



Product Catalogue | 2015

Earthing & lightning protection Total solution catalogue

furse 

Power and productivity
for a better world™ 

Furse overview

Our reach & expertise

1

With over 120 years of experience Furse provide world leading Earthing, Lightning and Electronic Systems Protection solutions. From our own designed and manufactured products, through to risk assessment and systems design advice, Furse offer a renowned Total Solution for earthing and lightning protection.

Furse was acquired by the ABB Group in 2012, and through the wider distributor network they offer, the Furse brand has now become established as a world leader in earthing and lightning protection, with our products specified and installed in many prestigious projects globally.

The combined expertise of Furse and the experience within the electrical sector ABB provide, allows us to share the knowledge we hold in key industry sectors with our clients. In turn this promotes properly informed decision making on the best earthing and lightning protection solution to suit your needs.

Why use Furse?

Expertise

Specialist advice from our fully qualified technical engineers - focusing on your earthing and lightning protection issues and concerns.

Experience

Providing the optimum design - one that doesn't use more material than is necessary, saving you money.

Products

Our knowledge of the latest products ensures a tailored design that can be installed using the most appropriate and up-to-date products.

Technical

With over 120 years accumulated knowledge of developing earthing and lightning protection solutions, we provide design systems to any recognized standard.

Customer service

Our sales and technical teams are ready to assist with all your earthing and lightning protection needs.

Knowledge

Our knowledge of the latest standards ensures designs and selected products comply with the latest IEC/BS EN/NFPA/UL standards.



Introduction

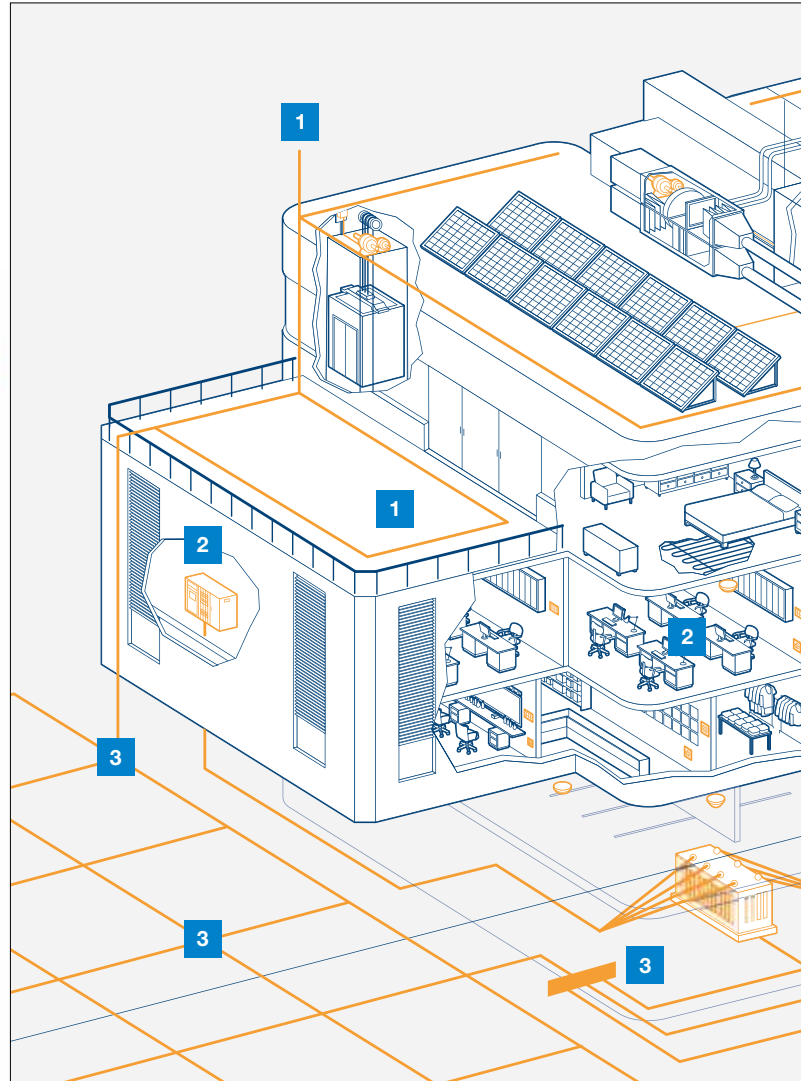
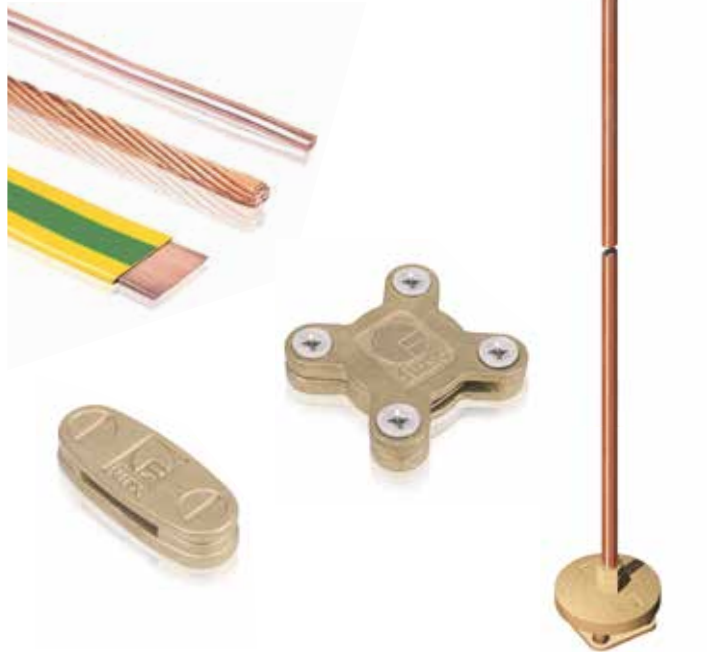
The Furse Total Solution approach

