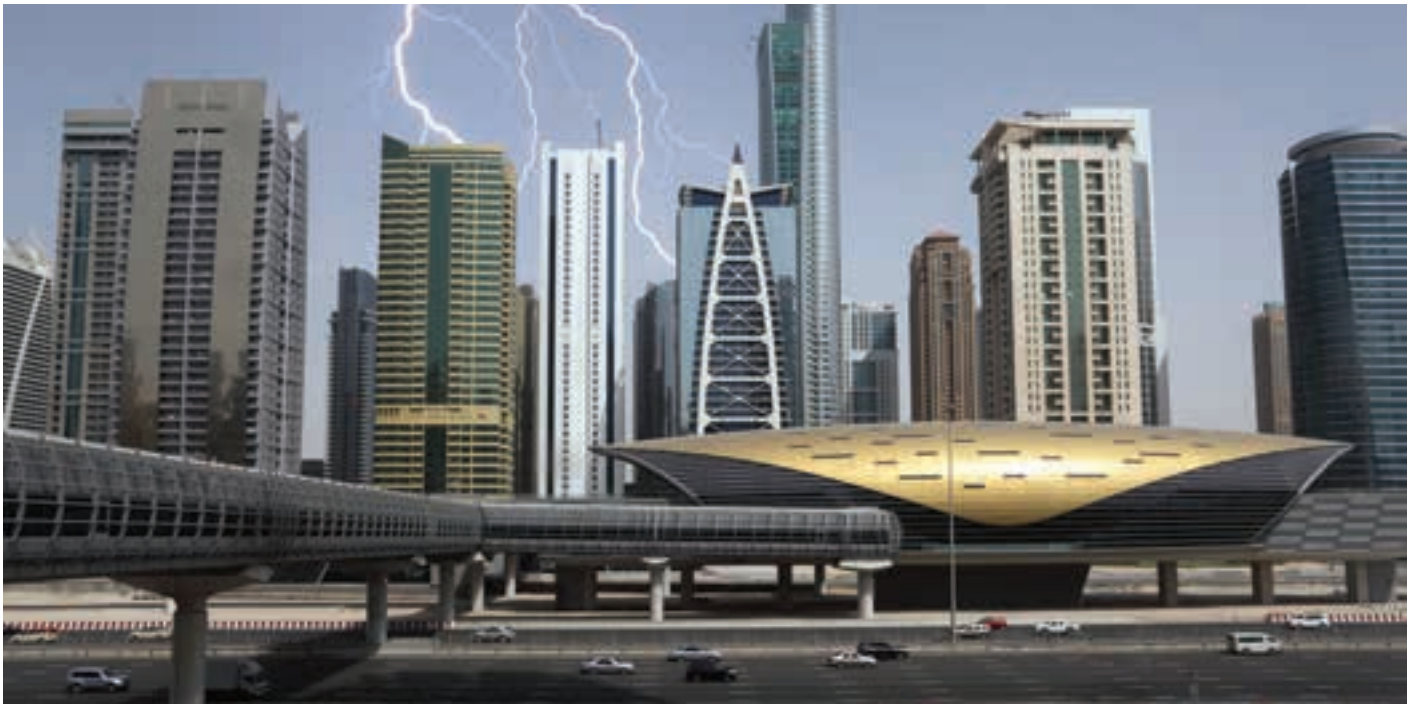
Earthing
Introduction



Furse earthing components are manufactured to meet exacting British, European and International standards to ensure robust, long lasting performance in even the harshest soil conditions.

All components are designed to withstand mechanical damage and the thermal and electromechanical stresses from the earth fault and leakage currents expected within an installation.

These components, combined together, form the earth termination system - the vital system for dispersing those dangerous lightning and fault currents safely and effectively into the ground.

Following National & International standards, we recommend a single integrated earth termination system for a structure, combining lightning protection earthing with power and telecommunication system earthing.

This integrated approach ensures all systems are appropriately cross-bonded and earthed, to fully safeguard against the risk of voltage differences which might otherwise give rise to flashover or electric shock.

Furse earthing and equipotential bonding products offer the surest solution to this problem.

From pipe clamps and metalwork bonds to connect to accessible metal parts, to low resistance copper conductor and high quality earth rods for the earthing arrangement - Furse products are designed to perform.

And where our standard range doesn't quite fit your requirements, with full design and manufacturing capability we can design a special component to suit.

Special component design and manufacture

Our standard range is designed to meet the vast majority of earthing applications. However, on occasion, you may have the need for a non-standard part, for example where connecting large copper cable or tape to a rod, or to metalwork.

Where this is the case, our technical engineering team can design a special component to your needs, which on approval can be manufactured in the quantity specified for the project.


