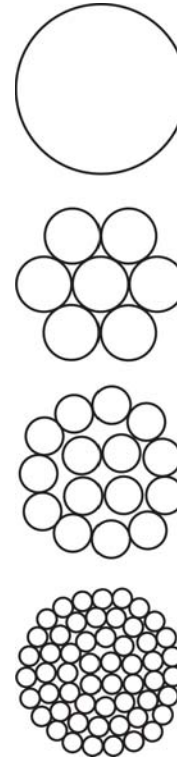


# EUROPEAN CABLE STRANDING

acc. to VDE 0295 and IEC 60228

| Cross section mm <sup>2</sup> | DIN VDE 0295 class 5/IEC 60228 |                    | DIN VDE 0295 class 6/IEC 60228 |                    | acc. to DIN VDE 0812 |                       |
|-------------------------------|--------------------------------|--------------------|--------------------------------|--------------------|----------------------|-----------------------|
|                               | No. of wires                   | max. wire-Ø mm/mil | No. of wires                   | max. wire-Ø mm/mil | No. of wires         | Nominal wire-Ø mm/mil |
| 0.14*                         |                                |                    | ≈ 18 x 0.11/ 3.94              |                    | ≈ 18 x 0.11/3.94     |                       |
| 0.25*                         | ≈ 14 x 0.16/ 6.30              |                    | ≈ 32 x 0.11/ 3.94              |                    | ≈ 14 x 0.16/5.91     |                       |
| 0.34*                         | ≈ 7 x 0.26/10.24               |                    | ≈ 42 x 0.11/ 3.94              |                    | ≈ 7 x 0.26/9.84      |                       |
| 0.50                          | ≈ 15/17 x 0.21/ 8.27           |                    | ≈ 28 x 0.16/ 6.30              |                    | ≈ 15/17 x 0.21/7.87  |                       |
| 0.75                          | ≈ 23 x 0.21/ 8.27              |                    | ≈ 42 x 0.16/ 6.30              |                    | ≈ 23 x 0.21/7.87     |                       |
| 1.00                          | ≈ 30 x 0.21/ 8.27              |                    | ≈ 56 x 0.16/ 6.30              |                    | ≈ 30 x 0.21/7.87     |                       |
| 1.50                          | ≈ 27-29 x 0.26/10.24           |                    | ≈ 84 x 0.16/ 6.30              |                    | ≈ 27-29 x 0.26/9.84  |                       |
| 2.50                          | ≈ 46 x 0.26/10.24              |                    | ≈ 140 x 0.16/ 6.30             |                    | ≈ 46 x 0.26/9.84     |                       |
| 4.00                          | ≈ 52 x 0.31/12.20              |                    | ≈ 224 x 0.16/ 6.30             |                    |                      |                       |
| 6.00                          | ≈ 78 x 0.31/12.20              |                    | ≈ 186 x 0.21/ 8.27             |                    |                      |                       |
| 10.00                         | ≈ 77 x 0.41/16.14              |                    | ≈ 320 x 0.21/ 8.27             |                    |                      |                       |
| 16.00                         | ≈ 122 x 0.41/16.14             |                    | ≈ 504 x 0.21/ 8.27             |                    |                      |                       |
| 25.00                         | ≈ 190 x 0.41/16.14             |                    | ≈ 760 x 0.21/ 8.27             |                    |                      |                       |
| 35.00                         | ≈ 272 x 0.41/16.14             |                    | ≈ 1083 x 0.21/ 8.27            |                    |                      |                       |
| 50.00                         | ≈ 400 x 0.41/16.14             |                    | ≈ 703 x 0.31/12.20             |                    |                      |                       |
| 70.00                         | ≈ 543 x 0.41/16.14             |                    | ≈ 988 x 0.31/12.20             |                    |                      |                       |
| 95.00                         | ≈ 484 x 0.51/20.08             |                    | ≈ 1340 x 0.31/12.20            |                    |                      |                       |
| 120.00                        | ≈ 589 x 0.51/20.08             |                    | ≈ 1680 x 0.31/12.20            |                    |                      |                       |
| 150.00                        | ≈ 740 x 0.51/20.08             |                    | ≈ 2122 x 0.31/12.20            |                    |                      |                       |
| 185.00                        | ≈ 902 x 0.51/20.08             |                    | ≈ 1472 x 0.41/16.14            |                    |                      |                       |
| 240.00                        | ≈ 1220 x 0.51/20.08            |                    | ≈ 1910 x 0.41/16.14            |                    |                      |                       |
| 300.00                        | ≈ 1525 x 0.51/20.08            |                    |                                |                    |                      |                       |



