Copper earth pit plate (copper plate electrode)

SCEP 6603 · SCEP 6605 · SCEP 6653 · SCEP 6655



Copper earth pit plate from KALOT Group is a solid copper plate earth electrode installed upright, vertically, in a pit filled with GIM , and it carries fault current and lightning current into the soil through its large surface. We supply the copper earth plate in two sizes, 660 × 660 and 660 × 500 mm, each 3 or 5 mm thick, in copper of standard 99.5% purity, or 99.99% purity to order. The earth conductor, a bare copper conductor or tape, is joined to the plate by exothermic welding. Where driving an earth rod is not practical, such as a hard layer near the surface, tight spaces or sites with many underground services, the copper plate is a dependable answer.

- Solid copper with a standard purity of 99.5%; 99.99% purity to order
- Two sizes, 660 × 660 and 660 × 500 mm, in 3 or 5 mm thickness
- Vertical installation in a GIM pit, using the KALOT Group method
- Bare copper conductor or tape connected by exothermic welding

Technical specifications

Product type	Plate earth electrode (copper earth pit plate)
Material	Solid copper
Purity	Copper with a standard purity of 99.5%; 99.99% purity to order
Dimensions (length × width)	660 × 660 and 660 × 500 mm
Thickness	3 or 5 mm, for both sizes
Weight	8.9 to 19.5 kg, depending on size and thickness
Two-face area	0.87 m² for 660 × 660 and 0.66 m² for 660 × 500
Conductor connection	Bare copper conductor or tape by exothermic welding; conductors of 16, 35, 50, 70, 95, 120 and 240 mm²
Supplied with welded conductor	We also supply the plate with copper conductor or tape exothermically welded at the factory
Installation method	Vertical, in a pit at least 30 cm wider in diameter than the plate width, inside GIM ground improvement material
GIM consumption	37 bags for 660 × 660 and 24 bags for 660 × 500, per the KALOT Group installation table
Order code	SCEP 6603, SCEP 6605, SCEP 6653 and SCEP 6655

Copper plate dimensions, thickness, weight and order codes

Order code	Length L (mm)	Width W (mm)	Thickness H (mm)	Weight (kg)	Two-face area (m²)
SCEP 6603	660	660	3	11.7	0.87
SCEP 6605	660	660	5	19.5	0.87
SCEP 6653	660	500	3	8.9	0.66
SCEP 6655	660	500	5	14.8	0.66

Dimensions are in millimetres. L is the length of the plate standing vertically in the pit, W the width and H the thickness. Weight is length × width × thickness × the density of copper (8.94 grams per cubic centimetre), and the area is the total of both faces of the plate. Our products are continuously improved; please confirm the final dimensions with our experts before purchase.

