 2011	2-3
III.	WOOD & WOOD PRODUCTS			
1.	Plywood/ Shuttering/Fire Retardant /Marine Plywood/Wood/ Timber	Dimensions Length Width Thickness	IS:303:1989, RA2013 IS:4990:2011 IS:5509:2000, Reaff.2017 IS:1328:1996, Reaff.2011 IS 710:2010	1000-3000mm 500-1500mm 3-50mm
		Glue adhesion Test (Adhesion of Plies)	IS:1734(P:5):1983, RA2013	Qualitative
		Modulus of rupture Modulus of Elasticity	IS: 1734(P:11)1983, RA- 2013 IS:1708(P-5) 1986, RA- 2013	5- 100N/mm ²
		Water Resistance test	IS:1734(P:6)1983, RA2013	Qualitative
		Mycological test Glue shear test	IS:1734(P:7)1983, RA2013 IS:1734(P:4)1983, RA2013	Qualitative 50-10000 N
		Tensile strength Parallel to grain	IS:1734(P:9):1983, RA2013	5- 100 N/mm ²
		Tensile strength Perpendicular to grain	IS:1734(P:9):1983, RA2013	5- 100 N/mm ²

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 35 of 47

Validity 21.05.2018 to 20.05.2020 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
		Moisture Content	IS:1734(P:1)1983, RA2013 IS: 1708(P-1)1986, RA 2010	0.5-30%
		Density	IS:1708(P-2):1986, RA2010 IS 1734(P-1):1983, RA--2013	300-1000 Kg/m ³
		Glue shear test	IS:1734(P:4)1983RA2013	50-10000N
		Fire Resistance test Flammability test Rate of burning Flame Penetration	IS:1734(P:3)1983RA2013	1 to 60 Minutes 0.1 to 60 Minutes 0.1 to 50 Minutes
2.	Particle Board/Pre-Laminated Particle Board/ Medium Density Fibre Board	Moisture	IS: 2380 (P-3):1977 RA 2013	0.5-30%
		Dimensions Length Width Thickness	IS 12823:2015 IS 3087:2005 RA 2010 IS 12406:2003, RA--2013	1000-3000mm 500-1500mm 3-50mm
		Water absorption	IS: 2380(P-16):1977 RA- 2013	1.0-100%
		Density	IS: 2380 (P-3):1977 RA- 2013	300-1000 kg/m ³
		Screw with drawl strength	IS: 2380 (P-14):1977 RA2013	400N- 10000N
		Swelling in water	IS: 12823:2015 IS 3087:2005 RA 2010 IS:2380(P-17):1977, RA:2013 IS 12406:2003, RA--2013	0-300mm
		Modulus of rupture	IS: 12823:2015 IS 3087:2005 RA- 2010 IS: 2380(P-4):1977 RA 2013 IS 12406:2003, RA--2013	5-100N/mm ²
		Modulus of Elasticity	IS: 12823:2015 IS 3087:2005, RA 2010 IS: 2380(P-4)1977 RA 2013 IS 12406:2003, RA--2013	500-8000 N/mm ²

Laboratory**National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi****Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi****Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana****Accreditation Standard ISO/IEC 17025: 2005****Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 36 of 47****Validity 21.05.2018 to 20.05.2020 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
		Tensile strength perpendicular to surface	IS: 12823:2013 IS: 2380(P:5)1977, RA-2013 IS 3087:2005, RA-2010	0.5-5 N/mm ²
		Tensile strength perpendicular to surface after Cyclic	IS: 12823:2015 IS: 2380(P-5):1977, RA2013 IS 3087:2005, RA-2010 IS 12406:2003, RA--2013	0.5-5N/mm ²
		Resistance to steam	IS: 12823:2015	Qualitative
		Resistance to crack growth	IS: 12823:2015	Qualitative
		Resistance to cigarette burn	IS: 12823:2015	Qualitative
		Resistance to stain	IS: 12823:2015	Qualitative
		Abrasion Resistance	IS 12823:2015	Qualitative
3.	Block Board	Dimensions Length Width Thickness	IS: 1659:2004 RA-2009	1000-3000mm 500-1500mm 3-50mm
		Dimension change caused by humidity (Length & Thickness)	IS: 1659:2004,RA-2009	0.01-0-5mm
		Resistance to water	IS: 1659:2004,RA-2009	Qualitative
		Adhesion of plies	IS: 1659:2004,RA-2009	Qualitative
		Mycological test	IS: 1659:2004,RA-2009	Qualitative
		Modulus of rupture	IS: 1659:2004,RA-2009	5- 100 N/mm ²
		Modulus of elasticity	IS: 1659:2004,RA-2009	500-8000 N/mm ²
		Spot test	IS: 1659:2004,RA-2009	Qualitative
		Edge straightness& Squareness	IS: 1659:2004,RA-2009	0-10 mm
4.	Flush Door Shutter	Glue adhesion Test	IS 4020(P-15):1998, RA- 2013	Qualitative
		End Immersion Test	IS 4020(P-13):1998, RA- 2013	Qualitative

