

WATER SUPPLIES DEPARTMENT
STANDARD SPECIFICATION E-30-02
EARTHING AND LIGHTNING PROTECTION MATERIALS

1. **GENERAL**

1.1 **Standards**

Earthing and lightning protection materials supplied shall comply with the latest issues and revisions of the following IEC and BS Standards:-

BS EN 13601	Copper and copper alloys. Copper rod, bar and wire for general electrical purposes
BS EN 12165	Copper and copper alloys. Wrought and unwrought forging stock
BS EN 62305	Protection against lightning
BS EN 62561	Lightning protection system components (LPSC)
IEC 60364-5-54	Low-voltage electrical installations. Selection and erection of electrical equipment. Earthing arrangements and protective conductors

1.2 **Test Certificates**

Sample tests to the requirements of BS EN 13601 shall be carried out on the earthing and lightning protection materials. The tests shall include both mechanical tests and electrical resistivity tests. Sample test certificates complete with detailed test results for similar materials used within the last 18 months shall be submitted for information upon request.

2. **COMPONENT CONSTRUCTION**

The following earthing and lightning protection materials shall be supplied as specified in the Specification and Drawings:-

2.1 **Earthing Plates and Tapes**

Earthing plates and tapes shall be made of high conductivity copper to the requirements of BS EN 13601. The copper shall be in the annealed condition. The size of the copper earthing plate shall be 1200mm x 1200mm x 6mm unless otherwise specified.

2.2 Earthing Tape Sleeving

Earthing tape sleeving shall be green in colour and manufactured from PVC or Low-Smoke Zero-Halogen type material.

2.3 Earthing Rods

Earthing rods shall be copperbond steel cored rods of diameter not less than 16mm and standard length of 1200mm. The copperbond layer shall be 99.9% pure electrolyte copper of thickness not less than 0.25mm.

The bonding of the copperbond layer shall be rigid in such a way that when a hole is being driven through on a vice, there is no separation between the copperbond layer and the steel core in the resulting shearing.

Rods shall be extensible by means of external couplings, and shall be provided with driving studs to protect the rod end when driven by a hammer.

2.4 Air Terminals

Each air terminal shall comprise the following components:-

- (a) Copper taper pointed air rod and multiple point; and
- (b) Copper air terminal base or ridge saddle for supporting taper pointed air rod.

2.5 Tape Clips

Tape clips for fixing earthing tapes shall be of the direct contact type manufactured from copper or copper alloy to the requirements of BS EN 62561.

2.6 Junction Tape Clamps

Junction tape clamps for joining, teeing or crossing of earthing tapes shall be manufactured from copper or copper alloy to the requirements of BS EN 62561.

2.7 Test and Junction Clamps

Test and junction clamps for isolating the down conductor and earth electrode shall be of the oblong type manufactured from copper or copper alloy to the requirements of BS EN 62561.

2.8 Earth Rod Clamps

Earth rod clamps for connection of earth rod and earthing tape shall be of heavy duty type manufactured from phosphor bronze to the requirements of BS EN 62561.

2.9 Main Earthing Terminal and Disconnecting Link

Main earthing terminal for the connection of equipotential bonding copper tapes shall be complete with 50mm x 6mm hard-drawn copper bar, disconnection link, channel base, insulator studs, washers, bolts and nuts.

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