\* with reference to IEC 60228

## COMPARISON EUROPEAN/AMERICAN CABLE STRANDING

Nominal diameter of copper conductor

| mm <sup>2</sup> | AWG/ MCM | mm <sup>2</sup> | AWG/ MCM | mm <sup>2</sup> | AWG/ MCM | mm <sup>2</sup> | AWG/ MCM | mm <sup>2</sup> | AWG/ MCM | mm <sup>2</sup> | AWG/ MCM |
|-----------------|----------|-----------------|----------|-----------------|----------|-----------------|----------|-----------------|----------|-----------------|----------|
| 0.08            | = 28     | 0.50            | = 20     | 2.50            | = 14     | 16.00           | = 6      | 70.00           | = 2/0    | 185.00          | = 350    |
| 0.14            | = 26     | 0.75            | = 19     | 4.00            | = 12     | 25.00           | = 4      | 95.00           | = 3/0    | 240.00          | = 450    |
| 0.25            | = 24     | 1.00            | = 18     | 6.00            | = 10     | 35.00           | = 2      | 120.00          | = 4/0    | 300.00          | = 550    |
| 0.34            | = 22     | 1.50            | = 16     | 10.00           | = 8      | 50.00           | = 1      | 150.00          | = 250    |                 |          |

# AMERICAN CABLE STRANDING

## AWG = actual mm<sup>2</sup> and Resistance

AWG is shown below with its exact equivalent value in mm<sup>2</sup> and diameter (mm).

The table on the previous page shows commercially used equivalent values, which are approximations.

| AWG Number | Cross Section mm <sup>2</sup> | Diameter mm | Conductor resistance ž/km |
|------------|-------------------------------|-------------|---------------------------|
| 1000 MCM   | 507                           | 29.3        | 0.036                     |
| 900        | 456                           | 27.8        | 0.04                      |
| 750        | 380                           | 25.4        | 0.048                     |
| 600        | 304                           | 22.7        | 0.061                     |
| 550        | 279                           | 21.7        | 0.066                     |
| 500        | 253                           | 20.7        | 0.07                      |
| 450        | 228                           | 19.6        | 0.08                      |
| 400        | 203                           | 18.5        | 0.09                      |
| 350        | 177                           | 17.3        | 0.10                      |
| 300        | 152                           | 16.0        | 0.12                      |
| 250        | 127                           | 14.6        | 0.14                      |
| 4/0        | 107.2                         | 11.68       | 0.18                      |
| 3/0        | 85.0                          | 10.40       | 0.23                      |
| 2/0        | 67.4                          | 9.27        | 0.29                      |
| 0          | 53.4                          | 8.25        | 0.37                      |
| 1          | 42.4                          | 7.35        | 0.47                      |
| 2          | 33.6                          | 6.54        | 0.57                      |
| 3          | 26.7                          | 5.83        | 0.71                      |
| 4          | 21.2                          | 5.19        | 0.91                      |
| 5          | 16.8                          | 4.62        | 1.12                      |
| 6          | 13.3                          | 4.11        | 1.44                      |
| 7          | 10.6                          | 3.67        | 1.78                      |
| 8          | 8.34                          | 3.26        | 2.36                      |
| 9          | 6.62                          | 2.91        | 2.77                      |
| 10         | 5.26                          | 2.59        | 3.64                      |
| 11         | 4.15                          | 2.30        | 4.44                      |
| 12         | 3.31                          | 2.05        | 5.41                      |
| 13         | 2.63                          | 1.83        | 7.02                      |

| AWG Number | Cross Section mm <sup>2</sup> | Diameter mm | Conductor resistance ž/km |
|------------|-------------------------------|-------------|---------------------------|
| 14         | 2.08                          | 1.63        | 8.79                      |
| 15         | 1.65                          | 1.45        | 11.2                      |
| 16         | 1.31                          | 1.29        | 14.7                      |
| 17         | 1.04                          | 1.15        | 17.8                      |
| 18         | 0.8230                        | 1.0240      | 23.0                      |
| 19         | 0.6530                        | 0.9120      | 28.3                      |
| 20         | 0.5190                        | 0.8120      | 34.5                      |
| 21         | 0.4120                        | 0.7230      | 44.0                      |
| 22         | 0.3240                        | 0.6440      | 54.8                      |
| 23         | 0.2590                        | 0.5730      | 70.1                      |
| 24         | 0.2050                        | 0.5110      | 89.2                      |
| 25         | 0.1630                        | 0.4550      | 111.0                     |
| 26         | 0.1280                        | 0.4050      | 146.0                     |
| 27         | 0.1020                        | 0.3610      | 176.0                     |
| 28         | 0.0804                        | 0.3210      | 232.0                     |
| 29         | 0.0646                        | 0.2860      | 282.0                     |
| 30         | 0.0503                        | 0.2550      | 350.0                     |
| 31         | 0.0400                        | 0.2270      | 446.0                     |
| 32         | 0.0320                        | 0.2020      | 578.0                     |
| 33         | 0.0252                        | 0.1800      | 710.0                     |
| 34         | 0.0200                        | 0.1600      | 899.0                     |
| 35         | 0.0161                        | 0.1430      | 1125.0                    |
| 36         | 0.0123                        | 0.1270      | 1426.0                    |
| 37         | 0.0100                        | 0.1130      | 1800.0                    |
| 38         | 0.00795                       | 0.1010      | 2255.0                    |
| 39         | 0.00632                       | 0.0897      | 2860.0                    |

