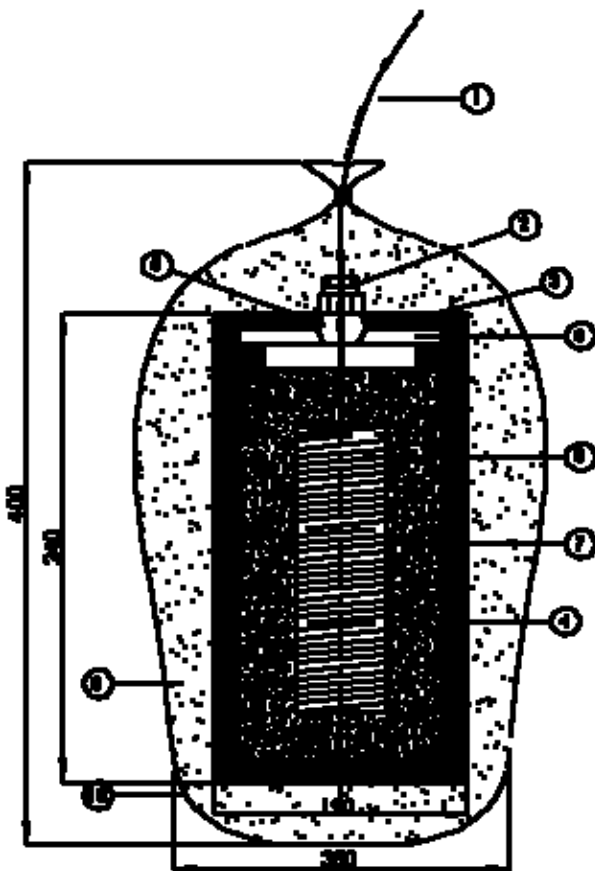


PG pars Permanent Half Cell Cu-CuSo₄



The cable an insulating covering which is resistant against dissolution of soil 1x10 mm ² XLPE/PVC cable black color	Cable	1
The connection of copper armature winding will be inside.	Gland	2
Isolating and water proofing the inner side of the half – cell from its surrounding environment	Epoxy resin	3
----	Ceramic covering	4
The connection shall be done with an appropriate terminal & it is perfectly sealed.	Connection of cable to armature winding	5
----	Copper winding	6
----	Cuso ₄	7
----	Plastic cop	8
----	Back fill	9
----	Cotton Back fill bag	10

Permanent Half – Cell

A good permanent half – cell should include a clear inactivate potential & reiteratively and can be used with high confidence as fixed point reference for measuring the potential of the other electrode. Its potential remains constant by pass of time, which in relation to standard hydrogen electrode is clear amount.



Main parts of the permanent half – cell:

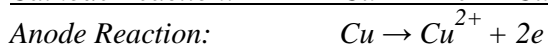
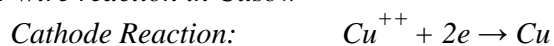
1- CuSo₄

Cuso₄ has a high purity (Cuso₄, 4H₂O) and the amount of copper with four H₂O molecules is About 27.5%.

The Cu – Cuso₄ electrode potential can be obtained through following formula:

$$E = E^0 + (RT/2F) Ln (Cu^{++})$$

Copper wire reaction in Cuso₄:



The potential variation depends on number of Cu⁺⁺ ions in Cuso₄. For high accuracy in measuring the potential, the Cuso₄ must be free of Fe²⁺, Zn²⁺ & Pb²⁺ ions, because existence of these ions leads to Cu⁺⁺ reduction in the electrolyte, change in range of desired potential, and local corrosion on the copper wire, which in result will cause the short life length of the half – cell.

Granulation of Cuso₄ is conforming standard (1.5 mm dial) and the amount of granules is 3 Kg in each half – cell.

2- Copper Wire

The copper wire has purity of 99.9% which the anneal operation is done on it. Elongation of the copper wire during work period leads to corrosion of copper that anneal operation saves the copper from corroding. And the wire will have high electricity conductance (Conforming the BS2874-C101 standard), without any oxidization on the surface (In order to release the copper oxide from the surface of the wire, HCL is used for a specific period of time conforming the ASTMA876 standard).

A copper wire is used in the half – cell, which shall be wound in a cylindrical form. The surface with copper sulfate is 1103 cm², which will cause the accuracy of measuring and useful life length of the half – cell to increase

Technical specification

- **Cable:** 10 meters of 1x10 mm² XLPE /PVC cable black color.
- **Dimension (With out backfill):** 150 mm dia. & 240 mm length.
- **Dimension (With backfill):** 240 mm dia. & 400 mm length.
- **Approx. Weight (Without backfill):** 5.2 Kg
- **Approx. Weight (With backfill):** 13 Kg
- **Back fill:**

- Powdered Gipson: 75%
- Gradually betonies: 20%
- Sodium Sulfate: 5%