

SIZING MAIN PROTECTIVE BONDING CONDUCTORS

This Guide gives information on the sizing of main protective bonding conductors, based on the requirements given in Regulation Group 544.1 of *BS 7671*.

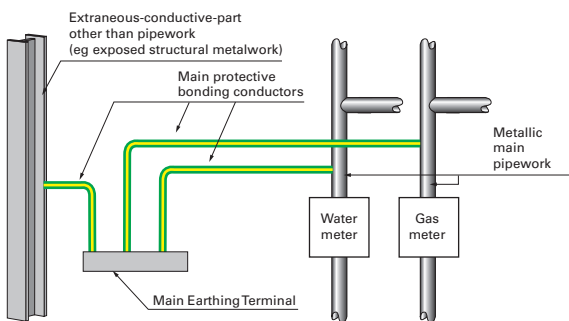
Protective equipotential bonding is a provision under the requirements for fault protection for protection against electric shock where the protective measure is Automatic Disconnection of Supply (ADS).

Arrangement of protective equipotential bonding

Where the protective measure is ADS, in each installation main protective bonding conductors complying with Chapter 54 of *BS 7671* are required to connect to the main earthing terminal the extraneous-conductive-parts of that installation including:

- water installation pipes
- gas installation pipes
- other installation pipework and ducting
- central heating and air conditioning systems
- exposed metallic structural parts of the building.

To meet the requirements of Regulation 411.3.1.2 the connection of a lightning protection system to the protective equipotential bonding must be made in accordance with *BS EN 62305*.



Where Protective Multiple Earthing (PME) conditions do NOT apply

Where PME conditions do **not** apply, Regulation 544.1.1 requires a main protective bonding conductor to have a cross-sectional area (csa) of **not less than half csa required for the earthing conductor** of the installation, and **not less than 6 mm²**. The csa **need not exceed 25 mm²** if the bonding conductor is of copper, or a csa affording equivalent conductance in other metals.



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Where PME conditions apply

Where PME conditions apply, Regulation 544.1.1 requires the main protective bonding conductors to be selected in accordance with the size of the neutral conductor of the supply and Table 54.8 (data reproduced below for reference).

TABLE 54.8 of BS 7671

Minimum csa of the main protective bonding conductor in relation to the neutral of the supply

NOTE: Local electricity distributor's network conditions may require a larger conductor.

Copper equivalent csa of the supply neutral conductor	Minimum copper equivalent* csa of the main protective bonding conductor
35 mm ² or less	10 mm ²
over 35 mm ² up to 50 mm ²	16 mm ²
over 50 mm ² up to 95 mm ²	25 mm ²
over 95 mm ² up to 150 mm ²	35 mm ²
over 150 mm ²	50 mm ²

* The minimum copper equivalent csa is given by a copper bonding conductor of the tabulated csa or a bonding conductor of another metal affording equivalent conductance.

Note 1

Table 54.8 should be used as a **guide** only, and the specific requirements of the electricity distributor should always be obtained with regard to the selection of main protective bonding conductors.

Note 2

The 'supply neutral conductor' referred to in Table 54.8 is the neutral conductor of the electricity distributor's low voltage network (otherwise known as the combined protective and neutral (PEN) conductor). It is **not** the neutral conductor on the consumer's side of the supply terminals, which may have a different csa.

The advice of the electricity distributor should always be obtained where it is proposed to use a main protective bonding conductor of a metal other than copper.