

## Earth electrode materials

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

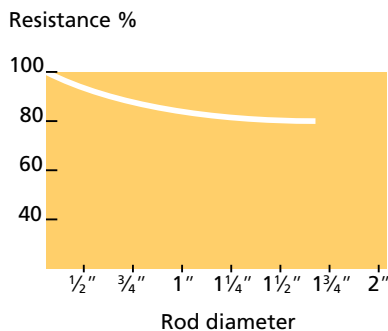
Three types of Furse earth rod are available, but the copperbonded steel cored rod is by far the most popular, due to its combination of strength, corrosion resistance, and comparatively low cost.

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.



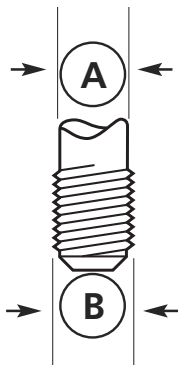
Effect of electrode diameter on resistance

## 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).



# Earth electrodes

## Threaded copperbond earth rod



RB225 + ST200 + CG270

Nominal diameter	Length	Thread 'B' UNC	Shank 'A'	Weight each	Part No.
1/2"	1200 mm	9/16"	12.7 mm	1.18 kg	RB105
1/2"	1500 mm	9/16"	12.7 mm	1.55 kg	RB110
1/2"	1800 mm	9/16"	12.7 mm	1.76 kg	RB115
1/2"	2400 mm	9/16"	12.7 mm	2.36 kg	RB125 <sup>†</sup>
5/8"	1200 mm	5/8"	14.2 mm	1.53 kg	RB205-FU
5/8"	1500 mm	5/8"	14.2 mm	1.88 kg	RB210
5/8"	1800 mm	5/8"	14.2 mm	2.29 kg	RB215
5/8"	2100 mm	5/8"	14.2 mm	2.51 kg	RB220-FU
5/8"	2400 mm	5/8"	14.2 mm	3.00 kg	RB225 <sup>†</sup>
5/8"	3000 mm	5/8"	14.2 mm	3.79 kg	RB235 <sup>†</sup>
3/4"	1200 mm	3/4"	17.2 mm	2.19 kg	RB305
3/4"	1500 mm	3/4"	17.2 mm	2.73 kg	RB310
3/4"	1800 mm	3/4"	17.2 mm	3.27 kg	RB315
3/4"	2100 mm	3/4"	17.2 mm	3.83 kg	RB320-FU
3/4"	2400 mm	3/4"	17.2 mm	4.35 kg	RB325 <sup>†</sup>
3/4"	3000 mm	3/4"	17.2 mm	5.44 kg	RB335 <sup>†</sup>

### Fittings

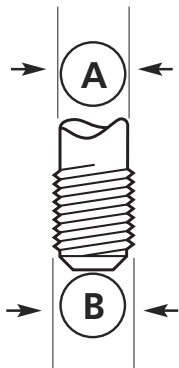
Type	Weight each	Part No.
1/2" Coupling	0.09 kg	CG170
5/8" Coupling	0.08 kg	CG270 <sup>†</sup>
3/4" Coupling	0.13 kg	CG370 <sup>†</sup>
1/2" Driving stud	0.05 kg	ST100
5/8" Driving stud	0.08 kg	ST200
3/4" Driving stud	0.12 kg	ST300

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

<sup>†</sup>UL467 (RB125, RB225, RB235, RB325, RB335, CG270, CG370)



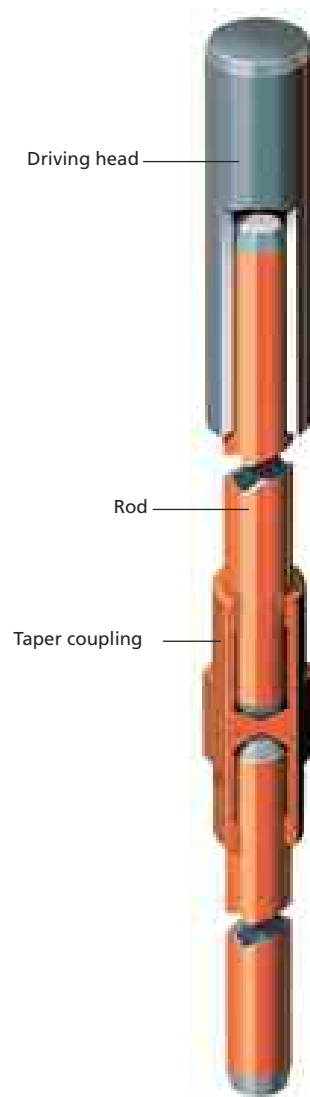


## Unthreaded copperbond earth rod

Diameter	Length	Weight each	Part No.
9.0 mm	1200 mm	0.62 kg	RB005
12.7 mm	1200 mm	1.18 kg	RB103
12.7 mm	1500 mm	1.55 kg	RB107
12.7 mm	1800 mm	1.76 kg	RB116
12.7 mm	2400 mm	2.36 kg	RB126 <sup>†</sup>
14.2 mm	1200 mm	1.53 kg	RB203
14.2 mm	1500 mm	1.88 kg	RB213
14.2 mm	1800 mm	2.29 kg	RB216
14.2 mm	2000 mm	2.51 kg	RB217
14.2 mm	2100 mm	2.68 kg	RB223
14.2 mm	2400 mm	3.00 kg	RB226 <sup>†</sup>
14.2 mm	3000 mm	3.79 kg	RB236 <sup>†</sup>
17.2 mm	1200 mm	2.19 kg	RB306
17.2 mm	1500 mm	2.73 kg	RB313
17.2 mm	1800 mm	3.27 kg	RB316
17.2 mm	2000 mm	3.64 kg	RB317
17.2 mm	2100 mm	3.83 kg	RB323
17.2 mm	2400 mm	4.35 kg	RB326 <sup>†</sup>
17.2 mm	3000 mm	5.44 kg	RB336 <sup>†</sup>

