005:2022

CEB

SPECIFICATION

LOW VOLTAGE INSULATED WIRES

CEYLON ELECTRICITY BOARD

SRI LANKA

Telephone: +94 11 232 8051

Fax: +94 11 232 5387

CONTENTS

LOW VOLTAGE INSULATED WIRES

1.0 SCOPE

This specification covers design, manufacture and testing of the following PVC/XLPE Insulated Aluminium/Copper Wires for Low Voltage applications.

(a) Twin Service Main Wire of 10/16 mm^2 Al Conductor, phase core PVC insulated, neutral core bare and both PVC sheathed together.

(b) Twin Service Main Wire of 10/16 mm^2 Al Conductor, both cores PVC insulated, and PVC sheathed together.

(c) Twin Service Main Wire of 10/16 mm^2 Al Conductor, phase core XLPE insulated, neutral core bare and both PVC sheathed together.

(d) Twin Service Main Wire of 10/16 mm^2 Al Conductor, both cores XLPE insulated, and PVC sheathed together.

(e) Single Wire of 16/35/50/70/95/120/150/185/240/300/500mm^2 Copper Conductor, Brown / Black/ Grey/ Blue coloured PVC insulated PVC sheathed.

(f) Single Wire of 16/35/50/70/95/120/150/185/240/300/500mm^2 Copper Conductor, Brown / Black/ Grey/ Blue coloured XLPE insulated PVC sheathed.

(g) Earthing Conductor 50mm^2 Copper, PVC insulated.

2.0 SYSTEM PARAMETERS

(a)	Nominal voltage (U)	400V ph to ph /230V ph to Neutral
(b)	System highest voltage (U_m)	440 V ph to ph /250V ph to Neutral
(c)	System frequency	50 Hz
(d)	Method of earthing	Solidly earthed neutral at substations
(e)	Maximum system fault current and duration	25 kA/ 1 second

3.0 SERVICE CONDITIONS

(a)	Annual average ambient temperature	30 °C
(b)	Maximum ambient temperature	40 °C
(c)	Maximum relative humidity	90%
(d)	Environmental conditions	Humid tropical climate with heavily polluted atmosphere
(e)	Operational altitude	From M.S.L. to 1900 m above M.S.L.
(f)	Isokeraunic (Thunder days) level	100 days

4.0 APPLICABLE STANDARDS

The equipment and components supplied shall be in accordance with the latest editions of the standards specified below and amendments thereof.

Conductor		
(a)	BS 2627: 1970	Specification for Wrought Aluminium -for Electrical Purposes- Wire
(b)	BS EN 60228:2005	Conductors of Insulated Cables
(c)	IEC 61089: 1991	Round wire concentric lay overhead electrical stranded conductors

PVC Insulated Cable		
(a)	BS EN/IEC 60811.1: 1995	Insulating and sheathing materials of electric cables. Common test methods. General application. Measurement of thickness and overall dimensions. Test for determining the mechanical properties.
(b)	IEC 60502-1: 2009	Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) – Part 1: Cables for rated voltages of 1 kV (Um = 1,2 kV) and 3 kV (Um = 3,6 kV)
(c)	IEC 60227-1:2007	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 1: General requirements
(d)	IEC 60227-3 :1997	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 3: Non-sheathed cables for fixed wiring

XLPE Insulated Cable		
(e)	IEC 60502-1: 2009	Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) – Part 1: Cables for rated voltages of 1 kV (Um = 1,2 kV) and 3 kV (Um = 3,6 kV)

Material conforming to other International Standards which are not less stringent than the Standards stipulated above may be offered. When such alternative Standards are used, reference to such Standards shall be quoted and English language copies of such Standards shall be provided with the offer.

However, in the event of discrepancy, details given in this CEB specification supersede above standards.

5.0 BASIC FEATURES

5.1. Conductor

5.1.1. Aluminium Conductor Properties

Aluminium Wires shall:

(a) be made from ¾ hard drawn Aluminium (H6) wires as per BS 2627.

(b) conform to the Quality of Aluminium Re-draw rods as in CEB Specification 001:2018.

5.1.2. Copper Conductor Properties

(a) The conductor shall be stranded plain annealed copper of class 2 as per BS EN 60228.