FurseCEM
25 kg
Conductive
Earthing Mix

Earthing
Product selection guide

Product selection guide - Earthing

Earthing

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An effective earthing system is a fundamental requirement of any modern structure or system for operational and/or safety reasons. Without such a system, the safety of a structure, the equipment contained within it and its occupants are compromised.

Earthing systems typically fall into (but are not limited to) one of the following categories:
- Power generation, transmission and distribution
- Lightning protection
- Control of undesirable static electricity
- Telecommunications

The following schematic illustrates the key elements of an effective earthing system.

Conductors and earth electrodes

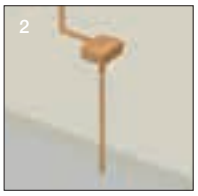
As with lightning protection, the first choice faced by the designer of an earthing system is the type of conductor to be used. The correct choice of conductor is extremely important, whether it be a simple below ground electrode or a complex computer room signal reference grid.

1. Conductors

We offer three types of conductor:
- Flat tape
- Solid circular
- Stranded cable

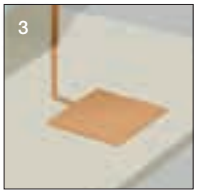
It is important that earthing conductors should be correctly sized for their application, as they may be required to carry a considerable current for several seconds. A range of conductor materials is available. Above ground, copper, aluminium and steel may be used. Below ground, copper is the most common choice due to its high resistance to corrosion.

In addition to the conductors, earth rods and plates or any combination thereof can be used to achieve an effective earth depending on the site conditions.



2. Earth rods

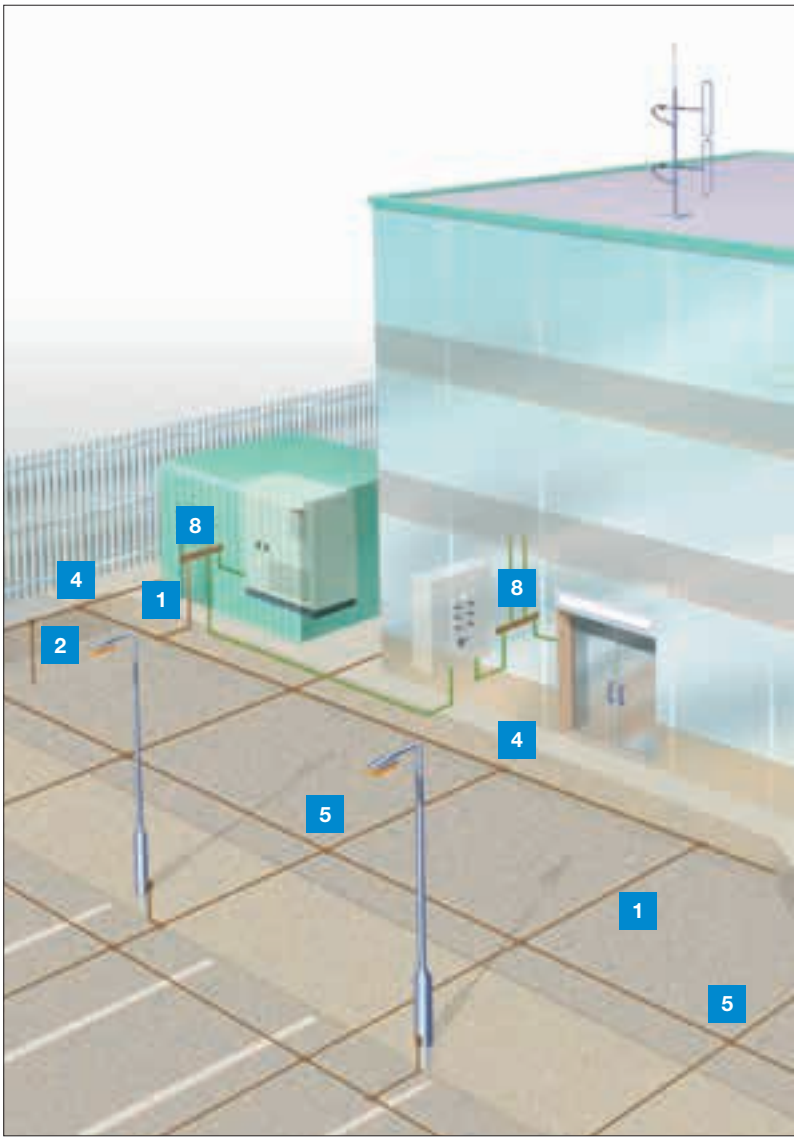
Earth rods take advantage of lower resistivity soils at greater depths than normal excavation will allow.



