

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED
STANDARDISED GUARANTEED TECHNICAL PARTICULARS FOR
UNARMoured COPPER CONTROL CABLES

Sl.	Description	Parameters / Values				
1	Material Description	<u>CONTROL CABLES</u>				
2	a) Type and description of the cable with size	Copper conductor PVC Insulated un-armoured cables as per IS : 1554 (Part-I)				
	b) Standards which they conform to	IS : 1554(P-I), IS 8130, IS : 5831				
	The type tests should have been conducted not earlier than 5 years in the Standard third party laboratory. The Manufacturer shall produce the type test reports at the time of acceptance tests.					
	c) Quality of material & standard to which conform	BIS				
	The Manufacturer shall produce the valid BIS certification at the time of acceptance tests.					
3	CONDUCTOR (Sq.mm)	2 c x 2.5	4 c x 2.5	6 c x 2.5	10 x 2.5	12 c x 2.5
	a) Material	Stranded Copper conductor as per IS : 8130				
	b) Whether stranded	Yes				
	c) If so, number of strands (Approx)	7	7	7	7	7
	d) Nominal Diameter of each strand before stranding (mm)	0.67	0.67	0.67	0.67	0.67
	e) Max. resistance at 20 Deg. C (Ohms/kM)	7.41				
4	INSULATION					
	a) Material	PVC Type A as per IS : 5831				
	b) Nominal thickness (mm)	0.9	0.9	0.9	0.9	0.9
	c) Minimum tensile strength without ageing (N/mm2) and maximum % variation after ageing.	12.5 & ± 20 %				
	d) Minimum elongation at break without ageing (%) and maximum % variation after ageing.	150% & ± 20%				
	e) Minimum volume resistivity at					
	i) 27 Deg C (Ohm-Cm)	1 x 10 ¹³				
	ii) Max. rated temperature of 70 Deg. C (Ohm-Cm)	1 x 10 ¹⁰				
	f) Minimum insulation resistance constant at					
	i) 27 Deg C (Mega ohm kM)	36.7				
	ii) Max. rated temperature of 70 Deg. C (Mega ohm kM)	0.037				
	iii) Whether application of insulation is by way of extrusion.	Extrusion				

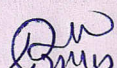
APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYP.

**STANDARDISED GUARANTEED TECHNICAL PARTICULARS FOR
UNARMoured COPPER CONTROL CABLES**

Sl.	Description	Parameters / Values				
5	INNER SHEATH					
	a) Material	PVC as per IS : 1554 (Part-I)				
	b) Minimum thickness of inner sheath (in mm)	0.3	0.3	0.3	0.3	0.3
	c) Whether method of application is by way of extrusion	Extrusion				
6	Interstices (or fillers)					
	a) Whether used in the formation of cable	Yes				
	b) Material	PVC				
7	OUTER SHEATH					
	a) Material	PVC ST-1 as per IS: 5831.				
	b) Nominal thickness (mm)	1.8	1.8	1.8	2.0	2.0
	c) Minimum tensile strength without ageing.	12.5 & $\pm 20\%$				
	d) Minimum elongation of break (%) and maximum variation after ageing (%)	150% & $\pm 20\%$				
	e) Whether method of application is by way of extrusion	Yes, Extrusion				
	f) Are the inner and outer sheaths extruded in a single operation out of the material intended for	As per IS : 1554 (Part-I)				
	g) Whether the PVC suitably treated for withstanding the working conditions.	YES				
	h) Colour	BLACK				
8	Physical parameters					
	a) Overall diameter of core (mm)	3.85	3.85	3.85	3.85	3.85
	b) Calculated diameter over laid up cores (mm)	7.7	9.3	11.55	15.4	16
	c) Calculated diameter under the outer sheath (mm)	8.3	9.9	12.15	16.0	16.6
	d) Overall diameter of the finished cable (mm)	11.9	13.5	15.75	20.0	20.6
	Tolerance in %	5%				

APPROVED FOR TURNKEY PROJECTS


CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOJHA/HYD

67

**STANDARDISED GUARANTEED TECHNICAL PARTICULARS FOR
UNARMoured COPPER CONTROL CABLES**

Sl.	Description	Parameters / Values				
9	Drum length (mtrs)/tolerance (%)	1000 +/- 10% ingeneral or as per the requirement incase of short lengths.				
	a) Apprx. Cable weight (kG/kM)	200	277	389	610	693
	b) Gross weight of the complete drum with cable (kG)	247	329	497	728	818
10	Electrical parameters					
	a) Rated voltage (volts)	1100 Volts				
	b) Voltage grade (volts)	1100 Volts				
	c) Whether suitable for earthed/Uneathed system	Both				
	d) Continuous current carrying capacity (Amps)					
	i) In Air	27	24	24	24	24
	ii) In ducts	27	24	24	24	24
	iii) In ground	32	27	27	27	27
	e) Short circuit current capacity for 1 sec.	284.5 Amps				
	f) Max. Conductor temperature during short circuit condition.	160 deg.C.				
11	Markings	As per IS:1554(Par-I) & "APTRANSCO" to be indented, printed or embossed with an interval of one meter throughout the cable.				
12	Identification	Cores shall be identified by different coloring of PVC insulation by adopting the following scheme:				
		a) 2 cores : Red and Black				
		b) 4 cores :Red, Yellow, Blue and Black				
		c) 6,10 &12 cores: Two adjacent core(counting and direction core) in each layer, blue and yellow remaining cores gray.				

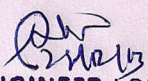


**Standardised Guaranteed Technical Particulars for
Unarmoured Copper Control Cables**

STD/GTP-DWG/Approval No. 201 / Revision No. 1

Prepared & Approved during January 2013

APPROVED FOR TURNKEY PROJECTS


CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDY.

1/17

1/17