5.1.3. Minimum designed withstand fault current and duration for conductors

Conductor Details	Minimum fault current/duration	
	XLPE insulation	PVC insulation
Copper conductors of 16 mm^2	2.3 kA / 1s	1.8 kA / 1s
Copper conductors of 35 mm^2	5 kA / 1s	4 kA / 1s
Copper conductors of 50 mm^2	7.2 kA / 1s	5.8 kA / 1s
Copper conductors of 70 mm^2	10 kA / 1s	8 kA / 1s
Copper conductors of 95 mm^2	13.6 kA / 1s	10.9 kA / 1s
Copper conductors of 120mm^2	17.2 kA / 1s	13.8 kA / 1s
Copper conductors of 150 mm^2	21.5 kA / 1s	17.3 kA / 1s
Copper conductors of 185 mm^2	25 kA / 1s	21.3 kA / 1s
Copper conductors of 240 mm^2 and above	25 kA / 1s	25 kA / 1s
Service main wires of 10 mm^2	0.9 kA / 1s	0.7 kA / 1s
Service main wires of 16 mm^2	1.5 kA / 1s	1.2 kA / 1s

5.1.4. Technical Parameters of Conductors

Conductor Cross Section (mm^2)	**Strands**		**DC Resistance at 20^{0}C (Ω/km)**		**Tensile Strength of material(N/mm^2)**
	Al	**Cu**	**Al**	**Cu**	**Al**
10	7/1.35	-	2.8264	-	125-165
16	7/1.70	7/1.70	1.7665	1.150	
35	-	19/1.53	-	0.524	-
50	-	19/1.78	-	0.387	-

Conductor Cross Section (mm^2)	Strands		DC Resistance at 20^0C (Ω/km)		Tensile Strength of material(N/mm^2)
	Al	Cu	Al	Cu	Al
70	-	19/2.14	-	0.268	-
95	-	19/2.52	-	0.193	-
120	-	37/2.03	-	0.153	-
150	-	37/2.25	-	0.124	-
185	-	37/2.52	-	0.0991	-
240	-	61/2.25	-	0.0754	-
300	-	61/2.52	-	0.0601	-
500	-	61/3.20	-	0.0366	-

5.2. PVC Insulated Wires

(a)	Insulation Type	Type PVC/A as per IEC 60502-1 for clause 1.0 item (a)-(f) and Type PVC/C as per IEC 60227-3 for clause 1.0 item (g)
(b)	Tensile Strength of as of manufactured	12.5 N/ mm^2
(c)	Tensile Strength variation after ageing (Maximum)	±25% for PVC/A and ±20% for PVC/C
(d)	Elongation at break as of manufactured	150 % for PVC/A and 125% for PVC/C
(e)	Elongation at break variation after ageing (Maximum)	±25% for PVC/A and ±20% for PVC/C
(f)	Colour of the insulation of 1.0 (a)	Phase – Brown
(g)	Colour of the insulation of 1.0 (b)	Black and Grey
(h)	Colour of the insulation of 1.0 (e)	Brown/Black/Grey/Blue as per the schedule of prices
(i)	Colour of the insulation of 1.0 (g)	Green and Yellow strips
(j)	Laying of cores of 1.0 (a) and (b)	Parallel

5.3. XLPE Insulated Wires

(a)	Insulation Type	Type XLPE as per IEC 60502-1
(b)	Tensile Strength of as of manufactured	12.5 N/ mm^2
(c)	Tensile Strength after ageing	12.5 N/ mm^2 with max. Variation ±25%
(d)	Elongation at break as of manufactured	200 %
(e)	Elongation at break after ageing	125 % with max. Variation ±25%
(f)	Colour of the insulation of 1.0 (c)	Phase – Brown
(g)	Colour of the insulation of 1.0 (d)	Black and Grey
(h)	Colour of the insulation of 1.0 (f)	Brown/Black/Grey/Blue as per the schedule of prices
(i)	Laying of cores of 1.0 (c) and (d)	Parallel