1 CM = 1 Circ. mil = 0.0005067 mm<sup>2</sup>

1 MCM = 1000 Circ. mils = 0.5067 mm<sup>2</sup>

4/0 is also known as 0000; 1 mil = 0.0254 mm

\*Shown in MCM (circular mils) for bigger cross sections

## UL/CSA current-carrying capacity for flexible cables

### Hook-up wire at ambient temperature up to 30 °C

| AWG | cross section mm <sup>2</sup> | current-carrying capacity |
|-----|-------------------------------|---------------------------|
| 24  | 0.21                          | 3.5                       |
| 22  | 0.33                          | 5.0                       |
| 20  | 0.52                          | 6.0                       |
| 18  | 0.82                          | 9.5                       |
| 16  | 1.31                          | 20                        |
| 14  | 2.08                          | 24                        |
| 12  | 3.32                          | 34                        |

| AWG | cross section mm <sup>2</sup> | current-carrying capacity |
|-----|-------------------------------|---------------------------|
| 10  | 5.26                          | 52                        |
| 8   | 8.35                          | 75                        |
| 6   | 13.29                         | 95                        |
| 4   | 21.14                         | 120                       |
| 3   | 26.65                         | 154                       |
| 2   | 33.61                         | 170                       |
| 1   | 42.38                         | 180                       |

### Correction-factors at ambient temperature over 30°C

For temperatures over 30 °C, multiply the current-carrying capacity in the tables times correction-factor (f) to obtain the allowable current.

| Ambient temperature °C | current-carrying capacity values of tables correction-factors (f) |
|------------------------|---|
| 31 - 35                | 0.91  |
| 36 - 40                | 0.82  |
| 41 - 45                | 0.71  |
| 46 - 50                | 0.58  |

### Multi conductor cables at ambient temperature up to 30°C

| AWG | cross section mm <sup>2</sup> | current-carrying capacity A (no. of conductors) |       |        |         |            |
|-----|-------------------------------|---|-------|--------|---------|------------|
|     |                               | up to 3   | 4 - 6 | 7 - 24 | 25 - 42 | 43 & above |
| 24  | 0.21                          | 2   | 1.6   | 1.4    | 1.2     | 1.0        |
| 22  | 0.33                          | 3   | 2.4   | 2.1    | 1.8     | 1.5        |
| 20  | 0.52                          | 5   | 4.0   | 3.5    | 3.0     | 2.5        |
| 18  | 0.82                          | 7   | 5.6   | 4.9    | 4.2     | 3.5        |
| 16  | 1.31                          | 10  | 8.0   | 7.0    | 6.0     | 5.0        |
| 14  | 2.08                          | 15  | 12.0  | 10.5   | 9.0     | 7.5        |
| 12  | 3.32                          | 20  | 16.0  | 14.0   | 12.0    | 10.0       |

| AWG | cross section mm <sup>2</sup> | current-carrying capacity A (no. of conductors) |       |        |         |            |
|-----|-------------------------------|---|-------|--------|---------|------------|
|     |                               | up to 3   | 4 - 6 | 7 - 24 | 25 - 42 | 43 & above |
| 10  | 5.26                          | 30  | 24    | 21     | 18      | 15         |
| 8   | 8.35                          | 40  | 32    | 28     | 24      | 20         |
| 6   | 13.29                         | 55  | 44    | 38     | 33      | 27         |
| 4   | 21.14                         | 70  | 56    | 49     | 42      | 35         |
| 3   | 26.65                         | 80  | 64    | 56     | 48      | 40         |
| 2   | 33.61                         | 95  | 76    | 66     | 57      | 47         |
| 1   | 42.38                         | 110   | 88    | 77     | 66      | 55         |