

SUPPLY OF 11 KV COPPER CABLES

TECHNICAL SPECIFICATIONS FOR 11 KV, 3CORE, 185SQ.MM. CU / SC / XLPE / SC / SWA / PVC CABLES

1.2.2.2 Cross Linked Polyethylene (XLPE) Insulated Cable

The cable shall carry without damage or undue stress a fault current of 31.5 Kilo Amps. for 1.25 seconds after a continuous period on full load. The cable shall comply with I.E.C 60502 –2 or equivalent .

The conductors shall be round stranded and shall consist of high purity copper having a conductivity of not less than 100% International standard. The conductors shall fully comply with BS 6360 or equivalent. The surface of the individual strands shall be smooth and clean before the insulation is applied. The cross-sectional area of each of the conductors of the cable shall not be less than 185 sq. mm. and the conductors shall be compacted.

The insulation shall be cross-linked polyethylene applied simultaneously with the inner and outer semi conducting screens in a common head by a triple extrusion process. The cross linking must be carried out by a dry nitrogen curing. Steam curing is not acceptable. The insulation shall be free from any contaminants larger than 0.25 mm. in its largest dimension or porosities or voids larger than 0.13 mm. The maximum number of voids between 0.05 mm and 0.13 mm allowed shall be 30 voids per cubic inch of insulation. In plant, repairs of the insulation are prohibited unless specifically agreed by the Purchaser.

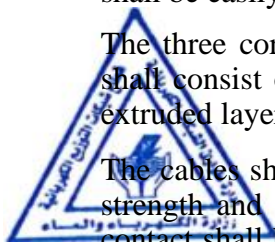
The conductors shall be screened by a semi-conducting screen. This layer shall consist of black semi-conducting thermoplastic or thermosetting material, and shall be easily removable from the conductor. The layer shall have an average thickness as per relevant international standard and shall be cylindrical.

A similar semi-conducting screen shall be extruded over the insulation and shall be easily removable from the insulation without scratching the surface.

The three cores shall be laid up together with suitable fillers. The bedding shall consist of at least two layers of a suitable semi-conducting tape or an extruded layer of semi-conducting material.

The cables shall be armored with galvanized steel wires to give it mechanical strength and also acts as a low resistance earth return conductor. Electrical contact shall be maintained between the cores screens and the earthed armour through the conductive bedding.

The cable shall have an overall extruded sheath of PVC type 9 (BSS 7655 section 4.2) or equivalent suitable for use in the specified site conditions. The sheath shall be red in colour.



The outersheath of the cables shall have marking by embossing or indenting "MEW" along with the manufacturers name with upright block letters of minimum 3 mm height at every two (2) meters of their length.

The manufacturer must have ISO 9001; Quality management standard, ISO 14001 Environment management standard and BS OHSAS 18001 occupational Health and Safety Management System and submit copies of these certificates with the offer.

In addition, the type test certificate from internationally recognized testing laboratory must also be submitted.

2.2.2.2 Identification of Cores:

The cores shall be identified by numbers (as given in B.S. 6622) or equivalent. Numbers shall be either printed in line in a colour contrasting with the insulation or by applying a thin coloured tape longitudinally along each core which should be visible. They shall be applied in such a manner that the cores will remain identifiable after wiping with a dry or wet cloth. The spacing shall be such that each number, both as a numerical and a word, is repeated intervals not greater than 70 mm.

3.2.2.2 Performance of the cable :-

In case of any fault develop (within three (3) years from the date of supply) on the cable due to manufacturing defect, the same has to be made good immediately by way of replacing or repairing. Confirm this in the form of guarantee letter.

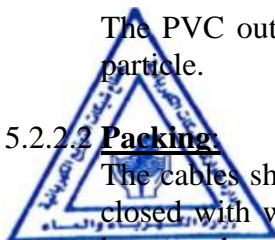
4.2.2.2 Storage in Open Yard Under Kuwait Climatic Conditions:

It shall be confirmed that the offered cables including the PVC over sheath will with-stand the severe ambient conditions when stored in the drums in the open yard for a period of two years.

