

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	1 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	CABLES & ACCESSORIES			
1.	PVC Insulated cables for Working voltage upto and including 1100volts IS: 694-1990 (For Cable size upto 70 Sqmm only)	A. Tests on conductor		
		Annealing test (for Copper)	Cl.6.2.3 IS: 8130-1984 Reff-2011 IS:10810 (Pt-1):1984,Reff-2011	0.2-200%
		Tensile test (for Aluminum)	Cl.6.2.1 IS: 8130-1984 Reff-2011 IS:10810 (Pt-2)1984,Reff-2011	1-10000N LC-1N
		Wrapping test (for Aluminum)	IS: 8130-1984 Reff-2011 IS:10810 (Pt-3)1984,Reff-2011	Visual test
		Conductor Resistance tests	Cl.6.3 of IS: 8130-1984 Reff-2011 IS:10810(Pt-5)1984,Reff-2011	0.02-100 m ohm LC-0.02 m ohm
		B. Test for overall dimension, thickness of insulation & sheath	Cl.10.13 &14 of IS: 694-2010 IS:10810(Pt-6)1984,Reff-2011	0.01-150mm LC-0.01mm 0.001-25mm LC-0.001mm
		C. Physical test on insulation & sheath		
		Tensile strength	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810(Pt-7)1984,Reff-2011	1-10000N, LC-1N
		Elongation at break		2.5-650%
		Ageing in air oven After ageing Tensile strength	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810 (Pt-11):1984,Reff-2011	30-200°C LC-0.1°C 1-10000N, LC-1N
		Elongation at break		2.5-650%

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	2 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Shrinkage tests	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810(Pt-12)-1984,Reff-2011	up to 200°C, LC-1°C, 0.1-150mm, LC-0.1mm
		Hot deformation tests	Cl.4.1 of IS 5831:1984 Reff-2011 IS:10810-1984(Pt-15),Reff-2011	Up to 200°C LC-1°C
		Loss of mass in air oven	Cl.4.1 of IS:5831:1984 Reff-2011 IS:10810-1984(Pt-10),Reff-2011	Up to 200°C, LC-1°C, 0-200g LC-0.01mg
		Heat shock tests	Cl.4.1 of IS 5831:1984 Reff-2011 IS 10810(Pt-14):1984,Reff-2011	Up to 200°C LC-1°C
		Insulation Resistance Test	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810(Pt-43)1984,Reff-2011	1M ohm- 100M ohms X 10 ⁵ (At 500Volts DC)
		High voltage (water immersion AC test)	Cl.16.2.1 of IS: 694:2010 IS:10810(Pt-45)1984,Reff-2011	0.2-10 kV, LC=0.2 kV
		A.C. High voltage at room temp.	Cl.16.3 of IS 694:2010 IS:10810(Pt-45)1984,2011	0.2-5/10 kV, LC- 0.2kV
		Flammability test	Cl.16.5 of IS 694:2010 IS 10810(Pt-53):1984,Reff-2011	0.01-1000mm LC 0.01mm
		Cold bend test	IS 5831-1984 Reff-2011 IS 10810(Pt-20):1984,Reff-2011	-50 ⁰ C to +50°C

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	3 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Cold impact test	IS 5831:1984 Reff-2011 IS 10810(Pt-21) :1984,Reff-2011	-50 ⁰ C to +50 ⁰ C
		Oxygen index test	Cl.16.8 of IS 694:2010 IS 10810 (Pt-58):1998 Reff-2008	1s-10 min LC -1 s
		Flame Retardant test on Single Cable	Cl. 16.9 of IS 694:2010 IS 10810 (Pt-61):1988,Reff-2010	1s-40 min
		Temperature Index	Cl. 16.13 of IS 694:2010 IS 10810 (Pt-64):2003,Reff-2013	1s-10 min LC-1 s
		Smoke Density	Cl.16.14 of IS 694:2010 IS 10810(P-63):1993,Reff-2008	1-35 ⁰ C LC-1 ⁰ C
2.	PVC Insulated cables for Working voltage upto and including 1100volts IS: 1554(P-1)1990	A. Tests on conductor		
		Annealing test (for copper)	Cl.6.2.3 IS: 8130-1984 Reff-2011 IS:10810(Pt-1):1984,Reff-2011	0.2-200%
		Tensile test (for Aluminum)	Cl.6.2.1 IS: 8130-1984 Reff-2011 IS 10810(Pt-2):1984,Reff-2011	1-10000N LC-1N
		Wrapping test (for Aluminum)	IS 8130:1984 Reff-2011 IS10810(Pt-3):1984,Reff-2011	Visual test
	(For Cable size upto 70 Sqmm only)	Conductor Resistance tests	Cl.6.3 of IS: 8130-1984 Reff-2011 IS:10810(Pt-5)1984,Reff-2011	0.02-100 ohms LC-0.02 ohms
		B. Test on Armoring wire and strip		
		Dimensions	Cl.13.3 of IS 1554(Pt-1):1988,Reff-2010 IS 10810(Pt-36) :1984,Reff-2011	0.01-150mm LC-0.01mm

