

TEST REPORT

(ELECTRICAL LABORATORY)

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TEST REPORT AS PER IS 14255 : 1995 [WITH AMENDMENT NO{s} 1]

REPORT NO : ATCC2015031903

DATED : 19.03.2015

Issue To: Finecab Wires & Cables Pvt. Ltd.
2-3-465/7, Minister Road,
Secunderabad-500003

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Nature of Sample : Aerial Bunched Cable for working voltages upto and including 1100Volts

b) Grade/Variety/Type/Class/Size etc: 3Cx95 sq.mm Stranded Circular Compacted Aluminium Phase Conductor XLPE insulated + 1Cx16 sq.mm Stranded Circular Compacted Aluminium Street Light Conductor XLPE insulated + 1Cx 70 sq.mm Stranded Circular Compacted Aluminium Alloy Bare Messenger Conductor, LT Aerial Bunched Cable, 1100 Volts grade, 5 meters Bare aluminium wire Dia. 2.55 mm for tensile strength and wrapping test before stranding, 5 meters Bare aluminium wire Dia. 1.74 mm for tensile strength and wrapping test before stranding, 5 meters bare aluminium alloy wire Dia. 3.57 mm for elongation test before stranding.

c) Declared Values, if any :

d) Code No. :

e) Batch No. & Date of Manufacture :

f) Quantity : 15 Meters + 5 meters + 5 meters + 5 meters (Approx.)

g) Date of Receipt : 06.02.2015

i) Job Order Number: 15021604

h) BIS seal : INTACT/ NOT INTACT/ NOT SEALED NIL

i) IO's Signature : Signed/ Unsigned NIL

j) Any other Information/Expiry date,if any :

k) Date of Commencement of Testing : 23.02.2015

l) Date of Completion of Testing : 14.03.2015

m) Embossing/Printing: FINECAB XLPE 90 3Cx90+1Cx70+1Cx16 SQ.MM. 2015

n) Party Ref. No. : FWCP/2014-2015/D.NO.362 Dated: 31.01.2015

PART B : SUPPLEMENTARY INFORMATIONS

a) Reference to sampling procedure, wherever applicable : N.A.

b) Supporting documents for the measurements taken and results derived like graphs, tables, sketches and/or photographs, as appropriate to test report, if any[To be attached]: NIL

c) Deviation from the test methods as prescribed in relevant ISS/ work instructions, if any : NIL

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19/03/2015
(C.E.O.)

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(Quality Manager)

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PART C. TEST RESULTS

IS: 14255-1995

REPORT NO : ATCC2015031903

Sl.No.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
1	Test on phase/ Street Light conductors Cls. 4.1, 6.1 & 10		
1.1	Tensile test Cls. 10.1, Cls.6.2.1 of IS 8130-1984 IS 10810(Part-2)		
	Phase	H2 Grade Above 100 and up to and including 150 N/mm ² or H4 Grade Above 150 N/mm ²	H2 Grade 130.3 134.5
	Street Light		
1.2	Wrapping Test Cl.10.1, Cls.6.2.2 of IS 8130-1984 IS 10810(Pt.3)		
	Phase	The wires not break during the test	Satisfactory Satisfactory
	Street Light		
1.3	Flexibility Cl. 6.1 & Cl. 4.1 (a) of IS 8130:1984	Class-1/Class-2	Class 2
1.4	Nature and Shape of Conductor Cl. 4.1	Stranded Circular/Compacted Circular	Compacted Circular
1.5	No. of wires in Conductor Cl 5.3.3, Table 2 of IS 8130:1984		
	Phase	15 (Min.)	19
	Street Light	6 (Min.)	7
1.6	Conductor Resistance test Cls. 10.1, Table-2 of IS 8130-1984 IS 10810(Part-5)		
	Phase I	At 20°C	0.302
	Phase II	0.320 Ohm/km Max.	0.304
	Phase III		0.302
	Street Light	1.91 Ohm/km Max.	1.84
2	Test on Messenger conductor Cls. 4.2, 6.2 & 10		
2.1	Elongation test (Before Stranding) Cls. 10.1 & 11.3, IS 10810(Part-2)	4% Min.	5.5
2.2	Breaking load test (After Stranding) Cls. 10.1 & (table-3), IS 10810(Part-2)	19.70 kN Min.	20.25
2.3	Conductor Resistance test Cls. 10.1 & (table-3), IS 10810(Part-5)	At 20°C 0.492 Ohm/km Max.	0.478
3	Insulation Cls.5.1	The insulation shall be either of cross-linked polyethylene compound or of polyethylene compound	Cross-Linked Polyethylene
4	Construction of conductor As per Cls.6		
4.1	Cls.6.1	The power/Outer insulated neutral/street lighting Conductor should be flexibility class-2 of as per IS:8130-1984	Class-2
4.2	Cls.6.2	The messenger conductor should be either stranded circular or compacted circular type and shall have min. 7 strands. The surface of the conductor should be smooth	Circular Compacted Messenger 7 Strands

