



AMIT TEST AND CALIBRATION CENTRE

(BIS/NABL ACCREDITED LABORATORY)

19/168, Sarai Rohilla, Old Rohtak Road, Near Shastri Nagar Metro & Usha Mata Mandir, Delhi-110035
Tel. 011-23643995, Fax : 011-23643992 (M) 9582782444, Email: info@atncc.in; amittestcc@gmail.com

TEST REPORT

(ELECTRICAL LABORATORY)

ADDRESS OF THE LABORATORY :

19/168, Basti Sarai Rohilla, Old Rohtak Road, Near Usha
Mata Mandir, Gurudwara Wali Gali, Delhi -110035

TELEGRAM :

TELEPHONE(S) :

FAX :

E-mail :

TEST REPORT AS PER IS:694-1990 :

011-23643995, 011-23643992

011-23643992

info@atncc.in

[WITH AMENDMENT NO(s) 5]

REPORT NO: ATCC2014081103

DATED : 11.08.2014

Issue To: Finecab Wires & Cables Pvt. Ltd.

Plot No.6 & 20 Phase-IV,

IDA, Patancheru-502319

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Nature of Sample :

PVC Insulated Cables for working voltages upto and
including 1100 Volts

b) Grade/Variety/Type/Class/Size etc:

1C x 35 sq.mm, (276/0.405mm) annealed bare stranded flexible
copper conductor, Class 5, FRLSH PVC Insulated Type A, unsheathed
cable, suitable for low temperature & outdoor use (weatherproof)
Category C2, 1100 Volts grade, Cable Code YSZ

5 meters copper wire Dia.0.405 mm for annealing test before stranding
100 grams bare copper wire dia. 0.405 mm for copper purity test.

c) Declared Values, if any :

d) Code No. :

e) Batch No. & Date of Manufacture :

f) Quantity :

g) Date of Receipt :

h) BIS seal :

i) IO's Signature :

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

k) Date of Commencement of Testing :

l) Date of Completion of Testing :

m) Embossing/ Identification:

n) Party Ref. No. :

25 Meters + 5 Meters + 100 Grams (Approx.)

07.07.2014

INTACT NOT INTACT/NOT SEALED NIL

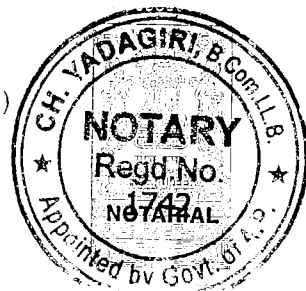
Signed/Unsigned NIL

17.07.2014

08.08.2014

FINECAB 1100V 1C X 35 SQ.MM. YSZ FR-LSH

FWCPL/2014-2015/D.NO.122 Dated: 05.06.2014



PART B : SUPPLEMENTARY INFORMATION

a) Reference to sampling procedure, wherever applicable :

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]:

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

ATTESTED

CH. YADAGIRI

B. COM LL.B

ADVOCATE & NOTARY

MACHA BOLARAM

RANGA REDDY DIST

AP INDIA

11/08/2014

SADHANA JADON
(Quality Manager)

MANOHAR SINGH JADON

M.S. Jadon
11/08/2014
(C.E.O.)

Issued By





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PART C. TEST RESULTS

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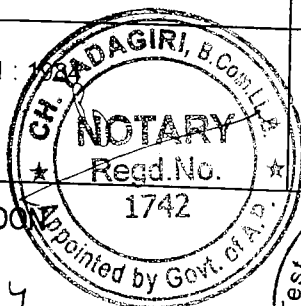
IS : 694-1990

