Earth electrodes
Introduction

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.

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

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

Copperbond rod

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.

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

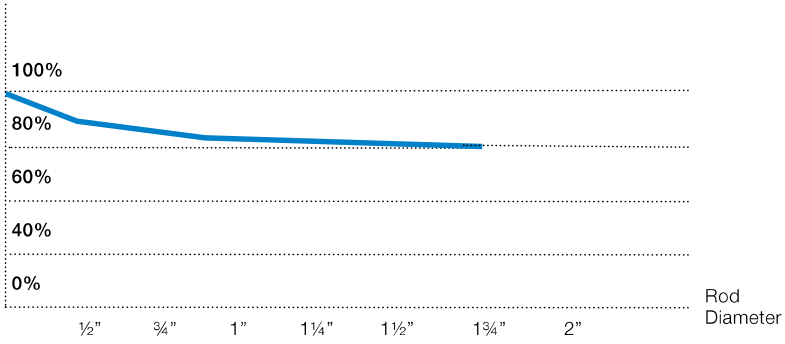
Stainless steel rods are used to overcome many of the problems caused by galvanic corrosion which can take place between dissimilar metals buried in close proximity. Furse stainless steel earth rods are highly resistant to corrosion.

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% by doubling the diameter of the rod (which means increasing the weight and the cost of the rod by approximately 400%).

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

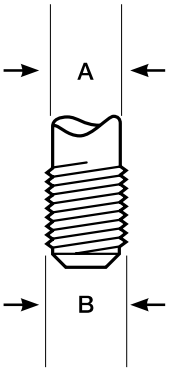


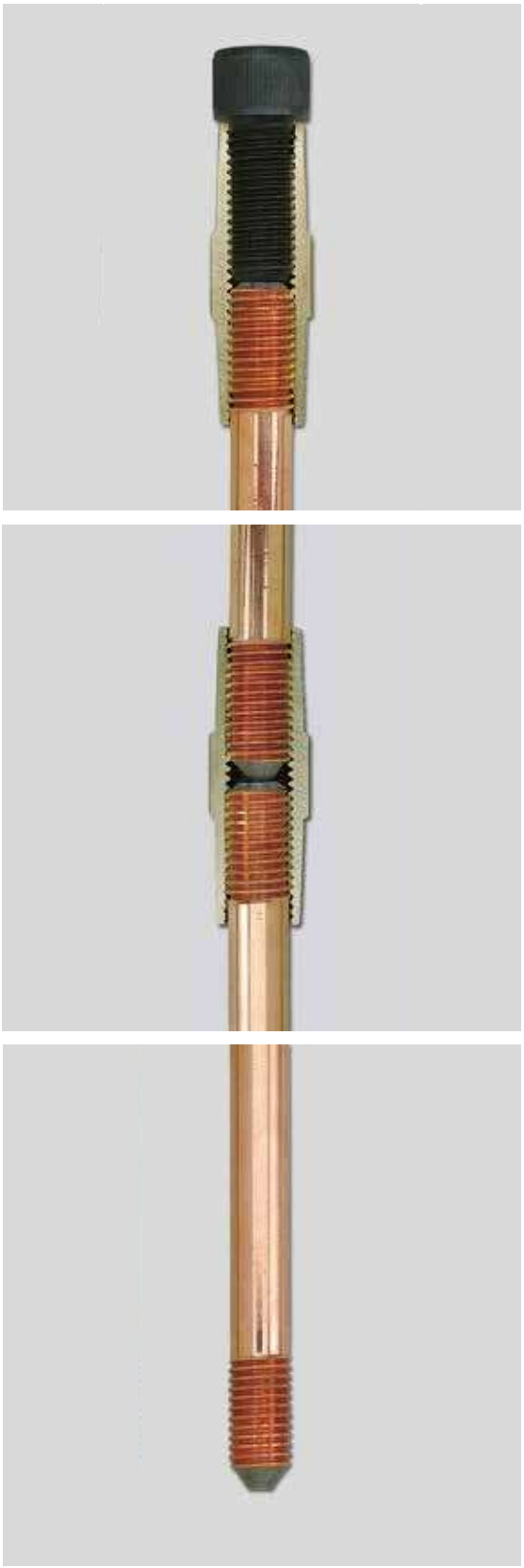
Thread and shank diameters

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
Earth rods

Threaded copperbond earth rod

Part no.	Nominal diameter (")	Length (mm)	Thread 'B' UNC (")	Shank 'A' (mm)	Weight each (kg)
RB105	Ø½	1,200	9/16	12.7	1.18
RB110	Ø½	1,500	9/16	12.7	1.55
RB115	Ø½	1,800	9/16	12.7	1.76
RB125	Ø½	2,400	9/16	12.7	2.36
RB205-FU	Ø⅝	1,200	⅝	14.2	1.53
RB210	Ø⅝	1,500	⅝	14.2	1.88
RB215	Ø⅝	1,800	⅝	14.2	2.29
RB220-FU	Ø⅝	2,100	⅝	14.2	2.51
RB225	Ø⅝	2,400	⅝	14.2	3.00
RB235	Ø⅝	3,000	⅝	14.2	3.79
RB305	Ø¾	1,200	¾	17.2	2.19
RB310	Ø¾	1,500	¾	17.2	2.73
RB315	Ø¾	1,800	¾	17.2	3.27
RB320-FU	Ø¾	2,100	¾	17.2	3.83
RB325	Ø¾	2,400	¾	17.2	4.35
RB335	Ø¾	3,000	¾	17.2	5.44

– High tensile low carbon steel core with minimum 250 microns of copper

Fittings

Part no.	Type (")	Weight (kg)
CG170	½ Coupling	0.09
CG270	⅝ Coupling	0.08
CG370	¾ Coupling	0.13
ST100	½ Driving stud	0.05
ST200	⅝ Driving stud	0.08
ST300	¾ Driving stud	0.12

Standards

IEC/BS EN 62561-2
BS 7430

UL467 (RB125, RB225, RB235, RB325, RB335, CG270, CG370)