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4.3	Cls.6.3	A protective barrier may be applied between the conductors and insulation. If required	N.A.
4.4	Cls.6.4	The size of street lighting conductor should be 16 mm ²	16
4.5	Cls.6.5 & Table -3	The size of messenger conductor for single phase and three phase cable and its breaking load and maximum dc resistance shall be as per Table 3	70 mm ²
4.6	Cls.6.6	There should be no joints in any wire of the messenger conductor except those made in the base rod of wires before final drawing. The direction of Outer layer of wires in messenger conductor should be right hand	No joints in any wire of the messenger conductor Right Hand
5	Insulation Cl. 7		
5.1	Cl. 7.1	The conductor (with protective barrier, wherever applied) shall be provided with cross linked polyethylene or polyethylene insulation applied by extrusion.	Cross Linked Polyethylene by Extrusion
5.2	Application of Insulation Cl. 7.4	The insulation shall be so applied that it fits closely on the conductor (or barrier, if any) and it shall be possible to remove it without damaging the conductor	Satisfactory
5.3	Colour of Insulation Cl. 7.5	The colour of insulation shall be black	Black
6	Core identification		
6.1	Cl. 8.1	The phase conductors shall be provided with one, two or three 'ridges' and outer neutral insulated conductor, if provided, shall have four 'ridges' for quick identification. The street lightning conductor and messenger conductor (if insulated) shall not have any identification	Satisfactory
6.2	Cl. 8.2	The single phase conductor shall be provided with 'One Ridge' and if neutral insulated conductor is provided shall have 'Four Ridges' for quick identification. The street Light Conductor & Messenger Conductor (if insulated) shall not have any identification mark.	N.A.
6.3	Cl. 8.3	Identification by other means, as agreed between the supplier and purchaser, is also permissible.	N.A.

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Sl.No.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
7	Assembly (Laying up) Cl.9		
7.1	Cl. 9.1	Three insulated phase conductors, one insulated neutral conductor (if required) and a street lighting conductor (if required) shall be twisted around the bare (or insulated) as required messenger conductor without fillers with a lay not exceeding 35 times the diameter of the insulated phase conductor.	32.5
7.2	Cl. 9.2	Single insulated phase conductor, one insulated neutral conductor (if required) and a Street Lighting Conductor (if required) shall be twisted around the bare (or insulated) as required Messenger Conductor without filler with a lay not exceeding 35 times the diameter of the insulated phase conductor.	N.A.
7.3	Cl. 9.3	The direction of lay shall be right hand.	Right Hand
8	Physical test for XLPE insulation Cls. 5.7 & 10		
8.1	Tensile strength & Elongation at break (before Ageing) Cls. 10.1& (Table-1), IS 10810(Part-7)		
8.1.1	Tensile strength		
	Phase I	12.5 N/mm ² Min.	17.95
	Phase II		17.42
	Phase III		18.15
	Street Light		17.65
8.1.2	Elongation at break		
	Phase I	200% (Min.)	510
	Phase II		490
	Phase III		483
	Street Light		478
8.2	After ageing in Air oven Cls. 10.1& (Table-1), IS 10810(Part-11)		
8.2.1	Tensile strength Variation		
	Phase I	± 25 % Max.	-7.55
	Phase II		-8.62
	Phase III		-7.90
	Street Light		-6.85
8.2.2	Elongation at break Variation		
	Phase I	± 25 % Max.	-5.88
	Phase II		-5.51
	Phase III		-5.80
	Street Light		-6.28