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 37 of 47

Validity 21.05.2018 to 20.05.2020 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
		Knife Test	IS 4020(P-14):1998, RA- 2013	Qualitative
		Dimensions	IS 4020(P-2):1998, RA- 2013	
		Length	IS 2202(P-1):1999, RA- 2011	1000-3000mm
		Width		500-1500mm
		Thickness		20-50mm
		Straightness	IS 4020(P-2):1998, RA- 2013	0.0-2mm
		Squareness	IS 4020(P-2):1998, RA- 2013	0.0-2mm
		Local Planeness	IS:4020(P-4):1998 RA- 2013	0.0-5mm
		Impact indentation test	IS:4020(P-5):1998 RA- 2013	0.0-5mm
		Flexure test	IS:4020(P-6):1998 RA- 2013	0.0-100mm
		Edge loading test	IS:4020(P-7):1998 RA- 2013	0.0-25mm
		Shock resistance test	IS:4020(P-8):1998 RA- 2013	Qualitative
		Buckling test	IS:4020(P-9):1998 RA- 2013	0.0-100mm
		Slamming test	IS:4020(P-10):1998 RA- 2013	Qualitative
		Misuse test	IS:4020(P-11):1998 RA- 2013	Qualitative
		Varying humidity test	IS:4020(P-12):1998 RA- 2013	Qualitative
		Screw withdrawal test	IS:4020(P-16):1998 RA- 2013	0 -10000N
		General Flatness test	IS 4020(P-3):1998, RA- 2013	Qualitative
IV.	PLASTICS AND PLASTIC PRODUCTS			
1.	UPVC Pipes & Fittings /CPVC Pipe	Dimension	IS:12235 (P-1&2):2004,RA-2014,IS:12818:2010	28-300mm
		Outside diameter	IS: 4985-2000, RA--2010	300mm-600mm
		Inside diameter	IS:10124:2009	0.1-25mm
		Wall thickness	IS: 13592:2013	25-50mm
		Socket length	IS: 15778:2007, RA:2012	
		Visual appearance	IS:4985:2000,RA-2010 IS:2508:2016 IS:12818:2010 IS:10124(P-2):2009, RA:2014	Qualitative

Laboratory National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 38 of 47

Validity 21.05.2018 to 20.05.2020 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
		Reversion Test	IS: 12235(P-5):2004,RA-2014 IS:15778:2007	0.2-20%
		Stress Relief Test	IS:12235 (P-6):2004, RA-2014	Qualitative
		Resistance to Chemical Action	IS:13592:2013 IS 12235(P-7):2004, RA-2014	0.01- 5%
		Hydrostatic Pressure (Long/ Short terms)	IS:12235 (P-8):2009, RA-2014 IS:15778:2007	0.1 to 150 kg/cm ²
		Impact Resistance/Resistance to external blows	IS:12235 (P-9):2004, RA-2014 IS:13592:2013 IS: 4985:2000, RA-2010 IS:12818:2010	Qualitative
		Opacity Test	IS:12235:2004 RA- 2009 IS:12235(P-3):2004, RA-2009	0.00 to 100%
		Test for Internal Diameter (for Casing Pipe)	IS:12818:2010	Size 40-400mm (Gauging)
		Leakage Test	IS:13592:2013	0.1 to 150 kg/cm ²
		Vicat Softening Temperature	IS:6307:1985, RA-2013 IS :12235(P-2):2004, RA-2014	50-150°C
		Density/Specific gravity	IS:12235(P-14/Sec-1)2004, RA-2014 IS:13360(P-3)/sec-1)1995 RA-2008 ASTM D297:2015	0.5- 5g/cc
		Tensile Strength	IS :12818:2010 IS 12235 (P-13):2004 RA2014	Upto-100 N/mm ²
2.	HDPE/PE Pipes	Dimension Outside diameter Wall thickness Ovality	IS:14151(Part-1):1999,RA 2009 IS: 4984:2016	28-300mm 300mm-600mm 0.1-25mm 25-50mm