1. Structural lightning protection

From Furse air termination systems including air rods and strike plates to capture lightning strikes, through to our comprehensive range of down conductors and lightning protection components which channel lightning energy safely to a Furse earth termination network.

Including:

- Air termination systems
- Lightning protection conductors
- Conductor clips, clamps & holdfasts
- Bimetallic connection components



1 Structural lightning protection | 2 Electronic systems protection | 3 Earthing

2. Electronic systems protection

Our extensive range of equipotential bonding and transient overvoltage Surge Protection Devices (SPDs) providing fully coordinated protection against transient overvoltages. SPDs are able to cover all incoming and outgoing metallic service lines including power, data, signal and telecoms.

Including:

- Lightning equipotential bonding SPDs
- Mains power transient overvoltage SPDs
- Data, signal & telecommunication lines SPDs
- DC power & photovoltaic system SPDs





6

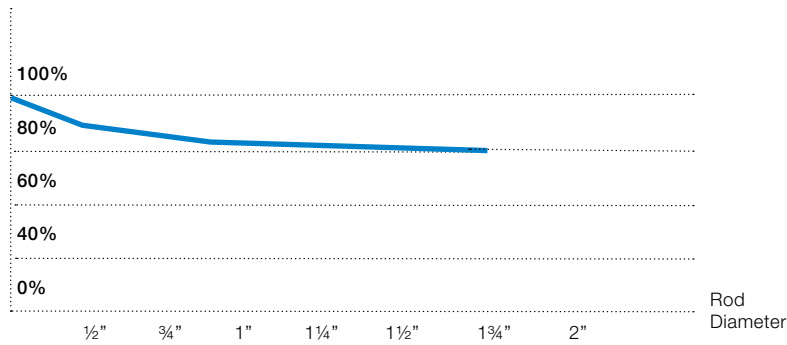


Diameter of rod

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

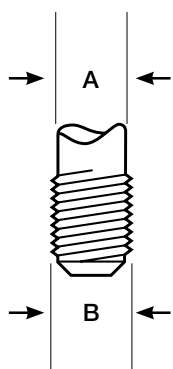


Thread and shank diameters

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 bonds & clamps

Mechanical clamps



Rod to tape clamp (type A)

| Part no. | Nominal rod diameter (") | (mm) | Max. conductor (mm) | Weight each (kg) |
|----------|--------------------------|--------|---------------------|------------------|
| CR105 | 0 1/2 | Ø 12.7 | 26 x 12 | 0.15 |
| CR105 | 0 3/4 | Ø 16 | 26 x 12 | 0.15 |
| CR105 | 0 1 | Ø 20 | 26 x 10 | 0.15 |
| CR108 | 0 3/4 | Ø 16 | 30 x 2 | 0.16 |
| CR108 | 0 1 | Ø 20 | 30 x 2 | 0.16 |
| CR110 | 0 3/4 | Ø 16 | 40 x 12 | 0.24 |
| CR115 | 0 3/4 | Ø 16 | 51 x 8 | 0.30 |
| CR125 | 0 1 | Ø 20 | 51 x 12 | 0.30 |
| CR130 | 0 1/2 | Ø 12.7 | 26 x 20 | 0.23 |
| CR130 | 0 3/4 | Ø 16 | 26 x 18 | 0.23 |
| CR130 | 0 1 | Ø 20 | 26 x 10 | 0.23 |
| CR130 | 0 1 1/4 | Ø 25 | 26 x 10 | 0.23 |