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	4 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Tensile strength test	Cl.13.6(a) of IS 1554(Pt-1):1988,Reff-2010 IS 10810(Pt-37):1984,Reff-2011	1-10000N LC-1N
		Elongation at break	Cl.13.6(b) of IS 1554(Pt-1):1988,Reff-2010 IS 10810(Pt-37):1984,Reff-2011	0.2-200%
		Torsion test for round wire	Cl.13.6(c) of IS 1554(Pt-1):1988,Reff-2010 IS 10810(Pt-38):1984,Reff-2011	Number of Turn By Counter
		Winding Test For Formed Wire	Cl.13.6(d) of IS 1554(Pt-1):1988,Reff-2010 IS 10810(Pt-39):1984,Reff-2011	Visual
		Uniformity Of Zinc coating	Cl.13.6(e) of IS 1554(Pt-1):1988,Reff-2010 IS 10810(Pt-40):1984,Reff-2011	Visual
		Mass of Zinc coating	Cl.13.6(f) of IS 1554(Pt-1):1988,Reff-2010 IS 10810(Pt-41):1984,Reff-2011	20-750gm/m ²
		Resistivity	Cl.13.6(g) of IS 1554(Pt-1):1988,Reff-2010 IS 10810(Pt-42):1984,Reff-2011	0.02-100 ohm-cm LC-0.02 ohm-cm

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	5 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	C. Physical test on insulation & sheath			
		Test for overall dimension, Thickness of insulation& sheath	Cl.10.13,14 IS:1554:1988, Reff-2010 IS:10810(Pt-6)1984, Reff-2011	0.01-150mm LC0.01mm 0.001-25mm LC 0.001mm
		Tensile strength	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810(Pt-7)1984,Reff-2011	1-10000N,LC-1N
		Elongation at break		2.5-650%
		Ageing in air oven After ageing Tensile strength	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810 (Pt-11):1984,Reff-2011	up to 200°C, LC-0.1°C 1-10000N,LC-1N
		Elongation at break		2.5-650%
		Shrinkage tests	Cl.4.1 of IS: 5831-1984 IS:10810(Pt-12)-1984,Reff-2011	up to 200°C, LC-1°C 01, 50mm, LC-0.1mm
		Hot deformation tests	Cl.4.1 of IS: 5831:1984 Reff-2011 IS:10810(Pt-15)-1984,Reff-2011	Up to 200°C LC-1°C
		Loss of mass in air oven	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810-1984(Pt-10),Reff-2011	up to 200°C, LC-1°C ,0-200g LC-0.01mg
		Heat shock tests	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810-1984(Pt-14),Reff-2011	up to 200°C LC-1°C

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	6 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Insulation resistance test	Cl.4.1 of IS: 5831-1984 Reff-2011 IS:10810(Pt-43)1984,Reff-2011	1M ohms- 100M ohms X 10 ⁵ (At 500Volts DC)
		High voltage (water immersion AC test)	Cl.16.3.1 of IS: 694:2010 IS:10810:(Pt-45)1984,Reff-2011	0.2-10 kV, LC=0.2 kV
		High voltage (water immersion D.C.test)	Cl.16.3.2 of IS: 694-2010 IS:10810-1984(Pt-45),Reff-2011	0.1-3 kV, LC=0.1kV
		A.C. High voltage at room temp.	Cl.16.2 of IS: 694-2010 IS:10810- (P-45)1984,Reff-2011	0.2-5/10 kV, LC= 0.2kV
		Flammability test	Cl.16.5 of IS: 694:2010 IS:10810(P-53)-1984,Reff-2011	0.01-1000mm LC 0.01mm
		Cold bend test	IS:5831-1984,Reff-2011 IS:10810(Pt-20) 1984,Reff-2011	-50°C to+50°C
		Cold impact test	IS:5831-1984,Reff-2011 IS:10810(Pt-21):1984,Reff-2011	-50°C to+50°C
		Thermal stability test	Cl.4.1 of IS 5831:1984,Reff-2011 IS:10810 (Pt-14):1984,Reff-2011	30-200°C LC-0.1°C
		Oxygen index test	Cl.16.5 of IS 1554:1988 IS: 10810 (Pt-58):1998 Reff-2008	1s-10 min LC – 1s
		Flame Retardant test on Single Cable	Cl. 16.6 of IS 1554:1988 IS 10810 (Pt-61):1998,Reff-2010	1s-40 min