5.4. Sheath Material

		1.0 (a), (b) and (e)	1.0 (c), (d) and (f)
a)	Sheath type	PVC ST1 or ST2 as per IEC 60502-1	PVC ST2 as per IEC 60502-1
d)	Tensile Strength of as of manufactured	12.5 N/ mm^2	
e)	Tensile Strength after ageing	12.5 N/ mm^2 with max. Variation ±25%	
f)	Elongation at break as of manufactured	150 %	
g)	Elongation at break after ageing	150 % with max. Variation ±25%	
h)	Colour of the sheath	Black	

In case of 10mm^2/16 mm^2 Aluminium wires, the sheath shall separate the insulated conductors by a minimum thickness of 4.6 mm to provide additional insulation between conductors. Groove of thickness not less than 1mm shall be provided on the sheath between the conductors so that both could be separated easily as per drawing No DS&S/2018/005.

5.5. Thicknesses of Insulation and Sheaths

Insulation and Sheath thicknesses shall be as per IEC 60502-1 standard for clause 1.0 item (a)-(f). Insulation thickness for 1.0 item (g) shall be as per IEC 60227-3.

6.0 REQUIREMENTS FOR SELECTION

6.1. Quality Assurance

The manufacturer shall possess ISO 9001:2015 or latest Quality Assurance Certification valid throughout the delivery period of this bid, for the manufacture of Low Voltage Insulated Wires for the plant where manufacturing is being done. The Bidder shall furnish a copy of the ISO certificate certified as true copy of the original by the manufacturer, along with the offer.

6.2. Manufacturing Experience

The manufacturer shall have minimum of ten (10) years experience in manufacturing Low Voltage Insulated Wires. Out of this period XLPE or PVC insulated Low Voltage Wire types should have been supplied successfully outside the country of the manufacturer for minimum of five (5) years for usage in utilities.

However, the manufacturers who have supplied Low Voltage Insulated Wires satisfactorily over the last five years, whose cumulative quantities either equal or exceeding the quantity in current bid, will be considered to have complied this clause.

6.3. Type Tests

Type Test Certificates conforming to the above referred standards or any other international standard which is not less stringent, issued by:

Either

(a) an accredited independent testing laboratory acceptable to the CEB or

(b) an accredited or independent testing laboratory acceptable to the CEB where the type tests have been witnessed by CEB or a reputed independent body acceptable to CEB

shall be furnished with the offer. Type Test Certificates shall clearly indicate the relevant standard, items concerned, showing the manufacturers identity, type No. /catalogue No. and basic technical parameters. In case if the submitted type tests are according to any other international standard which is not less stringent than the specified, then the copy of the used standard in English shall be submitted with offer.

Proof of accreditation and accredited scope by a national/ international authority shall be forwarded with the offer. Test certificates shall be complete including all the pages as issued by the testing authority. Type test certificates shall be in English language. Parts of test certificates shall not be acceptable.

Following type tests mentioned in the table are applicable for insulated wire types stipulated in clause 1.0 and below criteria shall be followed when submitting type test certificates.

For item (a) to (d) in clause 1.0: Type test certificates are acceptable for conductor sizes equal or higher (max. 16mm^2) than that of the offered conductor with same design configuration (insulation, sheath and voltage designation).

For item (e) to (g) in clause 1.0: Manufacturer shall provide type test certificates for the offered conductor size. However, if the manufacturer is unable to provide type test certificates for offered conductor size, type test certificates are required for conductor sizes smaller and higher than that of the offered conductor with same design configuration (insulation, sheath and voltage designation) to qualify.