SL.NO.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
1	Type of Cables Cl. 1.1.1	a) Cables for fixed wiring: i) Single core (unsheathed): ii) Single core (sheathed): iii) Circular twin, three and four core (Sheathed) iv) Flat twin with or without ECC (sheathed): and v) Flat three core (sheathed) b) Flexible cables, single core (unsheathed) c) Flexible cords: i) Single core (unsheathed): ii) Single core (sheathed): iii) Parallel twin (unsheathed): iv) Twisted twin (unsheathed): v) Circular twin, three, four and five core (sheathed): vi) Flat twin (sheathed). vii) Flat three (sheathed). Improved fire performance, categories C1 and C2.	N.A. N.A. N.A. N.A. N.A. Single core (unsheathed) N.A. N.A. N.A. N.A. N.A. N.A. N.A. C2
2	Conductor		
2.1	Copper Conductor Cl. 4.1, and IS 8130 : 1984.	The conductor shall be composed of plain annealed high conductivity copper wires	Plain annealed high conductivity Copper wires
2.2	Aluminium Conductor Cl. 4.2, and IS 8130 : 1984	The conductor shall be composed of aluminium wires	N.A.
2.3	Separator Tape Cl. 4.3	A separator tape made of suitable material may be applied over conductor at the discretion of the manufacturer.	N.A.
3	Insulation Cl. 5.1, and IS: 5831 : 1984	The insulation shall be of PVC compound conforming to the requirements of Type A	Type A
4	Fillers		
4.1	Cl. 6.1	The fillers shall consist of vulcanized rubber, unvulcanized rubber, thermoplastic compound or textile materials.	N.A.
4.2	Cl. 6.2	The filler materials shall be suitable for operating temperature of the cable and compatible with other components of the cable. These shall not be harder than PVC used for insulation and sheath.	N.A.
5	Binder Tape Cl. 7.1	Binder tape shall consist of plastic or proofed textile material.	N.A.
6	Sheath Cl. 8.1, and IS: 5831 : 1984 Cl. 8.2	The sheath shall consist PVC compound conforming to the requirements of ST1 type Improved fire performance, the insulation/sheath (as applicable.)	N.A. Insulation

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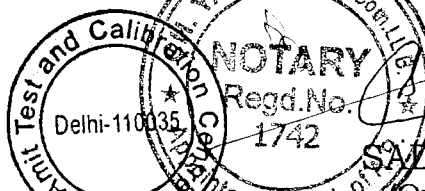
IS : 694-1990

SL.NO.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
7	Conductor		
7.1	Cross sectional area of conductor Cl. 9.0	35.0 sq. mm	35.36
7.2	Nature and Shape of Conductor Cl. 9.1 Table 1, 9.2 & Cl. 5.1, 5.2, 5.3 & 5.4, Table 1, 2 & 3 of IS 8130 :1984	Solid/Stranded/Flexible	Flexible
7.3	Flexibility Cl. 9.1, 9.2 Table 1 to 4 & Cl.4.1(a), (b) of IS: 8130 :1984	Class-1/Class-2/ Class-5	Class-5
7.4	Dia of wire, mm Cl. 5.4.3 Table 3 of IS: 8130 :1984	0.41 (Max)	0.404
7.5	No. of Wires in Conductor Cl. 5.4.2 of IS: 8130 :1984		276
8	Insulation		
8.1	Cl. 10.1	The conductor shall be provided with PVC insulation applied by extrusion.	Extrusion
8.2	Thickness of Insulation Cl. 10.2, 10.3 & 15.1 (b) Table 2 to 6 IS: 10810 (Part 6) Black Core	Table - 4 Nominal = 1.20 mm Minimum = 0.98 mm	Nom. Min. 1.34 1.25
8.3	Application of Insulation Cl. 10.4	It fits closely on the conductor and it shall be possible to remove it without damage to the conductor	Satisfactory
8.4	Core Identification Cl. 11.1, Table 7	Red, Black, Yellow, Blue, White, Grey or any other colour shall be permissible as agreed to between the purchaser and the supplier	Black
9	Laying-Up of Cores Cl. 12		
9.1	Flat Twin and Three-Core Cables (without ECC) Cl. 12.1	Two or three cores shall be laid side by side.	N.A.
9.2	Flat Twin Cables (with ECC) Cl. 12.2	The cores with a bare ECC shall be laid side by side in the same plane (ECC occupying the central position).	N.A.
9.3	Circular Twin, Three-and Four-Core Cables Cl. 12.3	Two, three or four cores shall be laid together with a suitable right-hand lay. The interstices between the cores may be filled with fillers. A binder tape may be applied over the laid-up cores.	N.A.
9.4	Circular Twin, Three, Four and Five Core Flexible Cords Cl. 12.4	Two, three, four or five cores shall be twisted together with a suitable right-hand lay. The interstices may be filled with sheathing material, fillers or strengthening cords of textile or any other suitable material.	N.A.
9.5	Parallel Twin (Unsheathed) Flexible Cords Cl. 12.5	Two conductors shall be laid parallel and insulated simultaneously such that the cores can be separated readily without damage.	N.A.