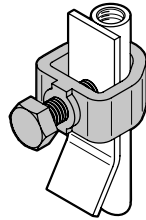
Standards

IEC/BS EN 62561-1 Class H
BS 7430

UL467 (CR105)



- Designed for connection of flat tape conductor to an earth rod. Corrosion resistance, conductivity and mechanical strength are essential considerations in clamp design to ensure an earthing system remains operative for many years. All Furse earth rod clamps have high strength copper alloy bodies and screws e.g. aluminium bronze, phosphor bronze etc., commercial brass is not used
- Tightening torque 15 Nm



8



Rod to cable clamp (type G)

| Part no. | Nominal rod diameter (") | (mm) | Max. conductor (mm ²) | Weight each (kg) |
|-----------|--------------------------|--------|-----------------------------------|------------------|
| CR505 | 0 3/4 | Ø 9.5 | 6-35 | 0.03 |
| CR510-FU* | 0 1/2 | Ø 12.7 | 16-50 | 0.05 |
| G5 | 0 3/4 | Ø 16 | 5.2-33.6 | 0.06 |
| CR515* | 0 3/4 | Ø 16 | 16-70 | 0.06 |
| G6 | 0 1 | Ø 20 | 5.2-33.6 | 0.06 |
| CR520* | 0 1 | Ø 20 | 35-95 | 0.06 |
| CR525 | 0 1 1/4 | Ø 25 | 70-150 | 0.14 |

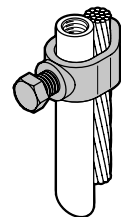
Standards

BS EN 62561-1 Class H
BS 7430

UL 467 (G5 & G6)



- High strength copper alloy clamp designed to provide a high quality, low resistance connection between solid circular or stranded conductor and an earth rod
- Tightening torque 12 Nm
- *Suitable for use with Ø 8 mm solid circular copper conductor



Earth bonds & clamps

Mechanical clamps



'U' bolt rod clamp (type E)

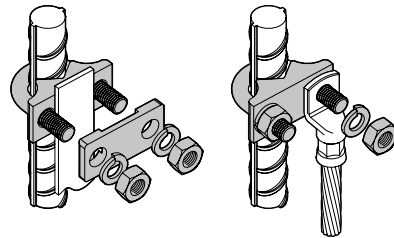
| Part no. | Nominal rod/ rebar diameter (") | (mm) | Hole centres (mm) | Tape width (mm) | Weight each (kg) |
|----------|---------------------------------|------|-------------------|-----------------|------------------|
| CR305 | Ø 5/8 | Ø 16 | 37 | – | 0.20 |
| CR310 | Ø 3/4 | Ø 20 | 37 | – | 0.20 |
| CR315 | Ø 1 | Ø 25 | 37 | – | 0.20 |
| CR320* | Ø 5/8 | Ø 16 | 37 | 25 | 0.26 |
| CR325 | Ø 1 1/2 | Ø 38 | 54 | – | 0.37 |
| CR330 | Ø 2 | Ø 50 | 64 | – | 0.44 |
| CR326 | Ø 1 1/2 | Ø 38 | 54 | 25 | 0.43 |

Standards

IEC/BS EN 62561-1 Class H
BS 7430

- High strength copper alloy 'U' bolt clamp designed to provide a high quality, low resistance connection between flat tape or stranded conductor and earth rod or rebar. 'U' Bolt threaded M10
- *CR320 includes additional plate to allow tape to be clamped without drilling

UL 467 (CR305)



'U' bolt rod clamp (type GUV)

