NEW METHOD FOR EVALUATING THE DURABILITY OF CONCRETE BY USING CONDUCTIVE GELS

PATENTED TECHNOLOGY

CONTACT DETAILS:

Research Results Transfer Office-OTRI
University of Alicante
Tel.: +34 96 590 99 59
Email: areaempresas@ua.es
http://innoua.ua.es

ABSTRACT

Researchers of the University of Alicante have developed a new method to assess the durability of reinforced concrete. The parameter used is the diffusion coefficient of chloride ions, which is related to the transport speed of chloride ions through the concrete, and therefore the time it takes triggered embedded steel corrosion. This test requires saturated samples of concrete.

University researchers have developed a method to perform this test in a non-saturated medium, using conductive gels as chloride reservoirs.

The main advantage of this technology is the elimination of the liquid environments for testing, thus eliminating the medium saturation restriction. This allows determining the diffusion coefficient in partial water saturation states of the concrete.

ADVANTAGES AND INNOVATIVE ASPECTS

KEY BENEFITS OF TECHNOLOGY

The main advantage of this technology is that it avoids the concrete saturation requirement for the concrete durability tests. Technology also provides other advantages such as:

- Prevention of sealing problems deriving from the use of liquid solutions.
- This method can work in a less restrictive and closer to reality medium.
- Ensures a better definition on the advancing front edge, ensuring good measurement accuracy.
- The use of conductive gels is not a significant additional cost.
- One of the electrodes can be replaced by one of the steel bars embedded in the concrete for the implementation of the method in real structures or samples.

INNOVATIVE ASPECTS

The main system innovation is the use of ion conductive gels as reservoirs of chlorides in migration assays.

Until now the techniques had to start with the full saturation of the specimen and keeping it in contact with a chloride ions solution during diffusion or migration tests. This guaranteed the absence of other transport mechanisms (such as capillary absorption) and avoided surface moisture changes. This new method is simple to implement and allows the elimination of these requirements.

Another innovative feature is that the system allows greater measuring accuracy of the advancing chloride front, because this advance occurs more homogeneously than in conventional tests in contact with liquid solutions.

MARKET APPLICATIONS

This technology is of interest to various companies in the building industry as concrete manufacturers, material testing laboratories, construction, architecture, etc.

COLLABORATION SOUGHT

We are looking for companies interested in acquiring the technology for exploitation.

It is possible to use different forms of technology transfer (licensing agreement of the patent, transfer of rights of use, manufacture or sale to other companies, etc.).