3. Earth plates

Earth plates are used to attain an effective earth in shallow soils with underlying rocks or in locations with large amounts of buried services. They can also provide protection at potentially dangerous places e.g. HV switching positions.

Main aspects and individual components of an earthing system



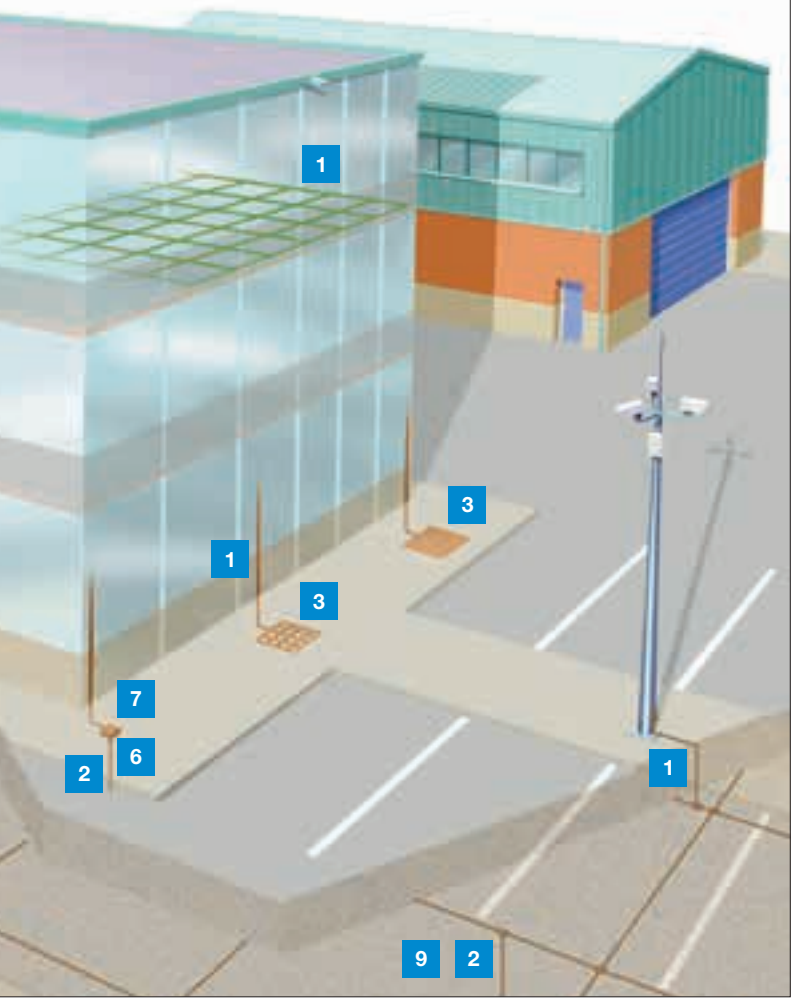
Connectors and terminations

An effective earthing system relies on joints and connections to have good electrical conductivity with high mechanical strength. Poorly chosen or badly installed joints and connectors can compromise the safe operation of an earthing system. We offer a range of connectors and termination methods to suit a wide range of applications:

4. FurseWELD exothermic welding

A simple, self-contained method of forming high quality electrical connections which requires no external power or heat source. Connections are made using the high temperature reaction of powdered copper oxide and aluminium.

This illustration is designed to demonstrate the main aspects and individual components of an earthing system. It is not intended to represent an actual scheme conforming to a particular code of practice. The drawing is not to scale.



FurseWELD connections allow conductors to carry higher currents than other types of connections. They will never loosen, are highly conductive and have excellent corrosion resistance.

5. Compression connectors

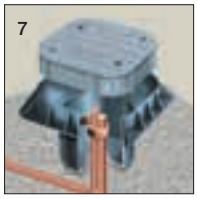
For applications where exothermic welding is not appropriate for creating permanent connections, compression connectors may be used.

Compression connectors produce very robust joints which can be buried in the ground or in concrete.

6. Mechanical clamps

Where permanent connections are not appropriate, mechanical clamps offer the ideal solution. These are typically used on smaller scale installations where periodic disconnection for testing is required.

All Furse mechanical clamps are manufactured from high copper content alloy. They have high mechanical strength, excellent corrosion resistance and conductivity.



7. Earth inspection pits

Regular inspection and testing of the earthing system is essential. Inspection pits allow easy access to earth electrodes and conductors to facilitate this procedure.

8. Earth bars

Earth bars are an efficient and convenient way of providing a common earth point. Integral disconnecting links mean the earth bars can be isolated for testing purposes.

9. Earth electrode backfills

Earth electrode backfills are to be used in areas where required resistance levels are difficult to achieve. These products effectively act to increase the electrode's surface area thus lowering its resistance to earth.