

Insulation System

Conductor Shielding

A conductor shield is provided on all cables rated 5-46 kV. The standard conductor shield on Nexans ENERGEX[®] cables is extruded semi-conducting crosslinked polyolefin (XLPO), which meets, or exceeds the CSA, AEIC, and ICEA requirements shown below. In addition, Nexans offers cables with a high performance “supersmooth” conductor shielding which enhances the life expectancy of the cable.

Requirements for Extruded Semi-conducting XLPO Conductor Shield	
Unaged tensile strength	7.0 MPa min.
Volume resistivity - at room temperature	1000 $\Omega\cdot\text{m}$ max.
- at 90°C	1000 $\Omega\cdot\text{m}$ max.
- at 130°C	1000 $\Omega\cdot\text{m}$ max.
Elongation, aged 168 hr. at 121°C	100% min.
Brittleness temperature	-25°C max.
Voids > 0.076 mm	none
Protrusions into insulation	0.076 mm max.
Protrusions into conductor shield	0.18 mm max.

Conductor Shield Thickness	
Conductor Size (AWG/kcmil)	Thickness, mm Minimum at 1 Pt.
8 - 4/0	0.31
250 - 500	0.41
600 - 1000	0.51

Insulation

The standard insulation on Nexans ENERGEX[®] cables is unfilled “tree retardant” crosslinked polyethylene (TRXLPE) meeting, or exceeding the requirements of CSA C68.3, AEIC CS8, and ICEA S-94-649 as shown below.

Using Nexans EXCELCURE[™] process, the conductor shield, insulation, and insulation shield are true-triple extruded and cured together in a sealed dry curing system.

All insulating compounds are conveyed through an “Extra Clean” compound handling system to minimize contamination and increase life expectancy.

Requirements for Extruded Semi-conducting XLPO Insulation Shield

Unaged tensile strength	7.0 MPa min.
Volume resistivity - at room temperature	500 $\Omega\cdot\text{m}$ max.
- at 90°C	500 $\Omega\cdot\text{m}$ max.
- at 130°C	500 $\Omega\cdot\text{m}$ max.
Elongation, aged 168 hr. at 121°C	100% min.
Brittleness temperature	-25°C max.
Voids > 0.13 mm	none
Protrusions into insulation	0.13 mm max.
Protrusions into insulation shield	0.13 mm max.

Insulation Shield Thickness

Insulation diameter (mm)	Thickness, mm	
	Min. at 1 Pt.	Max. at 1 Pt.
= < 25.4	0.76	1.80
= < 38.1	1.00	2.20
= < 50.8	1.40	2.50
> 50.8	1.40	2.90