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 39 of 47

Validity 21.05.2018 to 20.05.2020 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
		Visual appearance	IS:4984:2016 IS14151(P:1):1999, RA2009 IS14151(P:2):2008, RA2014	Qualitative
		Reversion Test	IS: 4984:2016 IS:14151(P-1)1999, RA-2009	0.2-100%
		Internal Pressure Creep rupture Test	IS: 4984:2016 IS:14151(P-1):1999, RA-2009 IS:14151(P-2):2008, RA-2014	0.1 to 150 kg/cm ²
		Fusion Compatibility Test on Fused pipes	IS: 14151(P-1):1999, RA 2009	Qualitative
		Leakage Test	IS:14151(P-1):1999, RA-2009 IS:14151(P-2):2008, RA-2014 IS:13592:2013	Upto 60 kg/cm ²
		Weld ability Test on welded pipes	IS: 14151(Part-1):1999, RA-2009	Qualitative
		Over all Migration test	IS:9845:1998, RA-2010	0.1-200mg/l
		Density/Specific gravity	IS:7328:1992, RA:2013 IS:13360(P-3)/sc-1)1995 RA-2008 ASTM D297:2015	10 to 1100 kg/m ³
		Melt Flow rate	IS: 2530-1963, RA 2013	0.01-30 gms/10min
3.	Films & Sheets	Tensile Strength	IS:2508:2016 IS:10889:2004, RA 2011	0.5-50 N/mm ²
		Elongation	IS:2508:2016 IS:10889:2004, RA-2011	5-800%
		Melt Flow rate	IS: 2530-1963, RA 2013	0.01-30 gms/10min
4.	PVC Water Stops	Cold bend Test	IS:15058:2002, RA 2013	Qualitative
		Hardness	IS :13360(P-5/S-11)1992, RA2013	5 -100 shore A
		Water absorption	IS:15058:2002 RA- 2013	0.01-10%
		Accelerated Extraction	IS:15058:2002 RA- 2013	Qualitative

Laboratory National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 40 of 47

Validity 21.05.2018 to 20.05.2020 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
		Effect of Alkali	IS:15058:2002 RA- 2013	0.01-5%
		Tensile Strength	IS 13360(Part-5/Sec-1): 1996, RA- 2013 IS 13360(Part-5/Sec-2): 1996, RA- 2013 IS 13360(Part-5/Sec-3): 1999, RA- 2010	2-30 N/mm ²
		Elongation	IS 13360(Part-5/Sec-1,2,3): 1996, RA--2013	5-500%
5.	Sheathing Ducts	Hardness Shore D	IS :13360(P-5/S-11)1992 RA-2013	5-100 shore D
V.	RUBBER AND RUBBER PRODUCTS			
1.	Rubber Hose / Rubber Product	Tensile Strength	IS:3400(P-1):2012	2-50 N/mm ²
		Elongation	IS:3400(Part-1)2012	5-800 %
		Resistance of lining to N Pentane	IS: 9573:2012	Upto 20%
		Adhesion	IS:3400(Part-5):1986 RA-2013	0-50 kN/m
		Compression set	IS:3400(Part-10):1977 RA 2013	0.1-100%
		Hardness IRHD	IS:3400(Part-2):2014	10 to 100 IRHD
		Tear Strength	IS:3400(Part-17):1974 RA 2013	0.2 to 100 N/mm
		Hardness Shore A	IS:3400(Part-23):2002 RA 2012	5 to 100 shore A
	Density/specific gravity	IS:3400(Part-9):2014	0.5 to 5 g/cc	
VI.	PAPER & PAPER PRODUCTS			
1.	Paper and Allied Product	Substance/Grammage	IS: 1060(P-1):1966 RA- 2016	20-600g/m ²
		Moisture Content	IS: 1060(P-1):1966 RA- 2016	Upto 25%
		Ash content	IS: 1060(P-1):1966 RA- 2016	Upto 25%
		Breaking Strength	IS: 1060(P-1):1966 RA- 2016	Upto 50 N/mm

