Insulator bore-size chart

All 33 single-, twin- and four-bore alumina insulator sizes, by bore, with the largest wire each one takes

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Bore is the diameter of each hole, nominal, in mm. "Largest wire" is the bore minus a 0.3 mm nominal gap: the shortlist rule of our wire-size guide, taken from the largest bore tolerance written on our 2026 orders (±0.15 to ±0.3 mm). It is a filter, not an acceptance clearance. The tube column is the smallest usually-stocked protection tube with at least 1 mm between insulator OD and tube ID.

Twin bore

OD × bore (mm)	Supply	Largest wire at 0.3 mm gap	Largest listed wire within it	Tube to compare	Quote
2 × 0.5	Made to order	0.2 mm	–	6×4	Select size
2.5 × 0.7	Usually stocked	0.4 mm	0.35 mm, S, R, B (WIKA, Rössel)	6×4	Select size
3 × 0.8	Made to order	0.5 mm	0.5 mm, S, R, B (WIKA, Rössel)	6×4	Select size
3.5 × 0.9	Usually stocked	0.6 mm	0.51 mm, 24 AWG (ASTM E230)	7×5	Select size
4 × 1	Made to order	0.7 mm	0.51 mm, 24 AWG (ASTM E230)	7×5	Select size
4.2 × 1.1	Usually stocked	0.8 mm	0.51 mm, 24 AWG (ASTM E230)	9×6	Select size
4.5 × 1.2	Usually stocked	0.9 mm	0.81 mm, 20 AWG (ASTM E230)	9×6	Select size
5 × 1.2	Made to order	0.9 mm	0.81 mm, 20 AWG (ASTM E230)	9×6	Select size
5.5 × 1.4	Usually stocked	1.1 mm	1 mm, K, N, J (WIKA); base metal (Rössel)	10×7	Select size
6 × 1.4	Made to order	1.1 mm	1 mm, K, N, J (WIKA); base metal (Rössel)	10×7	Select size
8 × 1.8	Made to order	1.5 mm	1.38 mm, base metal (Rössel)	14×10	Select size
8.5 × 1.8	Usually stocked	1.5 mm	1.38 mm, base metal (Rössel)	14×10	Select size

Four bores

OD × bore (mm)	Supply	Largest wire at 0.3 mm gap	Largest listed wire within it	Tube to compare	Quote
2 × 0.4	Made to order	0.1 mm	–	6×4	Select size
2.5 × 0.6	Usually stocked	0.3 mm	0.25 mm, 30 AWG (ASTM E230)	6×4	Select size
3 × 0.6	Made to order	0.3 mm	0.25 mm, 30 AWG (ASTM E230)	6×4	Select size
3.5 × 0.8	Usually stocked	0.5 mm	0.5 mm, S, R, B (WIKA, Rössel)	7×5	Select size
4 × 1	Made to order	0.7 mm	0.51 mm, 24 AWG (ASTM E230)	7×5	Select size
4.2 × 1.0	Usually stocked	0.7 mm	0.51 mm, 24 AWG (ASTM E230)	9×6	Select size
4.5 × 1.1	Usually stocked	0.8 mm	0.51 mm, 24 AWG (ASTM E230)	9×6	Select size
5 × 1.2	Made to order	0.9 mm	0.81 mm, 20 AWG (ASTM E230)	9×6	Select size
5.5 × 1.3	Usually stocked	1 mm	1 mm, K, N, J (WIKA); base metal (Rössel)	10×7	Select size
6 × 1.3	Made to order	1 mm	1 mm, K, N, J (WIKA); base metal (Rössel)	10×7	Select size
8 × 1.6	Made to order	1.3 mm	1 mm, K, N, J (WIKA); base metal (Rössel)	14×10	Select size
8.5 × 1.6	Usually stocked	1.3 mm	1 mm, K, N, J (WIKA); base metal (Rössel)	14×10	Select size

Single bore

OD × bore (mm)	Supply	Largest wire at 0.3 mm gap	Largest listed wire within it	Tube to compare	Quote
2 × 1	Made to order	0.7 mm	0.51 mm, 24 AWG (ASTM E230)	6×4	Select size
2.5 × 1.5	Usually stocked	1.2 mm	1 mm, K, N, J (WIKA); base metal (Rössel)	6×4	Select size
3 × 2	Usually stocked	1.7 mm	1.63 mm, 14 AWG (ASTM E230)	6×4	Select size
4 × 2.5	Made to order	2.2 mm	2 mm, base metal (Rössel)	7×5	Select size
5 × 3	Made to order	2.7 mm	2 mm, base metal (Rössel)	9×6	Select size
6 × 4	Made to order	3.7 mm	3.25 mm, 8 AWG (ASTM E230)	10×7	Select size
10 × 4	Usually stocked	3.7 mm	3.25 mm, 8 AWG (ASTM E230)	15×11	Select size
8 × 5	Made to order	4.7 mm	3.25 mm, 8 AWG (ASTM E230)	14×10	Select size
12 × 7	Made to order	6.7 mm	3.25 mm, 8 AWG (ASTM E230)	18×13	Select size

Check the fit on the drawing

Compare the minimum finished bore with the maximum wire diameter, and allow more room for threading over the ordered length. Example: a 0.8 mm bore agreed at ±0.3 mm can come out at 0.5 mm, which leaves no clearance for 0.5 mm wire. Some buyers write the wire that has to pass through the bores on the order instead of a bore tolerance; that is the clearer way if fit is what matters.

Wire sizes: ASTM E230 gauges as reproduced by Tempco (catalog page 14-103); WIKA TE 65.80 (K, N, J in Ø1 or Ø3 mm; S, R, B in Ø0.35 or Ø0.5 mm); Rössel (base metal 1.0, 1.38, 2.0 and 3.0 mm; noble metal 0.5 or 0.35 mm).

Grade, lengths and lead time

Standard grade: C799 alumina (99.5% Al2O3); 99% and 95% on request. Lengths are cut to order, family range 10-4000 mm. Usually stocked sizes: about 3 days for small orders, about 7 for bulk. Made-to-order sizes: usually 25-30 days, from 100 pieces. We also make larger twin-bore sizes, up to 7 bores and flat twin-bore insulators to drawing.

For a quotation, send the wire diameter and its tolerance, the thermocouple type, number of bores, OD, length, the wire that must pass or a bore tolerance, and the quantity.

Wire-size guide and nominal size finder / Insulator product page / Request an insulator quotation