Type Tests	Item type as per Clause 1.0						
	1.0 (a)	1.0 (b)	1.0 (c)	1.0 (d)	1.0 (e)	1.0 (f)	1.0 (g)
Electrical Type Tests							
Insulation resistance measurement at ambient temperature *(IEC 60502-1)*	√	√	-	-	√	-	-
Insulation resistance measurement at maximum conductor temperature in normal operation *(IEC 60502-1)*	√	√	√	√	√	√	-
Voltage test for 4 h *(IEC 60502-1)*	√	√	√	√	√	√	-
Resistance of conductors (IEC 60227-3)	-	-	-	-	-	-	√
Voltage test at 2 500 V (IEC 60227-3)	-	-	-	-	-	-	√
Insulation resistance at 70 °C (IEC 60227-3)	-	-	-	-	-	-	√
Non- Electrical Type Tests							
Measurement of thickness of insulation *(IEC 60502-1)*	√	√	√	√	√	√	-
Measurement of thickness of non-metallic sheaths *(IEC 60502-1)*	√	√	√	√	√	√	-
Tests for determining the mechanical properties of insulation before and after ageing *(IEC 60502-1)*	√	√	√	√	√	√	-
Tests for determining the mechanical properties of non-metallic sheaths before and after ageing *(IEC 60502-1)*	√	√	√	√	√	√	-
Additional ageing test on pieces of completed cables *(IEC 60502-1)*	√	√	√	√	√	√	-
Loss of mass test on PVC sheaths of type ST2 *(IEC 60502-1)*	-	-	√	√	-	√	-
Pressure test at high temperature on insulations and non-metallic sheaths *(IEC 60502-1)*	√	√	√	√	√	√	-

Type Tests	Item type as per Clause 1.0						
	1.0 (a)	1.0 (b)	1.0 (c)	1.0 (d)	1.0 (e)	1.0 (f)	1.0 (g)
Test for resistance of PVC insulation and sheaths to cracking (heat shock test) *(IEC 60502-1)*	√	√	-	-	√	-	-
Hot set test for EPR, HEPR and XLPE insulations and elastomeric sheaths *(IEC 60502-1)*	-	-	√	√	-	√	-
Water absorption test on insulation *(IEC 60502-1)*	√	√	√	√	√	√	-
Flame spread test on single cables *(IEC 60502-1)*	√	√	√	√	√	√	-
Shrinkage test for XLPE insulation *(IEC 60502-1)*	-	-	√	√	-	√	-
Joints in Aluminium wires *(IEC 61089)*	√	√	√	√	-	-	-
Stress–strain curves *(IEC 61089)*	√	√	√	√	-	-	-
Breaking strength of conductor *(IEC 61089)*	√	√	√	√	-	-	-
Provisions covering constructional and dimensional characteristics (IEC 60227-3)	-	-	-	-	-	-	√
Mechanical properties of insulation (IEC 60227-3)	-	-	-	-	-	-	√
Pressure test at high temperature (IEC 60227-3)	-	-	-	-	-	-	√
Elasticity at low temperature (IEC 60227-3)	-	-	-	-	-	-	√
Heat shock test (IEC 60227-3)	-	-	-	-	-	-	√
Test of flame retardance (IEC 60227-3)	-	-	-	-	-	-	√

7.0 INFORMATION TO BE FURNISHED WITH THE OFFER

The following shall be furnished with the offer.

(a) Following technical details in English clearly identifying the offered items, but not limited to:

(i) Comprehensive catalogues,

(ii) Dimensional drawings,

(iii) Schematic diagrams,

(iv) Calculations, graphs and tables

(v) Operational literature,

(b) ISO 9001:2015 or latest Quality Assurance Certificate in accordance with clause 6.1.

(c) Manufacturer shall furnish a list of supplies with supplied items, purchaser (specifying address contact persons and contact details, country), year & quantity to prove his manufacturing experience and sales outside the country in accordance with Clause 6.2.

(d) Type Test Certificates in accordance with the clause 6.3.

(e) Duly filled and signed 'Annex - B: Schedule of Technical Requirements and Guaranteed Technical Particulars'.

Not furnishing above documents and details may result in the offer being rejected.

8.0 PERFORMANCE GUARANTEES AND WARRANTY

Manufacturer should provide CEB a warranty ensuring that wires supplied meet the specification and any wire found to be defective shall be replaced without extra cost during the first year after the final delivery to CEB stores.

9.0 SAMPLES

Two specimens of length 2 meters of samples from each category offered shall be supplied with the offer.

10.0 SPARES

Not Applicable.

11.0 PACKING AND LABELLING/MARKING

11.1. Packing

The Insulated Low Voltage Wire shall be delivered in 100 meter or 250-meter Coils/Drums (maximum allowable length variation of ± 5%) as per the schedule of prices and wrapped in polythene. For wire sizes above 70mm^2 wires shall be supplied in drums suitable for easy handling. Each coil shall bear a tag under the polythene wrappings showing the following particulars.

