Earth electrode materials

Quality earth rods are commonly made from either solid copper, stainless steel or copperbonded steel.

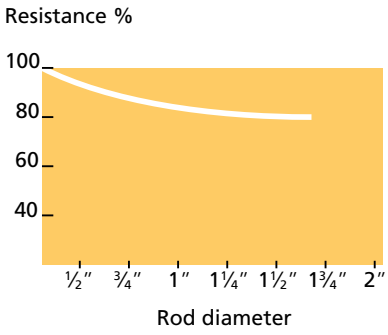
Three types of Furse earth rod are available, but the copperbonded steel cored rod is by far the most popular, due to its combination of strength, corrosion resistance, and comparatively low cost.

Solid copper and stainless steel rods offer a very high level of corrosion resistance at the expense of lower strength and higher cost.

Diameter of rod

One common misconception is that the diameter of the rod has a drastic effect on lowering earth resistance. This is not true! As the graph shows, you only lower the resistance value by 9.5 per cent by doubling the diameter of the rod (which means increasing the weight and the cost of the rod by approximately 400 percent!)

Thus the rationale is: Use the most economical rod that soil conditions will allow you to drive. This is one of the ways to ensure that you don't waste money on over-dimensioned rods.



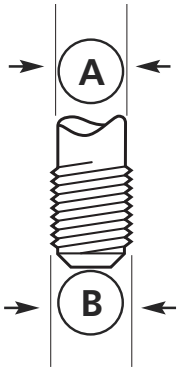
Effect of electrode diameter on resistance

Thread and shank diameters

Confusion often arises between thread and shank diameters for threaded rods.

The thread rolling process, used by quality rod manufacturers, raises the surface of the rod so that thread diameter (B) is greater than shank diameter (A) (see drawing).

All threads are Unified National Coarse (UNC-2A).



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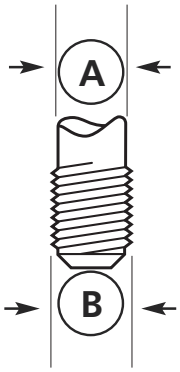
Threaded copperbond earth rod

RB225 + ST200 + CG270

Nominal diameter	Length	Thread 'B' UNC	Shank 'A'	Weight each	Part No.
½"	1200 mm	9/16"	12.7 mm	1.18 kg	RB105
½"	1500 mm	9/16"	12.7 mm	1.55 kg	RB110
½"	1800 mm	9/16"	12.7 mm	1.76 kg	RB115
½"	2400 mm	9/16"	12.7 mm	2.36 kg	RB125†
⅝"	1200 mm	⅝"	14.2 mm	1.53 kg	RB205-FU
⅝"	1500 mm	⅝"	14.2 mm	1.88 kg	RB210
⅝"	1800 mm	⅝"	14.2 mm	2.29 kg	RB215
⅝"	2100 mm	⅝"	14.2 mm	2.51 kg	RB220-FU
⅝"	2400 mm	⅝"	14.2 mm	3.00 kg	RB225†
⅝"	3000 mm	⅝"	14.2 mm	3.79 kg	RB235†
¾"	1200 mm	¾"	17.2 mm	2.19 kg	RB305
¾"	1500 mm	¾"	17.2 mm	2.73 kg	RB310
¾"	1800 mm	¾"	17.2 mm	3.27 kg	RB315
¾"	2100 mm	¾"	17.2 mm	3.83 kg	RB320-FU
¾"	2400 mm	¾"	17.2 mm	4.35 kg	RB325†
¾"	3000 mm	¾"	17.2 mm	5.44 kg	RB335†

Fittings

Type	Weight each	Part No.
½" Coupling	0.09 kg	CG170
⅝" Coupling	0.08 kg	CG270†
¾" Coupling	0.13 kg	CG370†
½" Driving stud	0.05 kg	ST100
⅝" Driving stud	0.08 kg	ST200
¾" Driving stud	0.12 kg	ST300



Furse copperbond earth rods probably offer to the installer the best and most economical earth rods available. They are made by molecularly bonding 99.9% pure electrolytic copper on to a low carbon steel core.

Furse rods are not of the sheathed type. They are highly resistant to corrosion, and because the steel used has a very high tensile strength, they can be driven by power hammers to great depths.

The counter-bored couplings are made from high copper content alloy, **commercial brass is not used**. This again ensures excellent corrosion resistance and high strength.

Copper thickness minimum 250 microns.

Earth rods to BS EN 50164-2, BS 7430
Fittings to BS EN 50164-1
†UL467 (RB125, RB225, RB235, RB325, RB335, CG270, CG370)

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