# 12.7/22kV Triplex Cu/XLPE/CWS/PVC/HDPE


1. Compacted Cu conductor
2. Conductor screen
3. XLPE insulation
4. Insulation screen
5. Semi conductive water-blocking tape
6. Copper wire screen
7. Non-hygroscopic tape
8. PVC inner sheath
9. HDPE outer sheath

## Properties:

| | |
|---|---|
| Rated voltage | 12.7/22kV |
| Max. operating temperature of conductor | 90℃ |
| Max. short-circuit operation temperature of conductor (5s Max. duration) | 250℃ |
| Ambient temperature range for operating | from -40℃ to +50℃ |
| Relative air humidity at temperature lower than +35℃ | up to 95% |
| Min. temperature for installing without preheating | +0℃ |
| Standard | AS/NZS 1429.1 |
| Fault Level | up to 10kA/s or customer requirements |

## Application:

Cables are designed for fixed installation, for laying in the ground, for indoor application and in cable ducts.

## Structural Parameters:

| Nominal conductor area | Approx. diameter of conductor | Nominal thickness of insulation | Nominal diameter over insulation | Nominal screen area | No. & diameter of screen wire | Nominal diameter over wire screen | Nominal thickness of outer sheath | | Approx. overall diameter of cable | Max. overall diameter of cable | Approx. weight of cable | Max. allowable pulling force of conductor | Min. bending radius | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Inner layer | Outer layer | | | | | During installation | Installed |
| $mm^2$ | mm | mm | mm | $mm^2$ | No./mm | mm | mm | mm | mm | kg/km | kN | mm | mm | mm |
| 35 | 7.0 | 5.5 | 20.9 | 34.0 | 40/1.04 | 23.9 | 1.0 | 1.0 | 30.9 | 66.1 | 3685 | 7.4 | 1190 | 790 |
| 50 | 8.1 | 5.5 | 22.0 | 49.5 | 28/1.5 | 25.9 | 1.0 | 1.0 | 32.9 | 70.4 | 4589 | 10.5 | 1260 | 840 |
| 70 | 9.8 | 5.5 | 23.7 | 68.9 | 39/1.5 | 27.6 | 1.0 | 1.0 | 34.6 | 74.1 | 5867 | 14.7 | 1330 | 880 |
| 95 | 11.4 | 5.5 | 25.3 | 68.9 | 39/1.5 | 29.2 | 1.0 | 1.0 | 36.2 | 77.5 | 6730 | 20.0 | 1390 | 930 |
| 120 | 12.9 | 5.5 | 26.8 | 68.9 | 39/1.5 | 30.7 | 1.0 | 1.1 | 37.7 | 80.7 | 7536 | 25.2 | 1450 | 960 |
| 150 | 14.4 | 5.5 | 28.3 | 68.9 | 39/1.5 | 32.2 | 1.0 | 1.1 | 39.2 | 83.9 | 8427 | 31.5 | 1510 | 1000 |
| 185 | 16.0 | 5.5 | 29.9 | 68.9 | 39/1.5 | 33.8 | 1.0 | 1.1 | 40.8 | 87.4 | 9570 | 38.9 | 1570 | 1040 |
| 240 | 18.4 | 5.5 | 32.3 | 68.9 | 39/1.5 | 36.2 | 1.1 | 1.2 | 43.2 | 92.5 | 11349 | 50.4 | 1660 | 1100 |
| 300 | 20.6 | 5.5 | 34.5 | 68.9 | 39/1.5 | 38.4 | 1.1 | 1.2 | 45.4 | 97.2 | 13207 | 63.0 | 1740 | 1160 |
| 400 | 23.4 | 5.5 | 37.3 | 68.9 | 39/1.5 | 41.2 | 1.1 | 1.2 | 48.2 | 103.2 | 15738 | 84.0 | 1850 | 1230 |
| 500 | 26.2 | 5.5 | 40.5 | 68.9 | 39/1.5 | 44.4 | 1.2 | 1.3 | 51.4 | 110.0 | 19021 | 105.0 | 1970 | 1310 |