(a) Manufacturer's Name or Trademark,
(b) Type of cable
(c) Core size
(d) Length of cable
(e) Colour of Insulation /sheath.
(f) Net weight/Gross weight.

The final packing requirements for the overall consignment are given in the bid document.

11.2. Identification and Marking

The outer sheath/insulation of the Low Voltage Insulated wire, at each 550mm interval (or less),

shall be embossed/printed indelibly, legibly and in a weatherproof and abrasion proof manner as follows:

(a) the word "CEB"
(b) Ratings: voltage U_0/U (U_m) /Conductor Size
(c) Standard adopted
(d) year of manufacture, manufacturer's name or trade mark, warranty period
(e) Other markings stipulated in the standards

12.0 INSPECTION AND TESTING

12.1. Routine Tests

The Routine Test Certificates conforming to the relevant standards (depending on the choice of the applicable standards) shall be furnished for the observation of the Engineer appointed by CEB at the time of inspection. In addition, the routine test certificates shall be sent with the shipment of wires.

12.2. Inspection

The Successful bidder shall make necessary arrangements for inspection by an Engineer appointed by the CEB and also to carry out in his presence necessary Acceptance tests on procured item and material without any additional cost. Acceptance test reports shall be a part of the shipping document. CEB may waive off the inspection either with the condition of witnessing the acceptance tests by an independent body acceptable to CEB or completely. In such a situation a notice of waive off will be issued in advance to the supplier.

12.3. Acceptance Tests

Unless specified below, visual inspection, dimensional checks, sample tests specified in the relevant standards, selected type tests and the routine tests conducted for the selected sample in addition to the complete routine test reports shall form the acceptance test report.

Following acceptance tests as per IEC 60502-1, IEC 60227-3 and IEC 61089 shall be done at the inspection by CEB Engineers;

Acceptance Tests	1.0 (a)	1.0 (b)	1.0 (c)	1.0 (d)	1.0 (e)	1.0 (f)	1.0 (g)
Conductor examination *(IEC 60502-1)*	√	√	√	√	√	√	-
Check of dimensions *(IEC 60502-1)*	√	√	√	√	√	√	-
Hot set test for EPR, HEPR and XLPE insulations and elastomeric sheaths *(IEC 60502-1)*	-	-	√	√	-	√	-
Conductor resistance as per IEC 60228	-	-	-	-	√	√	-
Conductor resistance as per BS 2627	√	√	√	√	-	-	-

Acceptance Tests	1.0 (a)	1.0 (b)	1.0 (c)	1.0 (d)	1.0 (e)	1.0 (f)	1.0 (g)
Resistance of conductors (IEC 60227-3)	-	-	-	-	-	-	√
Voltage test at 2500 V (IEC 60227-3)	-	-	-	-	-	-	√
Checks on cable markings and colour of insulations and sheaths	√	√	√	√	√	√	√
Checking of compliance with constructional provisions as per IEC 60227-3	-	-	-	-	-	-	√
Cross section area of the conductor (IEC 61089)	√	√	√	√	-	-	-
Conductor diameter (IEC 61089)	√	√	√	√	-	-	-
Linear density-Mass per unit length (IEC 61089)	√	√	√	√	-	-	-
Breaking strength of wires (IEC 61089)	√	√	√	√	-	-	-
Surface condition (IEC 61089)	√	√	√	√	-	-	-
Lay ratio and direction of lay (IEC 61089)	√	√	√	√	-	-	-

