

Technical Data

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Multiplication Factors for Wire Bundles with Equal Size Wires

This table provides multiplication factors for wire bundles of 1 to 61. To determine the approximate diameter of a wire bundle when the wires are all the same size, find the factor for the number of wires in the bundle and multiply the wire diameter by that factor.

Number of Wires	Multiplication Factor
1	1.00
2	2.00
3	2.16
4	2.41
5	2.70
6, 7	3.00
8	3.60
9, 10, 11, 12	4.00
13, 14	4.41
15, 16	4.70
17, 18, 19	5.00
20, 21	5.31
22, 23, 24	5.61
25, 26, 27	6.00
28, 29, 30	6.41
31, 32, 33	6.70
34, 35, 36, 37	7.00
38, 39 40	7.31
41, 42, 43, 44	7.61
45, 46, 47, 48	8.00
49, 50, 51, 52	8.41
53, 54, 55, 56	8.70
57, 58, 59, 60, 61	9.00

Calculation of Wire Bundles for Different Size Wires

To determine the wire bundle diameter when using wires of different sizes, follow these steps:

1. Determine the number of wires in the wire bundle.
2. Find the diameter of the wires in the Wire & Cable section of this catalogue.
3. Calculate the cable bundle outside diameter by using the method shown below.

*Example: A bundle of wires containing:
 3 x 44A0111-22 (1.19mm dia.)
 5 x 44A0111-20 (1.40mm dia.)
 1 x 44A0111-18 (1.65mm dia.)*

$$D = 1.2 \sqrt{3 \times 1.19^2 + 5 \times 1.40^2 + 1 \times 1.65^2}$$

$$D = 1.2 \sqrt{3 \times 1.4 + 5 \times 2.0 + 1 \times 2.7}$$

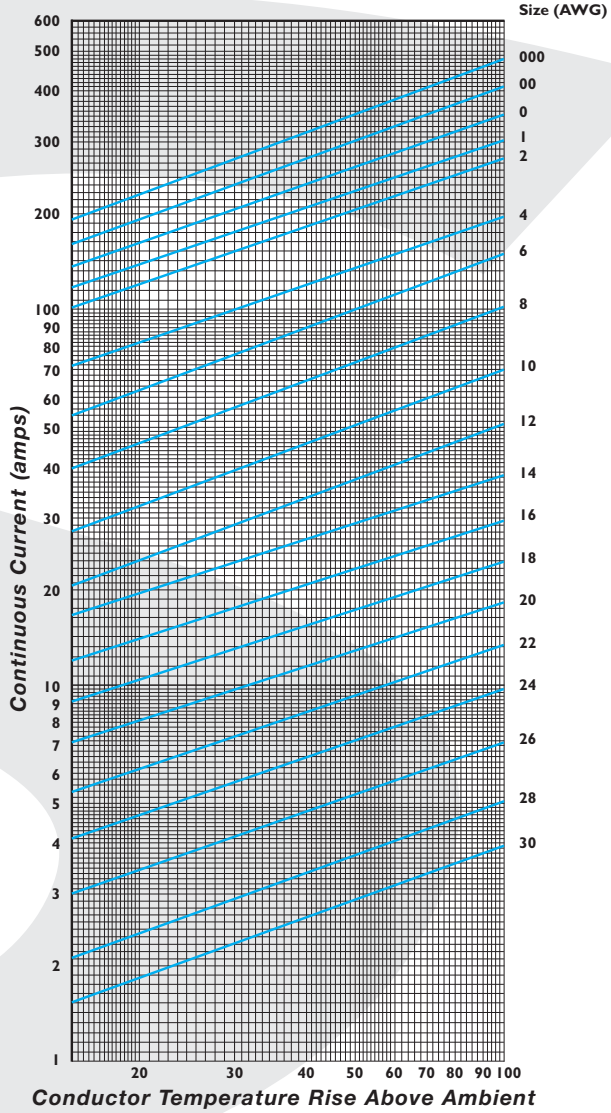
$$D = 1.2 \sqrt{4.2 + 10.0 + 2.7}$$

$$D = 1.2 \sqrt{17}$$

$$D = 1.2 \times 4.12$$

$$D = 4.95\text{mm}$$

Typical Conductor Temperature Rise of Single Insulated Wire In Free Air



Number of cores	2	3	4	7	9	12	15	18	21	24	27	30	37
Derating factor	0.825	0.73	0.66	0.54	0.49	0.43	0.39	0.36	0.33	0.31	0.29	0.28	0.26