

Cathodic protection is a commonly used technique in reducing and preventing corrosion of the internal surfaces of process facilities. It is intended to counteract the formation of corrosion cells, which can lead to anodic or cathodic reactions, causing damage in pressure vessels and storage tanks.

Caproco has designed a reference cell that combines field functionality with laboratory accuracy to allow operators to monitor and control the potential level of the cathodic protection present in the vessel under study.

The Caproco reference cell uses a Silver / Silver Chloride (Ag/AgCl) element for its durability and sensitivity in a range of conductive solutions. By having accurate data regarding the potential levels, one can evaluate the efficiency of the cathodic protection program in place.

APPLICATION

Once installed in the vessel or tank, a suitable millivoltmeter is connected to the cell and the vessel body and the potential recorded.

Since copper / copper sulfate is another commonly used reference element, a correction factor can be applied to the silver / silver chloride reading to calculate the equivalent potential to a saturated Cu/CuSO₄ half-cell. To do so, add -60mV at 20°C or -50 mV at 80°C:

$$E_{Cu} = E_{Ag} + (-60 \text{ mV}) \text{ at } 20^{\circ}\text{C}$$

A correction factor for converting to Cu/CuSO₄ is calculated and provided with each cell. The "normal" correction factor is for salt water (3% NaCl) at 20°C and atmospheric pressure. Specific correction factors for other environments are available on request.

SPECIFICATIONS

Caproco reference cells are manufactured from 316 stainless steel and use a silver element coated with silver chloride. Elements in other materials are available on request including: zinc, stainless steel and platinum. Standard retrievable reference cells are designed for mounting through a Caproco Hollow Plug assembly.

Maximum Operating Pressure	3,600 / 6,000 psi (24.8 / 41.4 MPa)
Maximum Operating Temperature	500°F (260°C)

ENCAPSULATION	Two part loaded resin with excellent thermal, electrical and mechanical properties.
CONNECTION	Single female type banana- jack



CONTACT CAPROCO FOR SIZING AND PART NUMBER INFORMATION