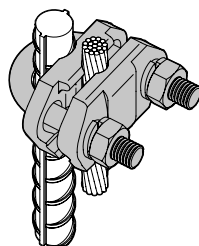
| Part no. | Nominal rod/ rebar diameter (") | (mm) | Conductor range (mm²) | Weight each (kg) |
|----------|---------------------------------|------|-----------------------|------------------|
| CR700* | Ø 5/8 | Ø 16 | 16-95 | 0.39 |
| CR700* | Ø 3/4 | Ø 20 | 16-70 | 0.39 |
| CR705 | Ø 5/8 | Ø 16 | 70-185 | 0.39 |
| CR705 | Ø 3/4 | Ø 20 | 70-150 | 0.39 |
| CR730 | Ø 5/8 | Ø 16 | 150-300 | 0.62 |
| CR730 | Ø 3/4 | Ø 20 | 150-300 | 0.62 |
| CR710 | Ø 1 | Ø 25 | 16-70 | 0.39 |
| CR740 | Ø 1 | Ø 25 | 70-150 | 0.39 |
| CR750 | Ø 1 | Ø 25 | 150-300 | 0.62 |

Standards

IEC/BS EN 62561-1 Class H
BS 7430

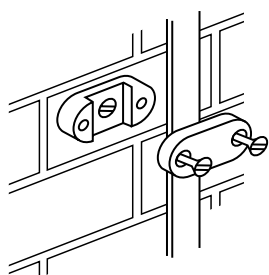
- High strength copper alloy 'U' bolt clamp designed to provide a high quality, low resistance connection between solid circular or stranded conductor and an earth rod or rebar
- Tightening torque 12 Nm
- * Suitable for use with Ø 8 mm solid circular copper conductor

UL 467 (CR700,
CR705, CR730)



Conductor network

Metallic conductor clips



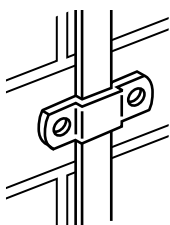
Standards

IEC/BS EN 62561-4 (CP115)

DC tape clip

| Part no. | Conductor size (mm) | Weight each (kg) |
|---|---------------------|------------------|
| For use with bare copper | | |
| CP205 | 20 x 3 | 0.06 |
| CP216 | 25 x 4 | 0.07 |
| CP227 | 30 x 5 | 0.10 |
| CP245 | 38 x 5 | 0.12 |
| CP241 | 40 x 4 | 0.14 |
| CP256 | 50 x 4 | 0.15 |
| For use with PVC covered copper | | |
| CP225 | 25 x 6 | 0.13 |
| CP265 | 50 x 6 | 0.26 |
| For use with lead covered copper | | |
| CP305 | 25 x 3 | 0.20 |
| For use with bare aluminium | | |
| CP105 | 20 x 3 | 0.02 |
| CP125 | 50 x 6 | 0.05 |
| For use with PVC covered aluminium | | |
| CP115 | 25 x 3 | 0.04 |
| CP130 | 50 x 6 | 0.06 |

- High quality alloys of either copper or aluminium down conductor clip for securing flat tape
- Other sizes available to order
- Fix using countersunk wood screws 1½" No. 10 or M6 (Part no. SW005 or SW105) and wall plugs (Part no. PS305)



Tape clip

| Part no. | Conductor size (mm) | Weight each (kg) |
|--------------------------------------|---------------------|------------------|
| For use with bare copper | | |
| CP510 | 20 x 3 | 0.02 |
| CP515 | 25 x 3 | 0.02 |
| For use with bare aluminium | | |
| CP405 | 20 x 3 | 0.01 |
| CP410 | 25 x 3 | 0.01 |
| CP415 | 25 x 6 | 0.01 |
| For use with PVC covered tape | | |
| CP517 | 25 x 3 | 0.02 |

- Manufactured from pure copper or aluminium, these pressed clips are available in a range of sizes to suit bare and PVC covered copper and aluminium tapes
- Fix using roundhead wood screws 1½" No. 10 or M6 (Part no. SW305 or SW405) and wall plugs (Part no. PS305)

Conductor network

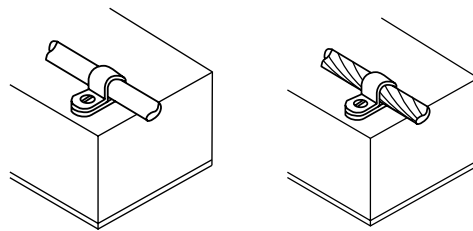
Metallic conductor clips



One hole cable clip

| Part no. | Conductor size (mm) | Conductor material | Weight each (kg) |
|--|---------------------|--------------------|------------------|
| For use with solid circular conductor | | | |
| CP905 | Ø 8 | Copper | 0.01 |
| CP925 | Ø 8 | Aluminium | 0.01 |
| CP915 | Ø 10* | Copper | 0.01 |
| CP935 | Ø 10* | Aluminium | 0.01 |
| For use with stranded conductor | | | |
| CP910 | 50 mm ² | Copper | 0.01 |
| CP915 | 70 mm ² | Copper | 0.01 |
| CP920 | 95 mm ² | Copper | 0.01 |