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 41 of 47

Validity 21.05.2018 to 20.05.2020 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
		pH value	IS: 1060(P-1):1966 RA- 2016	3.0-12
		Tear Strength	IS 1060(Part-1):1966, RA- 2009	0.1 – 100 N
VII.	MECHANICAL PROPERTIES OF METAL			
1.	Reinforcement Steel Bar	Elongation	IS 1608:2005 (RA:2013)	5-40%
		Tensile Strength		100 to 1500N/mm ²
		Yield Stress		100 to 1000N/mm ²
		0.2% Proof stress		100 to 1000N/mm ²
		Bend test	IS 1599:2012 (RA:2015)	8, 10, 12, 15, 16, 18, 20, 24, 25, 28, 30, 32, 36, 40, 45, 48, 56, 60, 64, 72, 75, 84, 96,100, 108, 112, 120, 124, 126, 135, 140, 144, 150, 160, 168, 175, 178, 192, 196, 200, 216, 240, 252, 280, 320 (for all grades upto 40mm dia)
		Re Bend test	IS 1786:2008(RA:2013)	8, 10, 12, 15, 16, 18, 20, 24, 25, 28, 30, 32, 36, 40, 45, 48, 56, 60, 64, 72, 75, 84, 96,100, 108, 112, 120, 124, 126, 135, 140, 144, 150, 160, 168, 175, 178, 192, 196, 200, 216, 240, 252, 280, 320 (for all grades upto 40mm dia)
		Mass / Meter		0.1 to 20 kg

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 42 of 47

Validity 21.05.2018 to 20.05.2020 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
		Bond Requirement Rib area by dimension measurement Pull Out test	IS 1786:2008(RA:2013) IS 2770(Part-1):1967(RA:2017)	1 - 50 mm ² /mm 5 -200 Kg/cm ²
		Total Elongation at max force	IS 1608:2005 (RA:2011)	2-10%
2.	Ferrous/ Non Ferrous Materials & Products (Welded Specimen)	Transverse tensile test	IS: 3600 (P-3): 2009 ASME Sec-IX-2017	100 to 1500 N/mm ²
		Bend Test (Root/face/side)	IS:3600 (P-5&6): 1983 (RA 2010)/ASME Sec – IX-2017	Qualitative
3.	Ferrous/Non Ferrous Materials & Products (Structural Steel, Pipes, Steel Tubes & Wire)	Elongation	IS 1608:2005 (RA:2011)	5-40%
		Tensile Strength		100 to 1500 N/mm ²
		Yield Stress		100 to 1000 N/mm ²
		0.2% Proof Stress		100 to 1000 N/mm ²
		Rockwell Hardness test -"B"	IS 1586-1-2012	20-100 HRBW
		Rockwell Hardness test -"C"		20-70 HRC
		Vickers Hardness Test	IS 1501-1-2013	100 to 950HV 10 100 to 950HV 30
		Izod Impact test	IS 1598:1977 (RA:2015)	10-168J
	Bend Test	IS 1599:2012 (RA: 2015) IS 2329:2005 (RA:2011)	8,10,12,15,16,18, 20, 24, 25,28,30,32, 36, 40, 45, 48,56,60, 64, 72,75,84,96,100,108, 112,120,124,126,135, 140,144,150,160,168, 175,178,192,196,200, 216,240,252,280,320 (for all grades upto 40 mm dia)	

