

Invitation to Bid No.:

Specification No.: R-828/2544

C Material, equipment, and specifications for L.T. CABLES WITH ALUMINIUM CONDUCTOR AND PVC INSULATION, FOR OVERHEAD LINE

C1 General material and packing instructions

Additional to the general instructions, the following shall be observed :

1a Scope

These specifications cover L.T. single-core cable with aluminium conductor and thermoplastic insulation based on PVC (polyvinyl chloride), for overhead line.

1b Standard

The PVC-INSULATED aluminium cables, overhead line cables, shall be manufactured and tested in accordance with the latest TIS 293 ; unless otherwise specified in these specifications.

1c Principal requirement

General

Special attention shall be taken in that the thermoplastic insulation shall be weatherproof, and not be affected by the tropical climate, even exposure to sunlight.

The overhead line cables shall be single-core type with compact stranded aluminium conductors and thermoplastic insulation based on PVC. The colour of insulation shall be Black. The cables shall be used for outdoor installation as overhead line cables in open-air on insulators with a maximum span of 50 m .

Marking

The surface of control cable outer sheath shall be marked in Thai language, a distance of about 50 cm. by printing in white, as follows :

“การไฟฟ้าส่วนภูมิภาค สายไฟฟ้าอลูมิเนียมหุ้มด้วยฉนวนโพลีไวนิลคลอไรด์ สำหรับ
ใช้กับแรงดันไฟฟ้าไม่เกิน 750 โวลต์ ขนาด A _____ ตร.มม., สัญญาเลขที่ B __, C
, D __, E __, F __”

Where

- A : The nominal cross-sectional area of conductor
- B : The purchase contract number
- C : Manufacturer's name and/or trade-mark
- D : PEA trade-mark, as the figure below.



- E : Year of manufacturer
- F : Other according to manufacturer's design

1d Packing

The cables shall be packed on non-returnable wooden reels with hub reinforcements. Reels shall be lagged with suitable wooden battens to protect the cables against damage. After lagging, the galvanized steel wire or steel strap shall be fitted to the battens over each flange of the reel. Overall outside diameter of reel shall not exceed 1 1/2 meter.

The wooden parts of reels shall be treated with water-borne wood preservatives, Chromated Copper Arsenate (CCA), according to Group 3 of TIS 515, see Table 1, to a dry net salt retention of 12.0 kg/m³.

Table 1
Active Ingredients of CCA

Description	TIS 515 - 2527		
	Group 3		
	Type 1	Type 2	Type 3
Copper, as CuO %	16.0 - 20.9	18.0 - 22.0	17.0 - 21.0
Chromium, as CrO ₃ %	59.4 - 69.3	33.0 - 38.0	44.5 - 50.5
Arsenic, as, As ₂ O ₅ %	14.7 - 19.7	42.0 - 48.0	30.0 - 38.0

The cable in each reel shall be supplied in production length with variation of $\pm 10\%$.
For cable sizes up to 185 mm² shall be supplied in reels as shown in Page 6 of 6 and
in production lengths specified in the Table 2 (see Page 5 of 6) .

Both terminals of cable in each reel shall be permanently marked with
manufacturer's symbol, for checking the original length.

An amount not exceeding 10% of the total length may be delivered in random
lengths, but any such length shall not be less than 50% of the production length on one
reel.

On acceptance, the measured length of cable in each reel shall not be less than the
packing length shown on the reel.

C2 Material and packing data to be given by bidder

2a Cable details

Exact description of cable construction.
Rated voltage of the cable in kV .
Dielectric testing voltage (r.m.s.) in kV .
Letter-number code according to TIS :
Nominal cross-sectional area of conductor in mm^2 .
Actual cross-sectional area of conductor in mm^2 .
Number of wires.
Diameter of wire in mm .
Overall diameter of conductor in mm .
Minimum conductor tensile load in N .
Maximum resistance of conductor at 20°C in Ω/km .
Weight resistivity of aluminium wire at 20°C in $\Omega\text{-g/m}^2$.
Weight of conductor in kg/km .
Thickness of conductor insulation in mm .
Minimum insulation resistance at 20°C and 60°C in $\text{M}\Omega\text{-km}$.
Outside diameter of cable in mm .
Maximum continuous current rating in open-air in A .
Maximum operating temperature of conductor in $^\circ\text{C}$.
Weight of cable in kg/km.

2b Illustration of the cable

An illustration shall be submitted, showing the conductor, and insulation.