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	7 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Temperature Index	Cl. 16.10 of IS 1554:1988 IS 10810 (Pt-64):2003,Reff-2013	1s-10 min LC-1 s
		Smoke Density	Cl.16.11 of IS:1554:1988 IS 10810(Pt-63):1993,Reff-2008	1-35 ⁰ C LC-1 ⁰ C
3.	Cross Linked Polyethylene Insulated PVC Sheathed Cables for Working voltage including 1100 volts IS 7098(P-I):1988 (For Cable size upto 70 Sqmm only)	A. Tests on conductor		
		Annealing test (for copper)	Cl.6.2.3 IS: 8130-1984 Reff-2011 IS:10810(Pt-1):1984,Reff-2011	0.2-200%
		Tensile test (for Aluminum)	Cl.6.2.1 IS: 8130-1984 Reff-2011 IS:10810(Pt-2)1984,Reff-2011	1-10000N LC-1N
		Wrapping test (for Aluminum)	IS: 8130-1984,Reff-2011 IS:10810(Pt-3)1984,Reff-2011	Visual test
		Conductor Resistance tests	Cl.6.3 of IS: 8130-1984 Reff-2011 IS:10810(Pt-5)1984,Reff-2011	0.2 micro ohms - 11ohms
		B. Test on Armoring wire and strip		
		Dimensions	Cl.13.3 Of IS7098(Pt-1): 1988 Reff-2010 IS 10810(Pt-36) :1984,Reff-2011	0.01-150mm LC-0.01mm
		Tensile strength test	Cl.13.6(a) of IS7098 (P-1): 1988 Reff-2010 IS 10810(Pt-37):1984Reff-2011	1-10000N LC-1N
		Elongation at break	Cl.13.6(b) of IS7098 (P-1):1988 Reff-2010 IS 10810(Pt-37):1984,Reff-2011	0.2-200%

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	8 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Torsion test for round wire	Cl.13.6(c) of IS 7098 (P-1):1988 Reff-2010 IS 10810(Pt-38):1984,Reff-2011	Number of Turn By Counter
		Winding Test For Formed Wire	Cl.13.6(d) of IS 7098 (P-1):1988 Reff-2010 IS 10810(Pt-39):1984,Reff-2011	Visual
		Uniformity Of Zinc coating	Cl.13.6(e) of IS 7098 (P-1):1988 Reff-2010 IS 10810(Pt-40):1984,Reff-2011	Visual
		Mass of Zinc coating	Cl.7098(f) of IS 1554 (P-1):1988 Reff-2010 IS 10810(Pt-41):1984, Reff-2011	20-750gm/m ²
		Resistivity	Cl.13.6 (g)of IS7098 (P-1):1988 Reff-2010 IS 10810(Pt-42):1984, Reff-2011	0.02-100 ohm-cm LC-0.02 ohm-cm
		C. Physical test on insulation		
		Test for Thickness of insulation& sheath	Cl.9.12 &14 Table 2of IS: 7098:1988 Reff-2010 IS:10810 (Pt-6)1984,Reff-2011	0.01-150mm LC-0.01mm 0.001-25mm LC-0.001mm
		Tensile strength	Table 1, IS:7098(P-1) :1988 Reff-2010	1-10000N, LC-1N
		Elongation at break	IS:10810 (Pt-7)1984,Reff-2011	2.5-650%

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	9 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Ageing in air oven After ageing Tensile strength	Table 1, IS:7098(Pt-1): 1988 Reff-2010 IS:10810 (Pt-11):1984,Reff-2011	up to 200°C, LC-0.1°C 1-10000N, LC-1N
		Elongation at break		2.5-650%
		Hot Set Test	Table –I of IS 7098 (P-I):1988 Reff-2010 IS 10810(P-30):1984 Reff-2011	up to 200 ⁰ C LC -0.1 ⁰ C 1-100mm, LC-1mm
		Shrinkage test	Table 1, IS:7098(P-1) :1988 Reff-2010 IS:10810(Pt-12):1984, Reff-2011	up to 200°C, LC-1°C 0.1-150mm LC-0.1mm
		Water Absorption Test	Table –I of IS 7098 (P-I):1988 Reff-2010 IS 10810(P-33):1984 Reff-2011	up to 200 ⁰ C, LC-1 ⁰ C, 0-200g, LC-0.01mg
		D. Physical test on Outer Sheath Tensile strength	Cl.4.1, IS: 5831-1984,Reff-2011 IS:10810(Pt-7)1984,Reff-2011	1-10000N, LC-1N
		Elongation at break		2.5-650%
		Ageing in air oven After ageing Tensile strength	Cl.4.1, IS: 5831-1984,Reff-2011 IS:10810 (Pt-11):1984,Reff-2011	up to 200°C, LC-0.1°C 1-10000 N,LC-1N
		Elongation at break		2.5-650%