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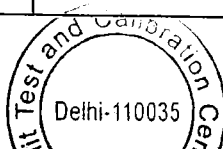
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IS : 694-1990

SL.NO.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
9.6	Twisted Twin (Unsheathed) Flexible cords Cl. 12.6	Two cores shall be twisted together with a suitable right hand lay.	N.A.
9.7	Flat Twin (Sheathed) Flexible cords Cl. 12.7	Two cores shall be laid side by side	N.A.
9.8	Flat Three (Sheathed) Flexible cords Cl. 12.8	Three cores shall be laid side by side	N.A.
10	Overall Dimensions Cl. 14 & 15.1 (b)		
10.1	Cl. 14.1 & Table 2 to 6	The mean overall dimensions of the cables shall not exceed the limits specified Table 4 13.0 mm (Max.)	11.48
10.2	Ovality Cl. 14.1.1	The difference between maximum and minimum measured values of overall diameter of sheathed circular cables shall not exceed 15 percent of the maximum measured value at the same cross-section.	N.A.
11	Test on Conductor		
11.1	Annealing Test for Copper (Before Stranding) Cl. 15.1a (i), Table-8 & Cl. 6.1.2.1 of IS 8130 : 1984, IS: 10810(Part 1)	Wire Diameter Over Up to and including mm mm Percent ---- 0.21 9.0 0.21 0.41 13.5 0.41 1.36 18.0 1.36 ---- 22.5	18.4
11.2	Tensile strength, (N/mm ²) (For Aluminium Conductor) Cl. 15.1 a (ii) Table-8 & Cl. 6.2.1 of IS 8130 : 1984 IS: 10810 (Part 2)	H2 Grade Above 100 and up to and including 150 N/mm ² or H4 Grade Above 150 N/mm ²	N.A.
11.3	Wrapping Test (for Aluminium Conductor) Cl.15.1 a (iii) Table-8 & Cl. 6.2.2 of IS 8130 : 1984 IS: 10810 (Part 3)	The wire should not Break	N.A.
11.4	Conductor Resistance Cl. 15.1 a (iv) Table-8 & Cl.6.3 & 6.3.1 and Table 1 to 3 & 6 of IS 8130: 1984 IS: 10810(Part 5)	Table - 3 At 20°C, ohm/Km 0.554 (Max.)	
12	Physical Tests for insulation Cl. 15.1 b (i) Table 8 & Cl. 4.1 (iii) Table 1 of IS 5831 :1984 IS: 10810 (Part - 7)		0.512
12.1	Tensile strength (Before Ageing) Black Core	12.5 N/mm ² (Min.)	15.07
12.1.1	Elongation at Break (Before Ageing) Black Core	150% (Min.)	210

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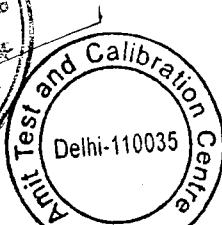
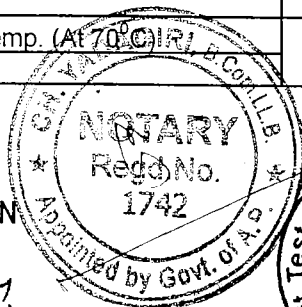
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SL.NO.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
12.2	Loss of mass in Air Oven Cl. 15.1 c.(ii) & Table 8 Cl.4.1 (v) Table 1 of IS 5831 :1984 IS: 10810 (Part -10) Black Core	2 mg/cm ² (Max.)	0.663
12.3	After Ageing in Air Oven Cl. 15.1 c (iii), Table 8 & Cl. 4.1 (iv) Table 1 of IS 5831 :1984 IS: 10810 (Part -11)		
12.3.1	Tensile strength Black Core	12.5 N/mm ² (Min.)	16.18
12.3.2	Variation Black Core	± 20% (Max.)	-7.37
12.3.3	Elongation at Break Black Core	150% (Min.)	193
12.3.4	Variation Black Core	± 20% (Max.)	+8.10
12.4	Shrinkage Test Cl. 15.1 c (iv), Table 8 & Cl.4.1 (viii) Table 1 of IS 5831 :1984 IS: 10810 (Part-12) Black Core	4% (Max.)	0.5
12.5	Heat Shock test Cl. 15.1 c (v), Table 8 & Cl.4.1 (vii) Table 1 of IS 5831 :1984 IS: 10810 (Part -14) Visual Examination Black Core	No signs of cracks or scales	No signs of cracks
12.6	Hot Deformation test Cl. 15.1 c(vi), Table 8 & Cl. 4.1 (vi) Table 1 of IS 5831 :1984 IS: 10810 (Part -15) Black Core	50%(Max.)	22.73
13	Insulation Resistance Test Cl. 15.1 (d), Table-8 & Cl. 4.1 (i) Table.1 of IS 5831 :1984 IS: 10810 (Part -43)		
13.1	Volume Resistivity At 27°C Black Core	1 x 10 ¹³ Ohm-cm (Min.)	4.05 x 10 ¹³
13.2	At Maximum rated temp. (At 70°C) Black Core	1 x 10 ¹⁰ Ohm-cm (Min.)	2.46 x 10 ¹¹
13.3	Insulation Resistance constant Cl.4.1 (ii) Table 1 of IS 5831:1984 IS: 10810 (Part-43)		
13.3.1	At 27°C Black Core	36.7 Mega ohm Km (Min.)	148.9
13.3.2	At Maximum rated temp. (At 70°C) Black Core	0.037 Mega ohm Km (Min.)	0.925