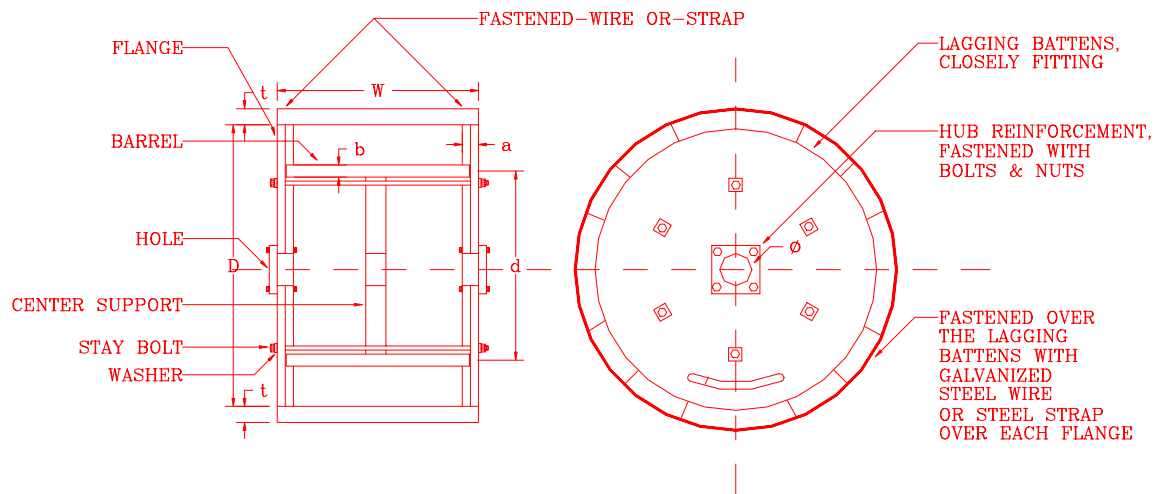
2c Packing detail

Packing method (shown by drawing(s), describe packing materials, details of wood treatment, name and composition of preservatives, and details of cable terminal marking).
Principal dimensions of reel in cm .
Gross weight of one reel in kg .
Net weight of one reel in kg .
Length of uncut cable per reel in m .

Table 2
Packing Details

PEA Material No.	Nominal cross-sectional area, mm ²	Reel size (mm)	Production length per reel m
02070000	25	1,000	3,000
02070001	35	1,000	3,000
02070002	50	1,000	2,000
02070003	70	1,000	1,500
02070004	95	1,000	1,000
02070005	120	1,400	2,000
02070006	150	1,400	2,000
02070007	185	1,400	1,500

WOODEN REELS



REEL SIZE mm	D mm	d (min) mm	W mm	a (min) mm	b (min) mm	t (min) mm	Ø mm	NUMBER OF STAY BOLTS (min)
-	-	-	-	-	-	-	-	-
1,000	980-1,020	500	660-700	50	19	25	75-100	6
1,400	1,380-1,420	710	875-915	63	25	38	75-100	6
1,800	1,780-1,820	965	880-920	75	35	38	75-100	6

Note :

1. Minimum clearance between cable and the lagging battens shall not be less than 25 mm .
2. Both ends of barrel battens shall be embedded in the flanges.
3. If PEA requests, the bidder has to state the reel manufacturer's name; and PEA reserves the right to observe the manufacturing process from time to time.

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C3 Schedule of detailed requirement

Item	PEA Material No.	Quantity	Description
1	02070000		Cable, overhead line, compact stranded aluminium conductor, single-core, PVC insulation, 750 V, 70 °C, nominal cross-sectional area 25 mm ² .
2	02070001		Ditto as Item 1, but nominal cross-sectional area 35 mm ² .
3	02070002		Ditto as Item 1, but nominal cross-sectional area 50 mm ² .
4	02070003		Ditto as Item 1, but nominal cross-sectional area 70 mm ² .
5	02070004		Ditto as Item 1, but nominal cross-sectional area 95 mm ² .
6	02070005		Ditto as Item 1, but nominal cross-sectional area 120 mm ² .
7	02070006		Ditto as Item 1, but nominal cross-sectional area 150 mm ² .
8	02070007		Ditto as Item 1, but nominal cross-sectional area 185 mm ² .
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Manufacturer :
Trade-mark :
Country of origin :
Bidder :
Bid No.:
Date :

C4 Price schedule

Item	PEA Material No.	Catalogue No.	Description	Quantity	Unit Cost (See details & conditions attached)	Total Cost (See details & conditions attached)
1	02070000		Cable, overhead line, compact stranded aluminium conductor, single-core, PVC insulation, 750 V, 70 °C, nominal cross-sectional area 25 mm ² .			
2	02070001		Ditto as Item 1, but nominal cross-sectional area 35 mm ² .			
3	02070002		Ditto as Item 1, but nominal cross-sectional area 50 mm ² .			
4	02070003		Ditto as Item 1, but nominal cross-sectional area 70 mm ² .			
5	02070004		Ditto as Item 1, but nominal cross-sectional area 95 mm ² .			
6	02070005		Ditto as Item 1, but nominal cross-sectional area 120 mm ² .			
7	02070006		Ditto as Item 1, but nominal cross-sectional area 150 mm ² .			
8	02070007		Ditto as Item 1, but nominal cross-sectional area 185 mm ² .			
	II					