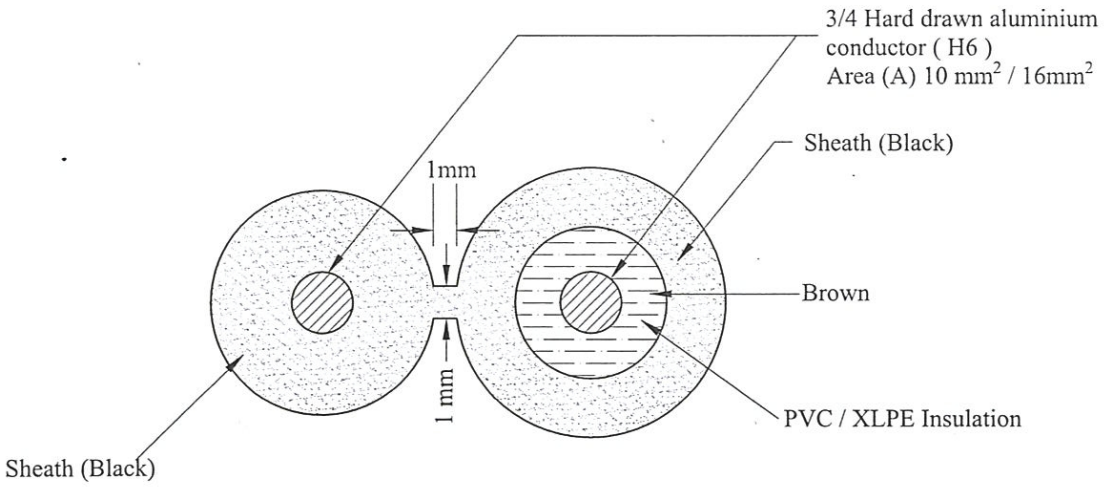
13.0 ANNEXES

Annex – A : Design of Twin Service Main Wire

Annex – B : Price Variation

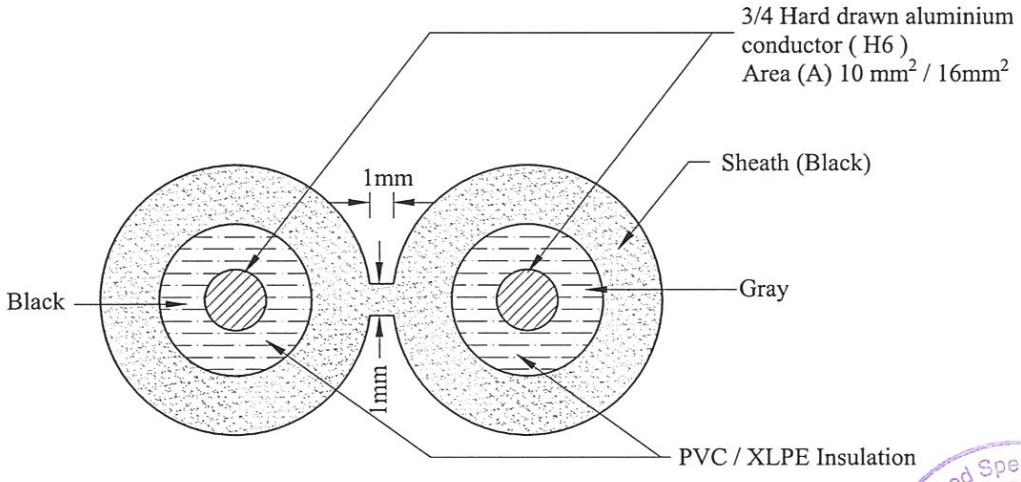
Annex – C : Schedule of Technical Requirements and Guaranteed Technical Particulars

Annex – D : Non-Compliance Schedule



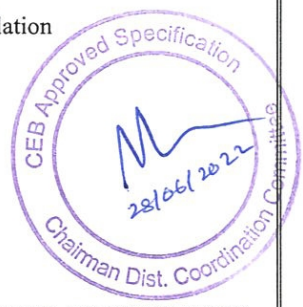
(a) TWIN SERVICE MAIN WIRE

(PHASE CORE INSULATED, NEUTRAL CORE BARE & BOTH SHEATHED)



(b) FLAT TWIN SERVICE MAIN WIRE

(BOTH CORES INSULATED AND SHEATHED)



ALL DIMENSIONS ARE IN MILLIMETRES

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : NOT TO SCALE
	DESIGN OF TWIN SERVICE MAIN WIRE	DRAWN : HARSHA
		DATE : MAR-2022
	DESIGNED BY / APPROVED BY	DRG. NO : DS&S/2022/005
DISTRIBUTION COORDINATION BRANCH	EE (DC) / CHAIRMAN, SPECIFICATION COMMITTEE	CAD NO :

ANNEX- B

PRICE VARIATION

The Bidders shall forward their offers on the basis of the Price Variation stipulated below.

1.0 BASIS OF THE OFFER

(a) Suppliers of Low Voltage Insulated Wires are required to make their offers on the basis of a Base Price plus a Fixed Price Margin.