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	10 of 12

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		Loss of mass in air oven	Cl.4.1, IS: 5831-1984, Reff-2011 IS:10810 (Pt-10):1984, Reff-2011	Up to 200°C LC-1°C, 0-200g, LC-0.01mg
		Shrinkage test	Cl.4.1, IS: 5831-1984, Reff-2011 IS:10810(Pt-12)-1984, Reff-2011	Up to 200°C LC-1°C , 0-150mm, LC-0.1mm
		Hot deformation tests	Cl.4.1, IS:5831:1984, Reff-2011 IS:10810(Pt-15) 1984, Reff-2011	Up to 200°C LC-1°C
		Heat shock tests	Cl.4.1, IS: 5831-1984, Reff-2011 IS:10810 (Pt-14):1984, Reff-2011	Up to 200°C LC-1°C
		Thermal stability test	Cl.4.1, IS: 5831:1984, Reff-2011 IS:10810 (Pt-14) 1984, Reff-2011	30 -200°C LC-0.1°C
		Insulation resistance test	Cl.4.1, IS: 5831:1984, Reff-2011 IS:10810(Pt-43):1984, Reff-2011	1M ohms- 100M ohms X 10 ⁵ (500Volts DC)
		High voltage test (Room Temp.)	Cl.16.2, IS: 7098:2011 IS:10810-(Pt-45):1984, Reff-2011	0.2-10 kV, LC=0.2 kV
		Flammability test	Cl.16.5 IS: 694:2010 IS:10810(P-53):1984, Reff-2011	600-1000mm LC-0.01mm
		Cold bend test (outer Sheath)	IS:5831:1984, Reff-2011 IS:10810(Pt-20):1984, Reff-2011	-50°C to +50°C
		Cold impact test(outer sheath)	IS:5831:1984, Reff-2011 IS:10810(Pt-21):1984, Reff-2011	-50°C to +50°C

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	11 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Oxygen index test	Cl.16.9 of IS 7098 (P-I):1988 Reff-2010 IS:10810 (Pt-58):1998 Reff-2008	1 s-10 min LC – 1sec
		Flame Retardant test on Single Cable	Cl. 16.10 of IS 7098 (P-I):1988 Reff-2010 IS 10810 (Pt-61):1988,Reff-2010	1 s- 40 min
		Temperature Index	Cl. 16.14 of IS 7098 (P-I):1988 Reff-2010 IS 10810 (Pt-64):2003,Reff-2013	1s-10 min LC-1 sec
		Smoke Density	Cl.16.15 of IS 7098 (P-I):1988 Reff-2010 IS 10810(Pt-63):1993,Reff-2008	1-35 °C LC-1 °C
II. WIRING ACCESSORIES				
1.	Rigid plain Conduits of Insulating Material	Dimension	Cl.7 of IS 9537 (Pt-3):1983Reff-2013	0.01-150mm LC 0.01mm
		Bending Test	Cl.9.2 IS 9537 (Pt-3):1983Reff-2013	16,20 and 25mm
		Compression test	Cl. 9.3 IS 9537 (Pt-3):1983 Reff-2013	125N,320N, 750N,1250N, 4000N
		Impact Test	Cl. 9.4 IS 9537 (Pt-3):1983Reff-2013	Visual test
		Collapse test	Cl. 9.5 IS 9537 (Pt-3):1983 Reff-2013	16,20and 25mm

Laboratory	National Testing Laboratory Pvt. Ltd., B-265, Mangolpuri Industrial Area, Phase-1, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	21.05.2014
Certificate Number	T-1743	Valid Until	20.05.2016
Last Amended on	21.07.2014	Page	12 of 12

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Resistance to Heat	Cl. 10 IS 9537 (Pt-3):1983Reff-2013	0.1-300 ⁰ C LC-0.1 ⁰ C
		Resistance to Burning	Cl. 11 IS 9537 (Pt-3):1983 Reff-2013	0.01-1000mm LC 0.01mm
		Electrical Characteristics		
		Electrical Strength	Cl. 12.1.1 of IS 9537 (Pt-I):1980 Reff-2010	0.1-5 kV LC-0.1kV
		Insulation Resistance	Cl. 12.1.2 of IS 9537 (Pt-I):1980 Reff-2010	1M ohms- 100M ohms X 10 ⁵ (500Volts DC)
III.	RUBBER HOSE FOR LIQUEFIED PETROLEUM GAS (LPG)	Electrical Conitnuty Test	IS: 9573: 2012	Visual

-X-X-X-X-X-X-X-X-X-X-X-X-