Material and construction: solid copper plate

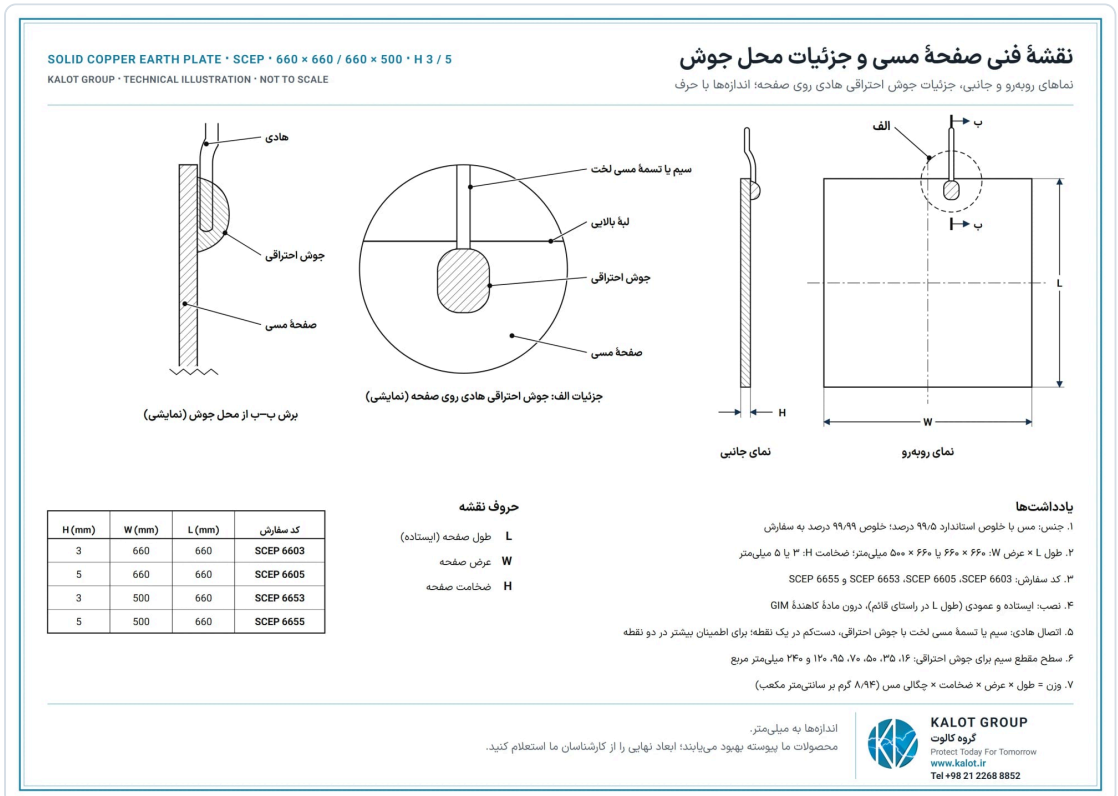
The KALOT copper earth plate is a **Solid copper** sheet, with copper through its full thickness, so scratches or surface wear during handling and installation do not change the plate's material. **The standard copper purity is 99.5%** , and we also supply the plate with **99.99% purity to order** . The earth conductor is joined to the plate by exothermic welding near the **Top edge** , and the plate

This document is not contractual; we may update product design, dimensions, weights and images without prior notice.