(b) The Base Price shall be the LME Official Settlement Price (Cash Official Offer Price) of Aluminium High Grade 99.7% and Copper Grade A, at London Metal Exchange (LME) in US Dollars on the 14th day before the closing of Bids (exclusive of the bid closing date) or the previous working day if that day is a non working day at the LME.

(c) The Fixed Price Margin shall be quoted in the currency of choice of the Bidder.

Accordingly, FOB Price of foreign Bidders offering cables from outside the country and the ex-factory price of Local Bidders shall be computed **for the evaluation as;**

$$\{A_0 \times MT1 \times US_0 + FP \times CC_0\} \times TL$$

Where;

A_0 - Base Price which is the LME Official Settlement Price (Cash Official Offer Price) of Aluminium High Grade 99.7% in case of Aluminium conductors or Copper Grade A in case of copper conductors, in US Dollars per Metric ton at the LME on the fixed date [Clause(1 b)]

FP - Fixed Price Margin per kilometre of offered Low Voltage Insulated Wire in the currency allowed under Clause 1(c) above.

MT1 - Quantity of High Grade Aluminium 99.7% in case of Aluminium conductors or Copper Grade A in case of copper conductors in Metric Ton for the manufacture of one kilometre of offered Low Voltage Insulated Wire considered for bid price.

TL - Total Length in kilometres of Low Voltage Insulated Wire offered.

CC_0 - Currency Conversion rate from the currency of choice of the Bidder to LKR prevailing on the 14th day before Bid opening.

US_0 - Currency Conversion rate from the US Dollars to LKR prevailing on the 14th day before Bid opening.

2.0 AWARD PRICE

(a) The FOB Award Price of foreign Bidders offering Low Voltage Insulated Wires shall be computed as;

$\{A_1$ x MT1x TL$\}$ in US Dollars + **[FP x TL]** in the currency of choice quoted.

(b) The Ex-factory Award Price of Local Bidders offering Low Voltage Insulated Wires shall be computed as;

$\{A_1$ x MT1x TL x $US_1\}$ + (FP x TL x CC_1) in LKR

Where;

A_1 - Base Price which is the LME Official Settlement Price (Cash Official Offer Price) of Aluminium High Grade 99.7% in case of Aluminium conductors or Copper Grade A in case of copper conductors, in US Dollars per Metric ton at the LME at the 3rd working day immediately after the day of award.

FP - Fixed Price Margin per kilometre of Low Voltage Insulated Wires in the currency of choice.

MT1 - Quantity of High Grade Aluminium 99.7% in case of Aluminium conductors or Copper Grade A in case of copper conductors in Metric Ton for the manufacture of one kilometre of Low Voltage Insulated Wires considered for bid price.

TL - Total Length in kilometres of Low Voltage Insulated Wires awarded.

CC_1 - Currency Conversion rate from the currency of choice of the Bidder to LKR prevailing on the 3rd working day immediately after the day of award.

US_1 - Currency Conversion rate from the US Dollars to LKR prevailing on the 3rd working day immediately after the day of award.

Intimation of the award will be faxed/ e-mailed to the successful Bidder and or to his agent in Sri Lanka on the same day of the award.

3.0 CONVERSION OF CURRENCY

(a) For the purpose of the evaluation the Prices A_o in US Dollars and the Fixed Price Margin (FP) in the currency of choice of the Bidder will be converted to LKR at the official Selling Exchange Rate of the Central Bank of Sri Lanka prevailing on the 14th day before closing of bids.

(b) The payment for the foreign Bidders for supply of Low Voltage Insulated Wires will be made at the contract price in the currency quoted for the Fixed Price Margin (FP) .The metal base prices in US Dollars will be converted to the currency of the FP at the official Selling Exchange rate at the Central Bank of Sri Lanka prevailing at the 3rd working day immediately after the day of award.

(c) The payment for local bidders for the supply of Low Voltage Insulated Wires will be made in LKR. The Prices of Aluminium or Copper in US Dollars will be converted to LKR at the official Selling Exchange rate at the Central Bank of Sri Lanka prevailing on the 3rd working day immediately after the day of award.