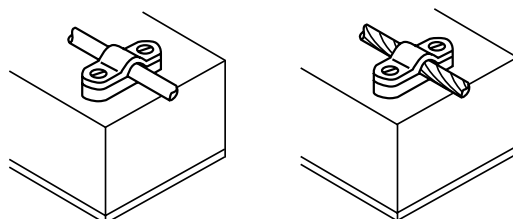
- Manufactured from pure copper or aluminium, these pressed clips are available to suit bare and PVC covered copper and aluminium solid circular conductor, and bare copper stranded conductor
- Fix using roundhead wood screws 1½" No. 10 or M6 (Part no. SW305 or SW405) and wall plugs (Part no. PS305)
- *PVC covered Ø8 mm conductor
- Clip supplied in open position



Heavy duty cast cable saddle

| Part no. | Conductor size (mm) | Conductor material | Weight each (kg) |
|--|---------------------|--------------------|------------------|
| For use with solid circular conductor | | | |
| CP805 | Ø 8 | Copper | 0.09 |
| CP806 | Ø 8 | Aluminium | 0.03 |
| CP815 | Ø 10* | Copper | 0.10 |
| CP816 | Ø 10* | Aluminium | 0.04 |
| For use with stranded conductor | | | |
| CP810 | 50 mm ² | Copper | 0.10 |
| CP815 | 70 mm ² | Copper | 0.10 |
| CP835 | 95 mm ² | Copper | 0.10 |
| CP855 | 120 mm ² | Copper | 0.10 |

- Manufactured from high quality alloys of either copper or aluminium for excellent corrosion resistance and high pull off loads
- Fix using countersunk wood screws 1½" No. 10 or M6 (Part no. SW005 or SW105) and wall plugs (Part no. PS305)
- *For use with PVC covered Ø8 mm conductor or for supporting air terminals when used in conjunction with wall mounted air rod bases.
- Can also be used with glazing bar holdfast and back plate holdfast stem



Standards

IEC/BS EN 62561-4

Earth electrodes

Inspection pits



Lightweight inspection pit

| Part no. | Description | Load rating (kg) | Weight each (kg) |
|----------|---|------------------|------------------|
| PT205 | Lightweight inspection pit with grey polymer lid | 5000 | 1.80 |
| PT309-FU | Lightweight inspection pit with black (unbranded) polymer lid | 5000 | 1.80 |
| PT110* | Lightweight inspection pit with concrete lid | 1200 | 7.50 |

Earth bar for lightweight inspection pit

| | | | |
|-------|------------------|--|------|
| PT004 | 5 hole earth bar | | 0.40 |
|-------|------------------|--|------|

Accessories for polymer lid

| | | | |
|-------|----------------|--|------|
| AK005 | 6 mm Allen key | | 0.03 |
|-------|----------------|--|------|

Accessories for concrete lid

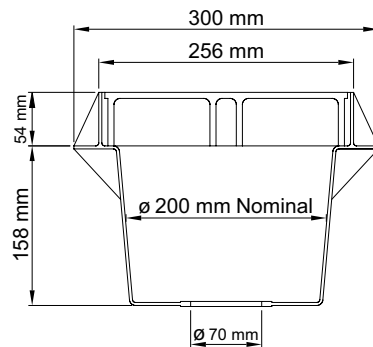
| | | | |
|-------|---|--|------|
| JH100 | M8 x 100 mm long mild steel 'J' bolt lifting hook | | 0.04 |
| AS100 | M8 x 60 stainless steel Allen caphead screw (2 per lid) | | 0.03 |

- Manufactured from high-performance, UV stable and chemically resistant polymer with either polymer or concrete lid to suit the application
- The lightweight inspection pit with polymer lid is load rated to 5,000 kg and is suitable for general to heavy duty use. It has a lockable lid and improved working area compared to the concrete inspection pit. The lightweight inspection pit with concrete lid is load rated to 1,200 kg and is designed for use in pedestrianized and light vehicular areas. The lid can be locked in place, if required order 2 x AS100 Allen caphead screws

*Not illustrated (drawing available on request)

Standards

IEC/BS EN 62561-5



Concrete inspection pit

| Part no. | Description | Weight each (kg) |
|----------|-------------------------|------------------|
| PT005 | Concrete inspection pit | 30.00 |