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Sl.No.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
8.3	Shrinkage test Cls. 10.1& (Table-1), IS 10810(Part-12)	4% Max.	
	Phase I		1.5
	Phase II		1.5
	Phase III		1.0
	Street Light		1.0
8.4	Water Absorption test (Gravimetric) Cls. 10.1& (Table-1), IS 10810(Part-33)	1 mg/cm ² Max.	
	Phase I		0.018
	Phase II		0.022
	Phase III		0.024
	Street Light		0.021
8.5	Hot set test Cls. 5.1& (Table-1), IS 10810(Part-30)	175% Max.	
8.5.1	Elongation under load		
	Phase I		76.20
	Phase II		82.45
	Phase III		86.60
	Street Light		84.65
8.5.2	Permanent Elongation(set)after cooling	15% Max.	
	Phase I		1.85
	Phase II		2.30
	Phase III		3.75
	Street Light		2.15
9	Test for thickness of insulation Cls.7,10.1&(Table-4), IS 10810(Part-6)	Nominal 1.50 mm Min. 1.25 mm	Nom. Min.
9.1	Phase conductors		
	Phase I		1.62 1.52
	Phase II		1.60 1.53
	Phase III		1.58 1.50
	Street Light	Nominal 1.20 mm Min. 0.98 mm	1.28 1.17
10	Insulation resistance test (Volume resistivity) Cls. 10.1& (Table-1), IS 10810(Part-43)	1x10 ¹³ Ohm-cm Min.	
10.1	Volume resistivity at 27°C		
	Phase I		4.18 x 10 ¹⁵
	Phase II		4.85 x 10 ¹⁵
	Phase III		5.65 x 10 ¹⁵
	Street Light		5.10 x 10 ¹⁵
10.2	At 70°C	1x10 ¹¹ Ohm-cm Min.	
	Phase I		2.90 x 10 ¹⁴
	Phase II		3.40 x 10 ¹⁴
	Phase III		3.18 x 10 ¹⁴
	Street Light		3.48 x 10 ¹³

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Sl.No.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
11	High voltage test Cls. 10.1& 11.2, IS 10810(Part-45)	At room temperature the cable shall withstand a voltage of 3 kV ac (rms) at a frequency of 40 to 60 Hz. or a dc voltage of 7.2 kV between conductors for 5 minutes	AC Voltage
	Phase I		Withstood
	Phase II		Withstood
	Phase III		Withstood
12	Street Light		Withstood
	Optional test Cls. 10.4, IS 10810(Part-50)		
	Bending test Cls. 11.4	No cracks visible to naked eye	Satisfactory
13	Aluminium Alloy wire, Chemical Composition Cl. 4.2		
13.1	Magnesium	0.5% Approx.	0.52
13.2	Silicon	0.5% Approx.	0.53

PART D REMARKS : The Sample conforms to various requirements specified in IS : 14255-1995 with amendments no. 1

Note: Any deviation from the standard, test method/specification- NIL

XXXXXXXXXX END OF TEST REPORT XXXXXXXXXXXX

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Notes :

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TEST REPORT

REPORT NO: ATCC2014081103

IS : 191-2007

SL.NO.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS		RESULTS
18	Copper purity test IS:191-2007 & 440-1964 Cls. 7.1 & (table-4)			
		Cu - ETP	Cu - FRHC	
18.1	Copper + Silver, % by mass	99.90 Min.	99.90 Min.	99.94
18.2	Bismuth, (ppm)	10 Max.	10 Max.	6
18.3	Lead, % by mass	0.005 Max.	0.005 Max.	0.004
18.4	Oxygen, % by mass	0.045 Max	0.045 Max	0.036
18.5	Total of all Impurities excluding silver & oxygen, % by mass	0.03 Max.	0.03 Max.	< 0.03

PART D REMARKS : The Sample conforms to various requirements specified in IS : 694/1990 with amendments No.1,2,3,4 & 5 and IS 191-2007, IS 440 - 1964.

Note: Any Deviation from the Standard, Test method/Specification - NIL

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