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 43 of 47

Validity 21.05.2018 to 20.05.2020 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
		Dimension	IS 2826:1986, RA-2016 IS 2676:1981, RA-2011 IS 2677:1979, RA-2011 IS:1730:1989, RA.:2014 IS: 808:1989, RA.: 2009	0.1-300mm
		Mass / Meter	IS: 1732:1989, RA.: 2009	2 to 100Kg
		Brinell hardness Test	IS:1500-1-2013	50-500 HBW/10/3000
4.	Ferrous Material & Products (Sheet/Plate)	Cupping Test	IS 10175:2012	0.1-25mm
5.	Ferrous Material & Products (Steel Pipes/Tubes)	Flattening Test	IS 2328:2005(RA: 2011)	50 to 600 mm (Qualitative)
6.	Splicing coupler	Slip test	IS:16172:2014	0.01 to 1.0 mm
		Tensile test/Breaking load	IS 1608:2005 (RA: 2011) IS:16172:2014	100 to 1000 N/mm ²
7.	Wires	Reverse Bend	IS 432(Part-2):1982 (RA:2009)	Qualitative
		Wrapping test	IS 1755:1983 (RA:2011)	Qualitative
8.	Seven-Ply Strand Wire for Pre-Stressed Concrete	Breaking Load	IS: 14268:2017 IS: 1608:2005, RA-2011	10 to 1000kN
		Elongation at break	IS: 14268:2017	2 to 10%
		0.2% Proof Load	IS: 1608:2005, RA-2011	50 to 400kN
		Lay length	IS: 14268:2017	0.02-300mm
		Mass	IS: 14268:2017	0.5 to 15 Kg
		Modulus of Elasticity Test	IS: 14268:2017 IS: 1608:2005 (RA:2011)	100 to 300 kN/mm ²

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 44 of 47

Validity 21.05.2018 to 20.05.2020 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
VIII.	PERFORMANCE/DURABILITY/SAFETY TEST			
1.	Portable Fire Extinguisher & Wheeled Fire Extinguisher	Fill Density	IS 15683:2006, RA-2012 Cl.5.3	0.5 to 1 kg/l
			IS:16018-2012,CI-5.3	0.5 to 1 kg/l
		Pressure Requirement	IS 15683:2006, RA-2012 Cl. 6	Qualitative
		1. Test Pressure	IS:16018-2012,CI-8.9.1.2	Qualitative
		2. Burst Pressure		
		Minimum effective discharge time and bulk range of discharge	IS 15683:2006, RA-2012 Cl.7.2	0.1sec to 15 Minutes Upto 5 meter
			IS:16018-2012,CI-6.2,6.2.2	0.1sec to 15 Minutes Upto 10 meter
		Resistance to temp. change	IS:15683:2006, RA-2012 Cl.7.3	-40 to100°C
			IS:16018-2012,CI-6.3	-40 to100°C
		(a) Retention of charge	IS 15683:2006, RA-2012 Cl.7.4	1 to 100%
		(b) Retention of Charge following Partial Discharge	IS 15683:2006, RA-2012 Cl.7.4.2	
			IS:16018-2012,CI-6.3	1 to 100%
		Resistance to impact	IS 15683:2006, RA-2012 Cl.7.5.1	Qualitative
		Resistance to vibration	IS 15683:2006, RA-2012 Cl. 7.5.2	1 to 60Hz 0.1 to 2mm Amplitude
	External corrosion Salt spray test	Cl.7.6.1 IS 15683:2006, RA-2012	Qualitative	
		IS:16018-2012,CI-6.6.1	Qualitative	
	Internal corrosion test	Cl.7.6.2 IS:15683:2006, RA-2012	Qualitative	
		IS:16018-2012,CI-6.6.2	Qualitative	
	Tapping Test	IS15683:2006, RA-2012 Cl.7.7	Retention 0.1 to 25%	
	Intermittent Discharge Test	Cl.7.8 IS:15683:2006, RA-2012	Retention 0.1 to 25%	
		IS:16018-2012,CI-6.5	Retention 0.1 to 25%	