Earth bars for concrete inspection pit

| | | |
|-------|-------------------------|-------|
| PT005 | Concrete inspection pit | 30.00 |
|-------|-------------------------|-------|

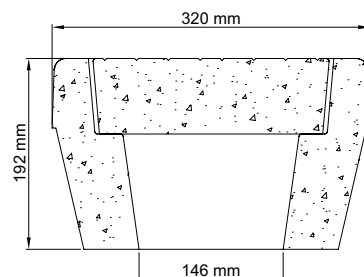
Accessories

| | | |
|-------|------------------|------|
| PT006 | 5 hole earth bar | 0.40 |
| PT007 | 7 hole earth bar | 0.58 |

- The concrete inspection pit is load rated to 3,500 kg and is suitable for most types of earthing and lightning protection installations
- It is not suitable for use in areas where high load, small wheel vehicles are used. The lightweight inspection pit (PT205) is recommended for this type of application

Standards

BS EN 62561-5



Earth electrodes

Backfill materials



Standards

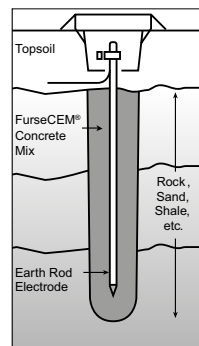
BS EN 50164-7

FurseCEM® conductive aggregate

| Part no. | Description | Weight each (kg) |
|----------|----------------------------------|------------------|
| CM025 | FurseCEM® | 25.00 |
| CM030 | FurseCEM® (supplied with cement) | 25.00 |

- Certain ground conditions make it difficult to obtain a reliable earth resistance, whilst particular installations may require a very low resistance. In such cases, FurseCEM® provides a convenient and permanent solution. By adding FurseCEM® in place of sand and aggregate, to cement, a conductive concrete is formed. This electrically conductive medium has many applications in the electrical/ construction industry, including RF and microwave screening, static control and, of course, earthing, for which it was specifically developed
- When used as a backfill for earth electrodes, FurseCEM® impregnated concrete greatly increases the electrode's surface area thus lowering its resistance to earth

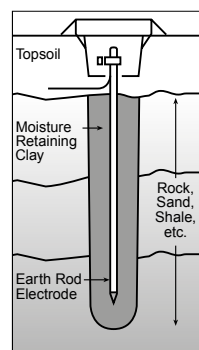
For further information on FurseCEM®, please contact the Furse sales office. A separate datasheet available on request.



Bentonite moisture retaining clay

| Part no. | Description | Weight each (kg) |
|----------|--------------------|------------------|
| CM015 | Bentonite powder | 25.00 |
| CM020 | Bentonite granules | 25.00 |

- Used as an earth-electrode backfill to reduce soil resistivity by retaining moisture. The clay is a sodium activated montmorillonite, which when mixed with water swells to many times its dry volume. It has the ability to hold its moisture content for a considerable period of time and to absorb moisture from the surrounding soil (e.g. from rainfall)
- CoSHH datasheet available on request



Earth bonds & clamps

Earth bars



Copper Earth Bar



Tinned copper Earth Bar

Furse earth bars are an efficient and convenient way of providing a common earth point, and integral disconnecting links allow easy isolation for testing purposes.

- Swan-Neck accessory, to facilitate the main earth bar connection
- Available as bare copper or tinned copper hard drawn bar

8

Standard Furse earth bars are available in a variety of lengths, but all consist of a 50 mm wide by 6 mm thick copper bar with M10 termination screws - standard product codes are provided.

Standard features and benefits

- The plastic channel base is entirely corrosion proof, made from high impact uPVC unlike the traditional galvanized steel channel
- Lighter and easier to handle, the use of a modern polymer channel has reduced the weight of the products, making them easier to handle
- Pre-drilled fixing holes for ease of installation
- A range of three designs to meet most installation requirements

Special earth bar requirements

Standard earth bars meet the majority of applications, however where a customer has a specific requirement, we can design and manufacture special earth bars and disconnecting links as appropriate. Special earth bar designs are provided for customer review and approval as required before manufacture.

Special earth bar design variables include:

- Size and type of bolt, hex nut and washer
- Length, width and thickness of earth bar
- Number of disconnecting links, and their position
- Number of insulators
- Supplied with mounting base or without

An example of a customer special earth bar comprising M10 and M6 studs and disconnecting links