Dimensional drawing of the copper earth plate

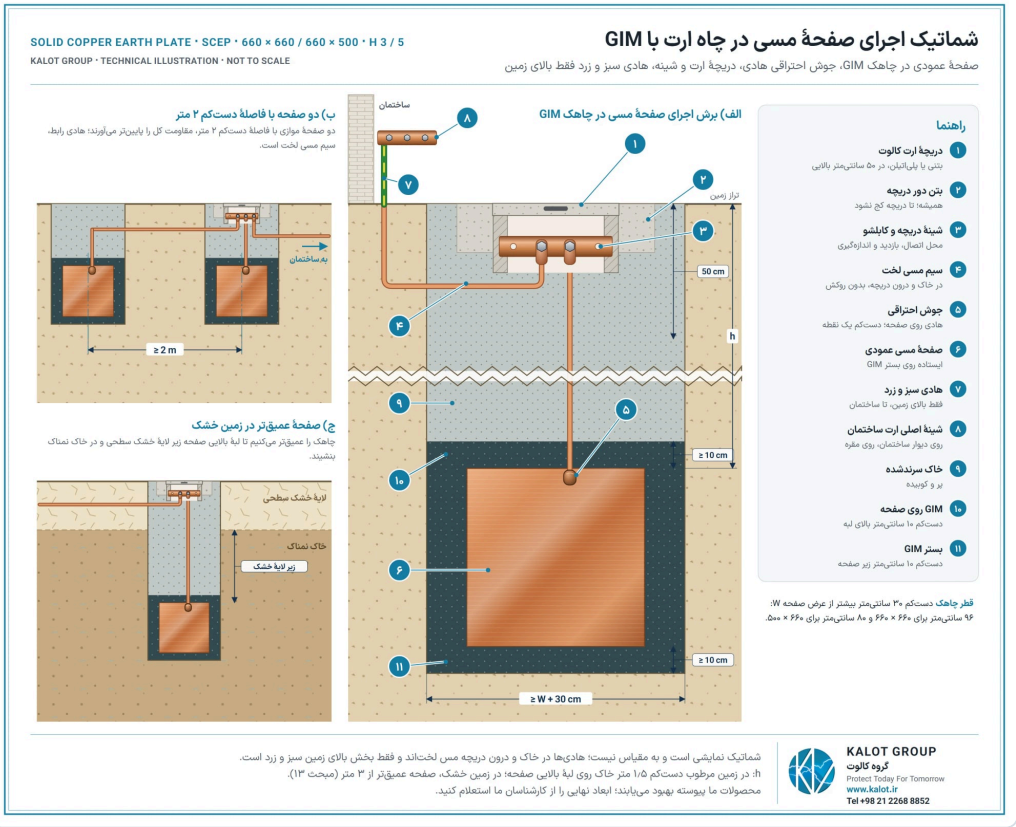


Technical drawing and weld location details



The full print-quality versions of the drawings (PDF and SVG) can be downloaded from the product page at www.kalot.ir.

Installation schematic: vertical plate in a GIM pit with an inspection pit



How to install a copper plate in an earth pit

۱. Choose the earth pit location: soil that holds its natural moisture, away from waste, fertiliser and chemicals. Mark the routes of underground services; if you know the soil resistivity, choose the size and number of plates on that basis.

۲. Dig a round pit with a diameter at least 30 cm larger than the plate's width: 96 cm for a 660 × 660 plate and 80 cm for a 660 × 500 plate. As far as possible, take the pit depth down to moist soil.

۳. Prepare the mix of GIM : combine each bag of GIM with 8 litres of clean water and 2 kg of cement. Add nothing else, and keep soil, sand, pieces of bag or plastic out of the mix.

۴. Join the bare copper conductor or tape to the plate near its top edge by exothermic welding at one point at least, or at two points for extra security. Choose the weld mould to match the conductor cross-section.

۵. Pour at least 10 cm of GIM mix into the bottom of the pit and stand the plate upright and vertical, with the welded conductor facing up, in the middle of the pit on this bed.

۶. Prepare the mix of GIM : pour it around the plate until the plate is fully covered and the GIM reaches at least 10 cm above its top edge. According to our installation table, the 660 × 660 plate needs 37 bags and the 660 × 500 plate needs 24 bags; for other pits, see the GIM consumption calculator.

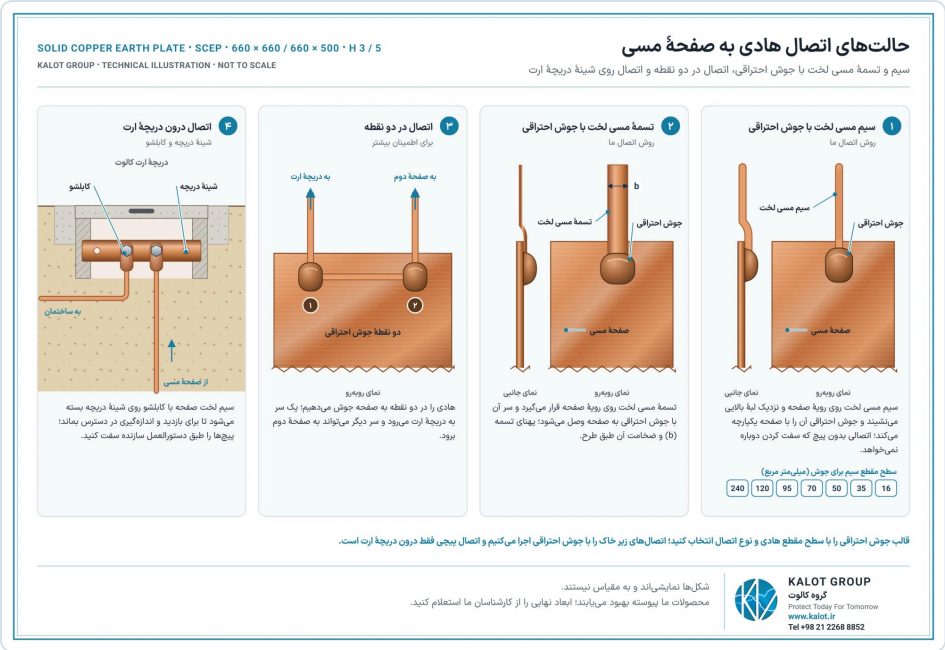
۷. Fill the rest of the pit with screened soil and compact it layer by layer. In the top 50 cm, set the inspection pit and pour concrete around it; inside the inspection pit, fix the bare copper conductor to the inspection pit bar with a cable lug and tighten the bolts to the manufacturer's instructions.