The PVC outer sheath shall contain no-reprocessed PVC material or foreign particle.

5.2.2.2 Packing:

The cables shall be wound on strong wooden cable drums. The drum shall be closed with wooden battens to prevent damage to the cable. All drums shall become the property of the purchaser. The cables shall be supplied in drum lengths of 250 meters. The drum lengths should not vary from this standard length by more than 10 meters.



6.2.2.2 **Inspection and Tests:**

The following tests shall be carried out in the presence of our appointed inspectors to determine whether the materials comply with the specifications. Three copies of the results/records of all tests shall be furnished to the purchaser.

7.2.2.2 **General:**

The contractor shall carry out the tests specified in any applicable international Electro-technical Commission (IEC) and/or British Standard (BS) Specifications or equivalent, unless otherwise agreed upon and such additional tests in the contractor`s works as in the option of the Purchaser or his representative are necessary to determine that the works comply with the conditions of this specification.

All samples used for testing shall be to the contractor`s expense and shall not affect the quantities to be supplied under this contract.

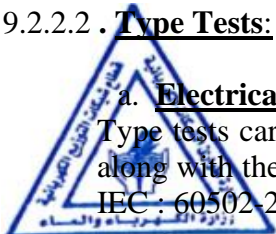
All instrument used for testing purposes, shall be calibrated by an approved authority and calibration certificates shall be submitted along with the inspection reports.

The test results/readings recorded during measurements and other observations noted shall be compiled / tabulated separately for each item of equipment and furnished to the purchaser in a fully professional manner in three (3) complete sets. Electronic copies of the reports shall also be submitted in three (3) complete sets of compact disks (CDs).

8.2.2.2 **Routine Tests:**

The Routine Tests shall be carried out at works on each drum of cable. All the Routine Tests as specified under clause 16 of IEC 60502-2 or equivalent shall be carried out. Further it shall be carried out with additional requirements that the voltage withstand test will be at 25 KV for 15 minutes and the magnitude of discharge at $1.73 U_0$ shall not exceed 5_pC .

9.2.2.2 . **Type Tests:**



a. **Electrical Type Tests:**

Type tests carried out by an independent testing laboratory shall be submitted along with the tender. All the Electrical Type Test specified under clause 18 of IEC : 60502-2 or equivalent shall be carried out.

Every offer should be accompanied by full type test certificates and reports from an internationally recognized independent testing laboratory for the cables of the specified design, construction and rating.

10.2.2.2 **Non-Electrical Type Tests:**

All the Non-Electrical Type Tests as required under clause 19 of IEC: 60502-2 or equivalent shall be carried out.

11.2.2.2 **Sample Tests:**

All the sample tests as specified under clause 17 of IEC:60502-2 or equivalent shall be carried out at manufacturers works.

12.2.2.2 **Sample Test to Confirm actual metal Weight:**

The sample shall be taken from one drum of each production batch or from one drum of every 10 Kms. of cable produced in a batch i.e.a sampling whichever is higher in percentage is to be considered.

13.2.2.2 **Acceptance of Tests:**

Should 10% of the samples taken from the selected drums in the consignment fail to pass any of the above mentioned Routine tests, the whole of the consignment shall be deemed not to comply with the standards and shall be rejected.

14.2.2.2 **Vocabulary Number:**

The vocabulary number to be indicated on each cable drum is WA0014112002/6150. The markings shall be in bold and clear letters and the exact size and type of lettering shall be submitted to the MEW for approval.

15.2.2.2 **Technical Schedules:**

The attached technical schedules shall be completed in all respects by the Tenderer and returned duly signed. The value indicated in general particulars and guarantees shall be as specified in IEC/BSS/IEEE or any other international standard (which are accepted by MEW). Supporting documents authenticating the values shall be submitted.

