

Insulation Performance Specifications

EPR PERFORMANCE SPECIFICATIONS

The insulation shall be a premium quality, heat, moisture, ozone and corona resistant thermosetting ethylene propylene; TYPE I, II or III as listed in ICEA S-93-639 or ICEA S-97-682. The cable manufacturer shall compound the insulation material with in its own or remotely owned facilities. The insulation shall be compatible with both the conductor shield and the insulation shield. The thickness shall be at the 100% or 133% level as applicable and in accordance with the latest edition of ICEA S-93-639, ICEA S-97-682 and UL 1072. The diameters over the insulation shall be in accordance with ICEA S-97-682. The EPR insulation shall also meet the guaranteed values as listed in the table below.

| | PHYSICAL REQUIREMENTS | GUARANTEED VALUE |
|--|---|------------------|
| Unaged | Tensile strength, psi, min. | 1600 |
| | Elongation at rupture, %, min. | 275 |
| | Tensile Stress at 200% elongation, psi, min. at room temperature | 1000 |
| | Modulus, psi, min. @ 130 °C | 300 |
| After Air Oven Aging at 121 °C for 7 days (168 hours) | | |
| | Tensile stress, % of unaged value, min. | 90 |
| | Elongation at rupture, % of unaged value, min. | 90 |
| Hot Creep Test at 150 °C | | |
| | Elongation, %, max. | 25 |
| | Set, %, max. | 5 |
| Heat Distortion after 1 hour in air oven at 121 °C | | |
| | Percent max. | 8.5 |
| Ozone Resistance | | |
| | 0.30% Concentration, 25 °C, 24 hours | No Cracks |
| | No Cracks 0.0005% Concentration, 52 °C, 24 hours | No Cracks |
| Cold Bend | -55 °C | No Cracks |
| Heat Deformation Test per ASTM D2220 | | |
| | % Max. Distortion of buffed samples of insulation conditioned for 5 minutes and under load for 15 minutes | No Cracks |

TR-XLPE PERFORMANCE SPECIFICATIONS

Suitable for use for the following specifications

- AEIC CS8
- CEA S-94-649
- ICEA T-31-610
- ICEA T-34-664 as applicable for TR-XLPE insulated concentric neutral cable
- UL 1072 Type MV-90 or MV-105
- CSA C68.5

ICEA T-34-664 as applicable for TR-XLPE insulated concentric neutral cable must conform to the following chart:

| PHYSICAL PROPERTIES | UNIT | TEST METHOD | VALUE |
|-------------------------------------|---------|---------------|-------|
| Density (Base Resin) | g/cm3 | ASTM D1505 | 0.92 |
| Tensile Strength | kg/ cm2 | ASTM D638 | 200 |
| Elongation | % ASTM | D638 | 550 |
| Oven Aging @ 135 °C , 7 days | | | |
| Tensile Strength Retention | % ASTM | D638 | > 90 |
| Elongation Retention | % ASTM | D638 | > 90 |
| Hot/Set @ 200 °C, 20N/cm2 | | IEC-60811-2-1 | |
| Hot Elongation | % | | < 100 |
| Permanent Set | % | | < 5 |
| Cure Behavior @ 180 °C (MDR) | | HCY-I-24196 | |
| Ts1 | minute | | > 1 |
| Tc90 | minute | | < 5 |
| Mh-MI | lb · in | | > 4.5 |
| Moisture | ppm | HCY-I-24205 | < 200 |

| ELECTRICAL PROPERTIES | UNIT | TEST METHOD | VALUE |
|-----------------------------|--------|-------------|----------|
| Dielectric Constant @ 1 MHz | - | ASTM D150 | < 2.3 |
| Dissipation Factor @ 1 MHz | - | ASTM D150 | < 0.0005 |
| Dielectric Strength | kV/mm | ASTM D149 | > 20 |
| DC Volume Resistivity | ohm cm | ASTM D257 | > 1016 |

| TREE RESISTANCE | UNIT | TEST METHOD | VALUE |
|----------------------------|------|-------------|-------|
| Relative Bow-tie Tree Size | % | Internal | < 15 |
| Resistance to Water Tree | | | |
| Growth @25 °C, 30 days | % | Internal | < 0.1 |

1. Tree test conditions: Frequency=1kHz, Applied Voltage=5kV, 0.01M NaCl Solution.
2. Values are typical : not to be construed for specification.

