

# Medium Voltage Power Cables XLPE-insulated

## 6/10 kV, 12/20 kV, 18/30 kV

### Laying of Cable

In order to avoid any damage, the XLPE-insulated medium voltage cables should carefully laid and installed. It must be ensured that the cables should not be pulled over the hard or sharp edges. The cable ends must be water-tight-sealed. After cutting the length both ends must be sealed immediately.  
A laying depth of 60 to 80 cm is recommended. Single conductor cables are normally arranged in a trefoil touching or triangular shape. For laying in conduits, specially the influence of thermal insulation of air space between the cable and the inner wall of conduit should be considered. The inner diameter of the conduit should be at least 1,5 times that of the diameter of the cable.

### Bending radius

During the laying of XLPE cables, the bending radius should not be below of the following values:

- Cable without metal sheath = 15 x cable Ø
- Cable with Alu-laminated sheath = 30 x cable Ø

### Temperature range

During the installation, the temperature should not be below the following values:

- for XLPE-insulation + PVC jacket = -5°C
- for XLPE-insulation + PE jacket = -20°C

### Max. permissible tensile strength

By pulling the conductors with a pulling head (not for armoured cables)

$P = \text{No. of cores} \times \text{conductor cross-section} \times \delta$   
 $\delta = \text{permissible pulling tension N/mm}^2$   
 – For Cu-conductor: 50 N/mm<sup>2</sup>  
 – For Alu-conductor: 30 N/mm<sup>2</sup>

### Current carrying capacity

according to VDE 0276 part 620, -5C or HD 620 S1

### Laying in earth (ground)

- Laying depth 0,7 –0,8 m
- Earth temperature in the laying depth 20°C
- Specific heat resistance 1,0 K m/W
- Load factor 0,7 (EVU-Load)

### Laying in air

- Air temperature 30°C
- Load factor (permanent load) 1,0

### Laying in conduits

Cables for conduit systems laying in earth, a reduction of the current carrying capacity with a factor of 0,85 is recommended.

### Test voltages

Kind of voltage test	Voltage test in kV		
	$U_0/U = 6/10 \text{ kV}$	$U_0/U = 12/20 \text{ kV}$	$U_0/U = 18/30 \text{ kV}$
Voltage test a. c. in kV	15	30	45
Voltage test d. c. in kV	48	96	144
Voltage test a. c. (voltage test = 1000 h)	18	36	54

### Voltage test to cable system

During the operation or after laying the medium voltage power cables, the dielectric can be tested with alternating or direct current. The test duration continues 30 minutes.

Kind of voltage test	$U_0/U = 6/10 \text{ kV}$	$U_0/U = 12/20 \text{ kV}$	$U_0/U = 18/30 \text{ kV}$
Voltage test a. c. in kV	12	24	36
Voltage test d. c. in kV	34 up to 48	67 up to 96	76 up to 108