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 45 of 47

Validity 21.05.2018 to 20.05.2020 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
		Construction requirement Burst test	IS:15683:2006, RA-2012 Cl. 9.2.2	5-280 kg/cm ²
			IS:16018-2012,CI-8.10.2.1	5-280 kg/cm ²
		Crushing Test	IS:15683:2006, RA-2012 Cl.9.2.3	1 to 150mm & 2 to 280 kg/cm ²
		Cyclic pressure test	IS:15683:2006, RA-2012 Cl. 9.2.5	2 to 280 kg/cm ²
			IS:16018-2012,CI-8.3.3	2 to 280 kg/cm ²
		Thickness of the cylinder	IS 15683:2006, RA-2012 Cl.9.2.6.3	0.001 to 25mm
			IS:16018-2012,CI-8.6	0.001 to 25mm
		Air oven ageing test of plastic components	IS:15683:2006, RA-2012 Cl. 9.8.2	30-100 Deg C
			IS:16018-2012,CI-8.10.2.2	30-100 Deg C
		Ultraviolet Light exposure test of plastic components	IS:15683:2006, RA-2012 Cl. 9.8.3	10 to 100 deg C
			IS:16018-2012,CI-8.10.3	10 to 100 deg C
		Hose Assemblies	IS:15683:2006, RA-2012 Cl.9.9	0.5 to 5 meter
			IS:16018-2012,CI-8.11.1	0.5 to 10 meter
		Safety Locking Device	IS 15683:2006, RA-2012 Cl.9.11	2 to 200N
			IS:16018-2012,CI-8.15	2 to 200N
		Carbon Dioxide Extinguisher Horn	IS 15683:2006, RA-2012 Cl.9.14	Qualitative
			IS:16018-2012,CI-8.13	Qualitative
		Leakage Test	IS 15683:2006, RA-2012 Cl. 7.4.3	Qualitative
			IS:16018-2012,CI-8.9.2	Qualitative

Laboratory

National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 46 of 47

Validity 21.05.2018 to 20.05.2020 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
		General Requirement	IS 15683:2006, Cl. 9.2.1 RA-2012 & IS:16018-2012	Qualitative
		a) Service Pressure	(Cl. 9.2.1.1)	
		b) Construction	(Cl. 9.2.1.2)	Qualitative
		c) Requirement of welding	(Cl. 9.2.1.3)	Qualitative
		d) Construction	(Cl. 9.2.1.4)	Qualitative
		e) Thread of plastic component	(Cl. 9.2.1.6)	Qualitative
		f) Construction	(Cl. 9.2.1.7)	1 to 15 mm
		Method of Operation	IS 15683:2006, RA-2012 Cl. 9.10	5 to 200 N
			IS:16018-2012,CI-8.14	5 to 200 N
		Dip. Tube and filters	IS 15683:2006, RA-2012 Cl. 9.13	0.02 to 5 mm
			IS:16018-2012, CI-8.17.1 & 8.17.2	0.02 to 5 mm
		Colour	IS 15683:2006, RA-2012 Cl. 10.1	Qualitative
			IS:16018-2012,CI-9.1& 9.2	Qualitative

Laboratory National Testing Laboratory Pvt. Ltd., Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 1: Plot No. 83/14, Street No. 1, Udyog Nagar, Mundka Industrial Area, New Delhi

Location 2: Khesra no. 290, 291, 292, 293, 299, Village-Lova Kala, Bahadurgharh, District Jhajar, Haryana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7198 (in lieu of T-1544, T-1743 & T-1545) Page 47 of 47

Validity 21.05.2018 to 20.05.2020 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
-----	----------------------------	-------------------------	---	--

MECHANICAL TESTING

LOCATION 2				
I.	PERFORMANCE/DURABILITY/ SAFETY TEST			
1.	Portable Fire Extinguisher & Wheeled Fire Extinguisher	Performance Requirement for Test Fires Class-A Class-B	IS 15683:2006, RA-2012 Cl. 8.0	Qualitative
			IS:16018-2012, Cl-8.1 & 8.1.2	Qualitative