۸. Run the conductor bare and buried from the inspection pit to the building, and use green and yellow cable only for the above-ground section to the building's main earth bar. Measure the earth pit resistance after installation and record it, with the date, in the earthing system file.

Measuring resistance and inspecting a plate earth pit

Measure the earth pit resistance after installation using the fall-of-potential method (62%), and record the result with the date, season and soil moisture condition in the earthing system file; Topic 13 of the National Building Regulations requires measurement after installation and periodic measurements. During periodic inspections, check the condition of the conductor and the tightness of

Connecting copper conductor and tape to the plate by exothermic welding



Copper plate or earth rod? A technical and financial comparison

Feature	Copper plate, 660 × 660 and 660 × 500	Copper-bonded earth rod (two 1500 lengths)	Solid copper earth rod (two 1500 lengths)
Material	Solid copper; standard purity 99.5%	Steel core with copper coating (at least 0.25 mm)	Copper throughout the cross-section
KALOT sizes	660 × 660 and 660 × 500 mm; 3 or 5 thick	5/8 and 3/4 inch; length 1500	Diameters of 16 and 20; length 1500
Installation	A pit with a diameter at least 30 cm larger than the plate's width, by excavation	Driven without excavation; borehole in hard ground	Borehole with improvement material, or driven in soft soil
GIM ground improvement material	37 bags (660 × 660) and 24 bags (660 × 500)	No GIM when driven; 3 bags in a 15 cm borehole	As for the copper-bonded earth rod
Copper weight per electrode (kg)	8.9 to 19.5	0.29 and 0.36 (copper coating)	5.4 and 8.4
Conductor connection	exothermic welding	Exothermic welding or clamp	Exothermic welding or clamp
Corrosion resistance	Very good; copper through the full thickness	Good, as long as the coating is intact	Very good
Saline and chloride soil	Good	Medium	Good
Raw metal value per electrode (US dollars)	131 to 289	6.0 and 7.7	79 and 124
Metal value index (two 5/8 inch copper-bonded earth rod lengths = 1)	22 to 48	1 and 1.3	13 and 21
Full installation cost rank (1 = lowest)	3	1	2
Recommended use	Rock or a hard layer near the surface, tight space, many underground services and projects whose specifications call for a plate	Most projects: buildings, substations, lightning protection and towers	Saline and corrosive soils; high fault current

This table was prepared on 21 Mehr 1405. The raw metal value is calculated from the metal weight of each electrode: copper at the official London Metal Exchange price (LME) at the time, USD 14,822 per tonne, and the steel core of the copper-bonded earth rod at the current steel price. This value changes with the metal price, and the selling price also includes the manufacturing cost. For earth rods, two 1500 mm lengths (3 m depth) are shown, and for each type a smaller and a larger size. The cost rank covers the complete installation of one electrode: metal, drilling, GIM and connection. Earth pit resistance is set by the soil and the size of the electrode, not by its material or thickness; we measure the final resistance after installation. To learn more, see Choosing the right material for an earth electrode and Calculating earth termination resistance.

Choosing a size and asking for a copper plate price