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S. Sadhana
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SL.NO.	TESTS/ CL. REF.	SPECIFIED REQUIREMENTS	RESULTS
14	High Voltage test (Water immersion Test) Cl.16.2.1 & IS: 10810 (Part 45)		
14.1	A.C Test 16.2.1 Black Core	The core shall be immersed in a water bath at $60\pm3^{\circ}\text{C}$ after 24 hour a voltage of 3kV (rms) shall be applied between conductor and water. This voltage shall be raised to 6kV (rms) within 10 sec and held constant at this values for 5 minutes	Withstood
14.2	D.C Test Cl. 16.2.2 Black Core	The core should withstand dc.voltage of 1.2 kV in the same water bath as a.c. test at $60\pm3^{\circ}\text{C}$ for 240 hours continuously without breakdown	Withstood
15	Flammability Test Cl. 16.5, Pt-53 of IS: 10810/1984		
15.1	Period of Buring after removal of the Flame	60 Sec. (Max.)	4
15.2	Unaffected(uncharred) portion from the lower edge of the top clamp	50 mm (Min)	295
16	Optional Tests		
16.1	Cold bend Test for Insulation Cl. 15.4(a) Table -9 & Cl.4.1 (vii) Table1 of IS 5831 :1984 IS: 10810 (Part -20) Visual Examination Black core	No signs of cracks or scales	No Signs of cracks
17	Additional Test for Cables with Improved Fire Performance Category C2 Cl. 15.1.1 & Appendix A		
17.1	Oxygen index Test, (%) Cl. 16.8, IS:10810(Pt-58)/1998	29 (Min.)	33.2
17.3	Test for halogen acid gas evolution by weight, (%) Cl. 16.9, IS:10810(Pt-59)/1988	The level of HCL evovled shall not exceed 20% by weight	14.24
17.2	Temperature Index at 21% Oxygen, $^{\circ}\text{C}$ Cl. 16.10, IS:10810(Pt-64)/2003	250 (Min.)	370.0



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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

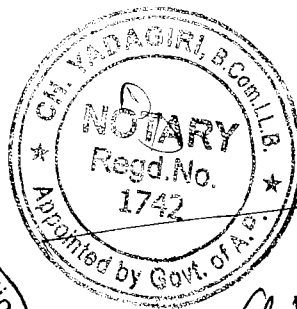
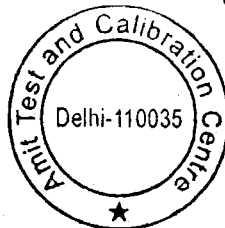
PART D REMARKS : The Sample conforms to various requirements specified in IS : 694/1990 with amendments No.1,2,3,4 & 5 and IS 191-2007, IS 440 - 1964.

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

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11/08/2014
(C.E.O.)

Issued By



S. Jadon
11/08/2014

SADHANA JADON
(Quality Manager)

Authorized Signatory

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Notes :

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