### Fittings

Type	Weight each	Part No.
12.7 mm Coupling	0.09 kg	CG177
14.2 mm Coupling	0.08 kg	CG277
17.2 mm Coupling	0.13 kg	CG377
12.7 mm Driving head	0.25 kg	ST107
14.2 mm Driving head	0.22 kg	ST207
17.2 mm Driving head	0.27 kg	ST307



RB226 + ST207 + CG277

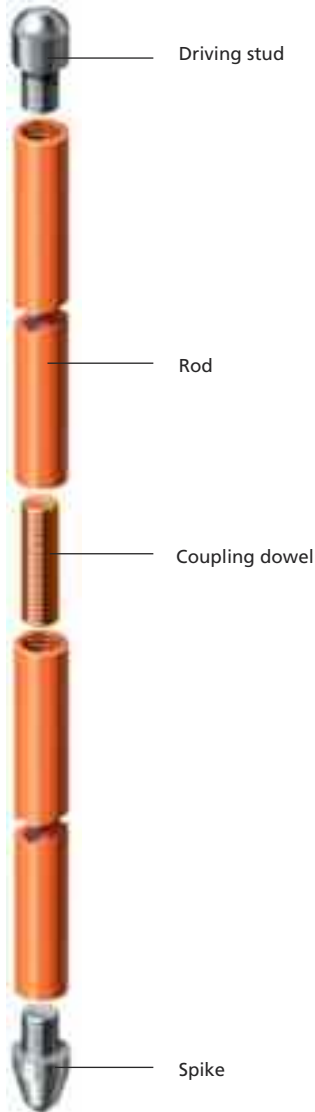


Earth rods to BS EN 50164-2, BS 7430

UL467 (RB126, RB226, RB236, RB326, RB336)



## Solid copper and stainless steel earth rod



RC010 +  
ST010 + SP010

	Diameter	Length	Weight each	Part No.
<b>Solid copper rod</b>				
	15 mm	1200 mm	1.88 kg	RC010
<b>NEW</b>	15 mm	1500 mm	2.35 kg	RC011
<b>NEW</b>	15 mm	3000 mm	4.70 kg	RC012
	20 mm	1200 mm	3.34 kg	RC015
<b>NEW</b>	20 mm	1500 mm	4.18 kg	RC016
<b>NEW</b>	20 mm	3000 mm	8.36 kg	RC017
<b>Solid copper rod kit</b>				
	15 mm	8 ft (2440 mm)	3.82 kg	RC010-KIT <sup>†</sup>
	20 mm	8 ft (2440 mm)	6.79 kg	RC015-KIT <sup>†</sup>
<b>Stainless steel rod</b>				
	16 mm	1200 mm	1.87 kg	RS005
<b>NEW</b>	16 mm	1500 mm	2.34 kg	RS011
<b>NEW</b>	16 mm	3000 mm	4.68 kg	RS012
<b>NEW</b>	20 mm	1500 mm	3.65 kg	RS016
<b>NEW</b>	20 mm	3000 mm	7.30 kg	RS017
<b>Stainless steel rod kit</b>				
	16 mm	8 ft (2440 mm)	3.80 kg	RS005-KIT <sup>†</sup>
<b>Fittings</b>				
Type			Weight each	Part No.
	15 mm hardened steel driving stud for copper/stainless steel rod		0.02 kg	ST010
	20 mm hardened steel driving stud for copper/stainless steel rod		0.05 kg	ST015
	Coupling dowel for 15 mm & 20 mm copper rod		0.02 kg	CG013
	Coupling dowel for 16 mm & 20 mm stainless steel rod		0.02 kg	CG005
	15 mm hardened steel spike for copper/stainless steel rod		0.02 kg	SP010
	20 mm hardened steel spike for copper/stainless steel rod		0.04 kg	SP015

### Solid copper rod

Furse solid copper earth rods offer greater resistance to corrosion. They are ideally used in applications where soil conditions are very aggressive, such as soils with high salt content.

### Stainless steel rod

Stainless steel rods are used to overcome many of the problems caused by galvanic corrosion which can take place between dissimilar metals buried in close proximity.

Furse stainless steel earth rods are highly resistant to corrosion.

Kits include 2 x 1200 mm rods, coupling dowel, driving stud and spike to make 8 ft rod.

Connections to the rods can be by mechanical clamps, compression or by Furse's own "FurseWELD" exothermic welding system.



BS EN 50164-2, BS 7430

<sup>†</sup>UL467 (RC010-KIT, RC015-KIT, RS005-KIT)