4.0 VARIATION FIGURES

The Bidders shall furnish;

(i) Fixed Price Margin (FP) for manufacture of one kilometre of Low Voltage Insulated Wires in the currency allowed in Clause 1(c)

(ii) Weight in metric tons of High Grade 99.7% Aluminium in case of Aluminium conductors or Copper Grade A in case of copper conductors (MT1) required for the manufacture of one kilometre of Low Voltage Insulated Wires

in the price schedule.

....

Signature and seal of the Manufacturer **Date**

I/We certify that the above data are true and correct

....

Signature and seal of the Bidder **Date**

CEB Approved Specification
28/06/2022
Chairman Dist. Coordination Committee

ANNEX- C

SCHEDULE OF TECHNICAL REQUIREMENTS AND GURANTEED TECHNICAL PARTICULARS

(CEB Requirements shall be filled by the procurement entity and information of the offer shall be filled by the manufacturer for each size/type of cable offered)

			CEB Requirement	Offered
1.	Name of the Manufacturer			
2.	Country of Origin			
3.	Rated Voltage category, U_0/U (U_m)		230V/400V (440V)	
4.	Applicable Standards		As per clause 4.0	
5.	Nominal cross-sectional area	mm^2		
6.	Designed Fault Current and duration for conductor	kA/s	As per clause 5.1.3	
7.	Conductor			
	(a) Conductor Material		As per clause 5.1	
	(b) Diameter	mm		
	(c) Number of strands	Nos.		
	(d) Number of Cores			
	(e) Shape			
	(f) Type			
	I. Solid / Stranded		Stranded	
	II. Compact / Non compact			
	(g) Max. DC resistance at 20°C	Ω/km	As per clause 5.1	
	(h) Diameter of the compacted bare conductor	mm		
	(i) Tensile strength of the conductor	N/mm^2		
	(j) Result of wrapping Test			
	(k) Current carrying capacity in air at 30°C	A		
	(l) Whether conductor material conforms with the CEB specification 001:2018, in case of Aluminium Conductors stipulated in this specification?	Yes/No		
8.	Insulation			
	(a) Material		As per Clause 5.2, 5.3 and 5.5	
	(b) Thickness of insulating sheath	mm		
	(c) Smallest measure of thickness	mm		
	(d) Tensile Strength	N/mm^2		
	(e) Tensile Strength after ageing	N/mm^2		
	(f) Elongation at break (%)			

	(g) Elongation at break after ageing (%)			
	(h) Resistance to cracking			
	(i) Colour/s of the insulation			
9.	Sheath			
	(a) Material			
	(b) Thickness of insulating sheath	mm	As per Clause 5.4 and 5.5	
	(c) Smallest measure of thickness	mm		
	(d) Tensile Strength	N/mm^2		
	(e) Elongation at break (%)			
	(f) Colour of the sheath			
10.	Approximate weight of complete cable	kg/ km		
11.	Minimum bending radius of Complete Conductor	mm		
12.	Whether markings provided on oversheath conform to Clause 11.2?	Yes/No	Yes	
13.	Standard cable length of a coil/drum	m	As per the price schedule	
14.	Whether a certified copy of ISO 9001:2015 or latest furnished with the offer?		As per clause 6.1	
15.	Whether the entire Type Test Certificates in accordance with clause 6.3 furnished with the offer?	Yes/No	Yes	
16.	Whether bidder agrees to do type tests as acceptance tests if the type tests provided in the offer are from BS 6004 or BS 6346?	Yes/No	Yes	
17.	Whether all information provided as per clause 7.0?	Yes/No	Yes	

....

Signature of the Manufacturer and seal **Date**

I/We certify that the above data are true and correct

....

Signature of the Bidder and seal **Date**

CEB Approved Specification
28/06/2022
Chairman Dist. Coordination Committee

Annex – D

Non-Compliance Schedule

On this schedule the bidder shall provide a list of non-compliances with this specification, documenting the effects that such non-compliance is likely to have on the equipment life and operating characteristics. Each non-compliance shall be referred to the relevant specification clause.

Clause No.	Non-Compliance

....

Signature of the Manufacturer **Date**

I/We certify that the above data are true and correct

....

Signature of the Bidder and seal **Date**