

Corrosion testing of additives for concrete, mortars and pastes

Determine the effect and susceptibility of corrosion by reinforcing steel with potentiostatic electrochemical testing according to the UNE-EN 480-14:2007 standard.

In reinforced concrete, most durability problems stem from steel reinforcements prematurely corroding. This shortens the service life of the structure and leads to costly repairs even in the best of cases. Therefore, it is essential to pre-verify the influence of an additive on the corrosion of the steel that will be used in the construction.

Durability is a quality that must be taken into account during the realization of a project, since preventive measures are usually both the most effective and least expensive ways to protect against aggressive physical and chemical agents.

For example, the current spanish ***Structural Code (Article 37, Active reinforcement)*** recommends testing to check that the injection products (adherent and non-adherent) do not adversely affect the passivity of the steel.

Potentiostatic electrochemical testing under UNE-EN 480-14:2007

One of the many corrosion tests we offer at Applus+ Laboratories, potentiostatic electrochemical testing (UNE-EN 480-14:2007) verifies the influence of the corrosion of reinforcing steel.

During the testing of concrete, mortar and paste additives, the current density is measured and then we visually inspect the reinforcing bar after the test is completed.

The current density for mortar specimens with additives should not exceed 10 $\mu\text{A}/\text{cm}^2$ at any time between 1 h and 24 h.

Other related tests for evaluating corrosion damage

Applus+ Laboratories is a European benchmark in the testing and certification of construction materials such as adhesives, waterproofing membranes and grouts. Our experts also provide services for products that require certification and CE marking (for access to the European market) and UKCA (for access to the UK market).

Some other tests we perform to determine corrosion damage include, but aren't limited to:

- Determination of the corrosion rate of reinforcement in the laboratory by measurement of polarization resistance, according to UNE 112072:2011.
- Determination of the electrical resistance of concrete, according to UNE 83988-1.
- Determination of resistance to chloride ion penetration, according to ASTM C1201.
- Determination of the chloride migration coefficient in concrete, mortar or cement repair materials from unstable state migration experiments, according to NT-BUILD 492.