Medium Voltage Power Cables

XLPE Insulated, with Longitudinal Water Barrier, PE Sheathed
Single Core Cables for Fixed Installations, 26/45kV

APPLICATION:
For indoor or outdoor installation in open air in tray, trough and conduit or for direct burial in free draining soil or inside duct where no mechanical damage is to be expected. Power cable for utilities medium voltage underground distribution systems and in commercial buildings, industrial plants, power stations and substations. For rated voltages Un/U(Um): 26/45(52) kV at maximum conductor temperatures of 90 °C for continuous normal operation and 250 °C for short circuit.

STANDARDS:
Conforms to IEC 60840 Standard: “Power cables with extruded insulation and their accessories for rated voltages above 30 kV (Un = 36 kV) up to 150 kV (Un = 170 kV) – Test methods and requirements”.

CONSTRUCTION:
A copper or aluminium compacted circular conductor has a triple single head extruded smooth conductor screen, XLPE (cross-linked polyethylene) insulation and bonded insulation screen, all dry nitrogen cured; water blocked metal screen made of solid bare copper wires uniformly spaced around the cable and a counter helix copper tape; ST7 surface printed black PE sheath is extruded over all. The following alternatives are available upon request:
- Longitudinal watertight conductor
- tree-retardant XLPE insulation
- EPR insulation
- easy stripable insulation screen
- no water barrier
- aluminium wire armour
- PVC outer red sheath.
Consult us on fire retardant and/or halogen free constructions.

PACKAGING
Standard supply lengths are given in the tables hereunder. Other bobbin lengths or cut to length - available upon request.

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>No. x mm²/mm²</th>
<th>Cross-sectional Area</th>
<th>Minimum No. of Conductors</th>
<th>Minimum OD of Conductor</th>
<th>Minimum OD of Screened Copper Tape</th>
<th>Minimum OD of Overhead Tape</th>
<th>Minimum OD of Steel Tape</th>
<th>Minimum OD of PE Sheath</th>
<th>Maximum Cable Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>16809E 1x95/25</td>
<td>15 10.5 2.3 42 2170 629 0.193 11.4 17.8 2.4 1.1</td>
<td>168126 1x20/25</td>
<td>18 10.5 2.4 44 2470 654 0.183 17.2 3.3 2.0 1.2</td>
<td>168168 1x150/25</td>
<td>18 10.5 2.4 45 2860 674 0.124 21.5 4.8 3.0 1.3</td>
<td>168197 1x185/25</td>
<td>30 10.5 2.5 47 3280 704 0.099 26.3 5.6 3.6 1.2</td>
<td>168280 1x240/25</td>
<td>34 10.5 2.5 49 3890 738 0.075 34.3 6.5 4.3 1.4</td>
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</table>
**SCOPE**

This specification describes XLPE insulated PE sheathed single core cables for fixed installations underground and in the air in commercial, industrial, and utilities plants. They are intended for use on single phase and three phase installations of 26/45 kV at maximum conductor temperatures of 90 °C for continuous normal operation and 250 °C for short circuit maximum conductor temperature.

**STANDARDS**

The following standard shall form a part of this specification to the extent specified herein:

- IEC 60840 Standard: "Power cables with extruded insulation and their accessories for rated voltages above 30 kV (Uₘ = 36 kV) up to 150 kV (Uₘ = 170 kV) – Test methods and requirements”.

**CONDUCTORS**

- Annealed, high conductivity copper compacted circular stranded conductor according to IEC 60228, Class 2.
- Aluminium compacted circular stranded conductor according to IEC 60228, Class 2.

**CONDUCTOR SCREEN**

The conductors shall be covered with a layer of extruded smooth conducting cross-linked polyolefin compound, firmly bonded to the insulation and which shall meet the requirements of the IEC 60840 Standard.

**INSULATION**

- Directly over the conductor screen shall be applied a homogeneous wall of XLPE insulation. The nominal thickness shall be 10.5 mm.
- Properties of the insulation shall be in accordance with IEC 60840 Standard.
- Ethylene propylene rubber insulation EPR, in accordance with IEC 60840 Standard, is available upon request.

**INSULATION SCREEN AND LONGITUDINAL WATER BARRIER**

- The insulation screen shall consist of a non-metallic extruded semi-conducting layer in combination with semi-conducting tape and a metallic layer.
- The extruded semi-conducting layer shall consist of smooth cross-linked polyolefin compound bonded to the insulation and meeting the requirements of IEC 60840 Standard.
- The conductor screen, the insulation and the insulation screen shall be applied in a single head triple extrusion process with dry nitrogen curing.
- A semi-conducting tape shall be applied on the extruded semi-conducting insulation screen.
- The metallic layer shall consist of a number of bare copper wires, uniformly spaced and helically applied on top of the semi-conducting tape. An open helix applied copper tape shall bind the wires together.
- The cross sectional area of the metallic layer shall be the one specified in the tables above to provide an earth fault current path. Other cross sectional areas can be supplied upon request.
- A separating tape shall be applied over all.
- The semi-conducting and separating tapes shall be swelling to the extent required to enable the final cable to pass the longitudinal water penetration test on the screen region as specified in Annex C of the IEC 60840 Standard.

**OVERSHEATH**

- An extruded black UV resistant PE sheath shall be applied on the assembly.
- Properties of the sheath shall be in accordance with IEC 60840 Standard for the ST7 type.

**TESTS**

The cable shall be tested in accordance with the IEC 60840 Standard.

**CHARACTERISTICS**

- Mechanical resistance to impacts: Low
- Flexibility: Semi-Flexible
- Minimum installation temperature: -20 °C
- Temperature range: -40 to +90 °C
- Weather resistance: Good

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