

CLAUSE NO.	TECHNICAL SPECIFICATIONS																		
	7) LT POWER CABLES																		
	Attributes / Characteristics Item / Components / Sub System Assembly	Make, Type & T.C as per relevant standard	Dimension/surface finish	Mechanical properties	Chemical Composition	Spark Test(as applicable)	Electrical properties	Hot Set Test/ Eccentricity & Ovality	Lay length & Sequence	Armour coverage, cross over, looseness, gap between two wires	Sequential marking/ Batch marking/ surface finish/ cable length	T.S & elongation before & after ageing on outer sheath &	Thermal stability	Anti termite coating on wooden drums	Constructional requirements feature as per NTPC specification	Routine & Acceptance Tests as per relevant standard & NTPC specification	FRLS Tests		
		Aluminum (IS-8130)	Y	Y	Y	Y		Y											
		XLPE Compound (IS-7098)	Y		Y			Y	Y				Y						
		PVC insulation Compound (IS: 5831)	Y		Y			Y					Y	Y					
		FRLS PVC Compound (IS-5831, ASTM-D2843, IS10810(Part 58), IEC-60754 Part-1)	Y		Y								Y	Y				Y	
		Extrusion & curing /Manufacturing of Core (PVC / XLPE)		Y			Y		Y					Y					
		Core Laying								Y									
		Armour wire/strip	Y	Y	Y														
		Inner sheath	Y	Y															
		Armouring		Y							Y								
		Outer Sheathing		Y								Y							
		Power Cable (Finished) (IS-5831, ASTM-D2843, IS10810(Part 58), IEC-60754 Part-1, IEC 60332 part III cat B)								Y	Y	Y	Y	Y		Y	Y	Y	
		Wooden drum(IS-10418) /Steel Drum		Y											Y	Y			
		Notes: 1. This is an indicative list of tests / checks. The manufacturer is to furnish a detailed Quality Plan indicating the practice and procedure along with relevant supporting documents. 2. Make of all major Bought out items will be subject to NTPC approval.																	
		DEVELOPMENT OF 25 MW FLOATING SOLAR PV PROJECT AT NTPC SIMHADRI IN ANDHRA PRADESH				TECHNICAL SPECIFICATION BID DOC. NO:RE-CS-5746-004-9						F-1			PAGE 13				

CLAUSE NO.	TECHNICAL SPECIFICATIONS				एनटीपीसी NTPC	
	ROUTINE TESTS		Following routine tests shall be carried out on each drum of finished cables for all types (PVC / XLPE insulated) & sizes.			
	3)	Conductor Resistance test				
	4)	High voltage test				
	ACCEPTANCE TESTS		Following Acceptance tests shall be carried out on each size of each type (PVC / XLPE insulated) of cables, in the offered lot.			
	A) For Conductor (as per sampling plan mentioned in IS: 1554 / 7098)					
		1)	Annealing test (Copper)			
		2)	Tensile Test (Aluminum)			
		3)	Wrapping Test (Aluminum)			
		4)	Resistance test			
	B) For Armour Wires / Formed Wires (If applicable) (as per sampling plan mentioned in IS: 1554 / 7098)					
		1.	Measurement of Dimensions			
		2.	Tensile Tests			
		3.	Elongation Test			
		4.	Torsion Test For Round wires only			
		5.	Wrapping Test			
		6.	Resistance Test			
		7.	Mass of Zinc coating test For G S wires / Formed wires only			
		8.	Uniformity of Zinc coating For G S wires / Formed wires only			
		9.	Adhesion test For G S wires / Formed wires only			
		10.	Freedom from surface defects			
	C) For PVC / XLPE insulation & PVC Sheath (as per sampling plan mentioned in IS: 1554 / 7098)					
		1)	Test for thickness			
		2)	Tensile strength & Elongation before ageing (for tests after ageing see "D")			
		3)	Hot set test (For XLPE insulation)			
	D) Ageing test:					
			Criteria	Condition	Test Requirements	Remarks
	PVC insulation & outer sheath:		Samples as per relevant IS, from each size of cables in the offered lot, shall be tested for tensile strength & elongation (before ageing). Tensile & elongation testing shall preferably be done with a computerized	All sizes which meet the criteria	The size which has maximum negative deviation from type test report values will be put on accelerated ageing test. The samples shall be aged in air oven at temperature of 130°C+/-2°C for 5 hours and tested for TS & elongation. Acceptance norms shall	In case the size does not meet the requirement in accelerated ageing test then all sizes (which
DEVELOPMENT OF 25 MW FLOATING SOLAR PV PROJECT AT NTPC SIMHADRI IN ANDHRA PRADESH		TECHNICAL SPECIFICATION BID DOC. NO:RE-CS-5746-004-9		F-1	PAGE 14	

CLAUSE NO.	TECHNICAL SPECIFICATIONS				एनटीपीसी NTPC
		machine. The values will be compared with corresponding values mentioned in the Type Test report accepted by NTPC. These values of Tensile Strength & Elongation (before ageing) should be within +/- 15% of the corresponding values of Type Test report. (Please note that test values should be more than the minimum values indicated in relevant standard).		be as per IS.	had met the criteria) will be put on ageing test as per IS.
			Sizes which do not meet the criteria	Every size will be put on ageing test as per IS.	----
	XLPE insulation	Samples as per relevant IS, from each size of cables in the offered lot,will be put on ageing test as per IS.			
	E) Following tests will be carried out on completed cables as per IS on each size of each type (PVC / XLPE insulated)				
		1)	Insulation resistance test (Volume resistivity method)		
		2)	High voltage test		
	F) Following tests shall be carried out on only one size of offered lot (comprising of all sizes & types)				
		1)	Thermal stability test on PVC insulation and outer sheath		
		2)	Oxygen index test on outer sheath		
		3)	Smoke density rating test on outer sheath		
		4)	Acid gas generation test on outer sheath		
	G) Flammability test as per IEC 60332 - Part- 3 (Category- B) on completed cables as per following sampling plan:				
			This test will be carried out using composite sampling i.e. irrespective of size; cables of one particular type (i.e. armoured PVC insulated, unarmoured PVC insulated, armoured XLPE insulated, unarmoured XLPE insulated) will be bunched together, as per calculations in line with the IEC. All sizes of PVC & XLPE insulated, armoured & unarmoured cables shall be covered. For one particular type, cables with OD less than or equal to 30 mm shall be clubbed together in touching formation while cables with OD greater than 30 mm shall be clubbed together leaving a gap equal to OD of cable having least diameter. Cable OD shall be taken as nominal overall diameter as per NTPC approved datasheet.		
	H) Following tests shall be carried on one length of each size of each type (PVC / XLPE insulated) of offered lot:				
		1)	Constructional / dimensional check, surface finish, length measurement, sequence of cores, armour coverage, Gap between two consecutive armour wires / formed wires, Sequential marking, drum / Batch (outer sheath extrusion batch) number marking on sheath		
		2)	Measurement of Eccentricity & Ovality		
	DEVELOPMENT OF 25 MW FLOATING SOLAR PV PROJECT AT NTPC SIMHADRI IN ANDHRA PRADESH		TECHNICAL SPECIFICATION BID DOC. NO:RE-CS-5746-004-9		F-1