# High Voltage XLPE Insulated
## Rating Factors for Cables Laid Direct in Ground

| Standard laying conditions | | Other laying conditions |
|---|---|---|
| Soil thermal resistivity | 1.2K.m/W | $I_{standard}$ = Standard current rating in ground |
| Depth of burial | 1200mm | $I_{rated} = I_{standard} \times k_1 \times k_2 \times k_3 \times k_4$ |
| Soil temperature | 25°C | $k_1$ = Table 1<br>$k_2$ = Table 2<br>$k_3$ = Table 3<br>$k_4$ = Table 4 |

Table 1 – Rating factor for variation in thermal resistivity of soil ($k_1$)

| Soil thermal resistivity K.m/W | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.7 | 0.8 | 0.9 | 1.0 | 1.2 | 1.5 | 2.0 | 2.5 | 3.0 |
| 1.21 | 1.16 | 1.11 | 1.07 | 1.00 | 0.92 | 0.81 | 0.74 | 0.68 |

Table 2 – Rating factor for variation in soil temperature ($k_2$)

| Soil temperature °C | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 1.11 | 1.08 | 1.04 | 1.0 | 0.96 | 0.92 | 0.88 | 0.83 | 0.78 |

Table 3 – Rating factor for variation in depth of laying (k3)

| Depth of laying (m) | 0.80 | 1.00 | 1.20 | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 |
|---|---|---|---|---|---|---|---|---|
| Rating factor | 1.06 | 1.03 | 1.00 | 0.97 | 0.95 | 0.94 | 0.91 | 0.90 |





**CBI-electric: african cables**

**B-BBEE Level 2 contributor**

PO Box 172, Vereeniging 1930 - Steel Road, Peacehaven, Vereeniging 1939, South Africa
Tel: +27 16 430 6000 - Fax: +27 16 430 6235 - www.cbi-electric.com
Directors: AE Dickson, PJ Banda, GW Eddey, TA Pooe, Z Mjali
Alternate Director: PW de Villiers

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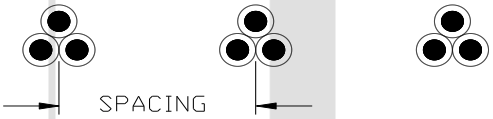
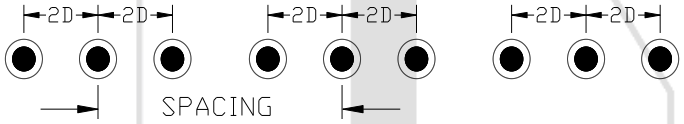
Table 4 – Group Rating factors for circuits of three single core cables in Trefoil formation touching, laid direct in ground (Single Point/Cross Bonded Systems) (k4)

| Number of Circuits in Trefoil |  | | | | | |
|---|---|---|---|---|---|---|
| | Touching | 300mm | 450mm | 600mm | 800mm | 1000mm |
| 2 | 0.78 | 0.80 | 0.83 | 0.85 | 0.88 | 0.89 |
| 3 | 0.66 | 0.69 | 0.73 | 0.76 | 0.79 | 0.81 |
| 4 | 0.60 | 0.64 | 0.68 | 0.71 | 0.75 | 0.78 |
| Number of Circuits in Flat Formation |  | | | | | |
| | Touching | 600mm | 800mm | 1000mm | 1200mm | 1400mm |
| 2 | 0.80 | 0.85 | 0.87 | 0.89 | 0.90 | 0.91 |
| 3 | 0.69 | 0.75 | 0.78 | 0.81 | 0.83 | 0.84 |
| 4 | 0.63 | 0.70 | 0.74 | 0.78 | 0.80 | 0.82 |