## Electrical Characteristics:

| Nominal conductor area | Max. DC resistance of conductor at 20℃ | Max. AC resistance of conductor at 90℃ | | | Fault current carrying of conductor for 1 second | Fault current carrying of screen for 1 second | Insulation resistance at 20℃ | Conductor to screen capacitance | Charging current per phase | Dielectric loss per phase | Maximum dielectric stress | Inductive reactance at 50Hz and 90℃ | | | Screen DC resistance at 20℃ | Zero sequence resistance at 20℃ | Zero sequence reactance at 50Hz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Trefoil touching | Flat touching | Flat spaced | | | | | | | | Trefoil touching | Flat touching | Flat spaced | | | |
| $mm^2$ | Ω/km | Ω/km | Ω/km | Ω/km | kA | kA | MΩ/km | μF/km | A/km | W/km | kV/mm | Ω/km | Ω/km | Ω/km | Ω/km | Ω/km | Ω/km |
| 35 | 0.524 | 0.668 | 0.668 | 0.668 | 5.0 | 5.0 | 14400 | 0.168 | 0.669 | 34.0 | 3.60 | 0.153 | 0.167 | 0.211 | 0.558 | 1.08 | 0.0930 |
| 50 | 0.387 | 0.494 | 0.494 | 0.494 | 7.2 | 7.4 | 13200 | 0.182 | 0.727 | 36.9 | 3.47 | 0.147 | 0.162 | 0.205 | 0.383 | 0.770 | 0.0888 |
| 70 | 0.268 | 0.342 | 0.342 | 0.342 | 10.0 | 10.2 | 11800 | 0.205 | 0.817 | 41.5 | 3.31 | 0.139 | 0.153 | 0.197 | 0.275 | 0.543 | 0.0796 |
| 95 | 0.193 | 0.247 | 0.247 | 0.246 | 13.6 | 10.2 | 10700 | 0.226 | 0.900 | 45.7 | 3.19 | 0.132 | 0.146 | 0.190 | 0.275 | 0.468 | 0.0741 |
| 120 | 0.153 | 0.196 | 0.196 | 0.196 | 17.2 | 10.2 | 9800 | 0.245 | 0.978 | 49.7 | 3.11 | 0.127 | 0.141 | 0.185 | 0.275 | 0.428 | 0.0698 |
| 150 | 0.124 | 0.159 | 0.159 | 0.159 | 21.5 | 10.2 | 9100 | 0.265 | 1.06 | 53.6 | 3.04 | 0.122 | 0.137 | 0.180 | 0.275 | 0.399 | 0.0662 |
| 185 | 0.0991 | 0.127 | 0.127 | 0.127 | 26.5 | 10.2 | 8400 | 0.285 | 1.14 | 57.8 | 2.98 | 0.118 | 0.133 | 0.176 | 0.275 | 0.374 | 0.0629 |
| 240 | 0.0754 | 0.0977 | 0.0974 | 0.0971 | 34.3 | 10.2 | 7600 | 0.316 | 1.26 | 64.1 | 2.90 | 0.113 | 0.127 | 0.171 | 0.275 | 0.351 | 0.0588 |
| 300 | 0.0601 | 0.0786 | 0.0783 | 0.0778 | 42.9 | 10.2 | 7000 | 0.345 | 1.38 | 69.8 | 2.85 | 0.109 | 0.123 | 0.167 | 0.275 | 0.335 | 0.0558 |
| 400 | 0.0470 | 0.0626 | 0.0621 | 0.0615 | 57.2 | 10.2 | 6300 | 0.380 | 1.52 | 77.1 | 2.79 | 0.105 | 0.119 | 0.163 | 0.275 | 0.322 | 0.0526 |
| 500 | 0.0366 | 0.0501 | 0.0495 | 0.0486 | 71.5 | 10.2 | 5700 | 0.421 | 1.68 | 85.3 | 2.74 | 0.102 | 0.116 | 0.160 | 0.275 | 0.312 | 0.0505 |

## Current Ratings:

| Nominal conductor area | Continuous current-carrying capacity, A | | | | |
|---|---|---|---|---|---|
| | In air | | | In ground | |
| |  |  |  |  |  |
| $mm^2$ | Solid bond | Solid bond | Solid bond | Solid bond | Solid bond |
| 35 | 174 | 183 | 130 | 174 | 144 |
| 50 | 205 | 218 | 156 | 205 | 171 |
| 70 | 254 | 269 | 193 | 249 | 209 |
| 95 | 309 | 326 | 230 | 296 | 249 |
| 120 | 355 | 376 | 261 | 335 | 281 |
| 150 | 400 | 425 | 294 | 374 | 314 |
| 185 | 455 | 485 | 343 | 420 | 363 |
| 240 | 534 | 569 | 395 | 484 | 416 |
| 300 | 609 | 648 | 445 | 540 | 465 |
| 400 | 698 | 744 | 504 | 608 | 524 |
| 500 | 794 | 848 | 568 | 679 | 585 |