



New Nanomaterials and products with high added value and durability

Description

A consortium composed by 8 companies and 4 technological centres from construction sector addressed the industrial investigation about new material based on nanotechnology, providing new functional products such as self-healing, optical properties, biocide, superhydrophobia, superoleophobia, fire resistance and static charge dissipation..

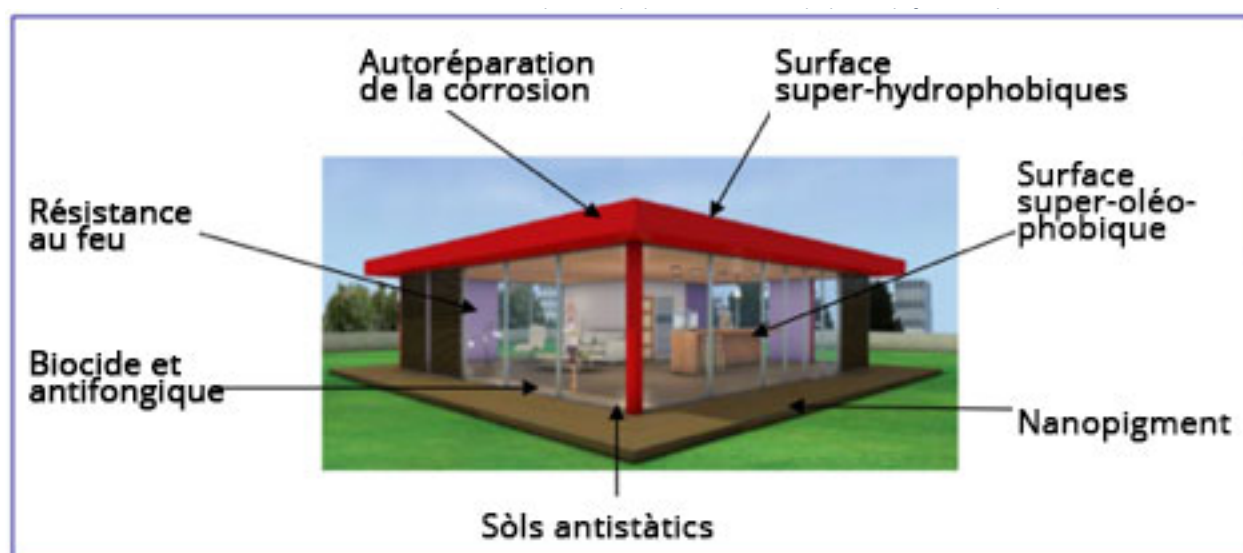


Image1: Nanohabitat house scheme with multifunctional properties

Objectives and improvements

The objective of this project was the development of new Nanomaterials and products with high added value and durability for their application in sectors related to Construction and Habitat: cement, wood, ceramics, polymers. Materials resulting from the project show properties that improve the quality of life and health of people in terms of improving the safety of buildings (structural integrity, fire resistance and elimination of risks derived from electric discharges), improving health (biocide environment), reducing maintenance costs (self-cleaning and durable surfaces).

Results

Reinforced concretes for marine environments based on the Cyes standard dosage for caissons modified with nano-encapsulated compounds were characterized proving that the mechanical resistance remains in similar values even increasing in some cases.

A pilot test with scaled specimens in real environment was performed, comparing the developed dosages in the project to standard reference and to commercial products traditionally applied in this kind of applications.

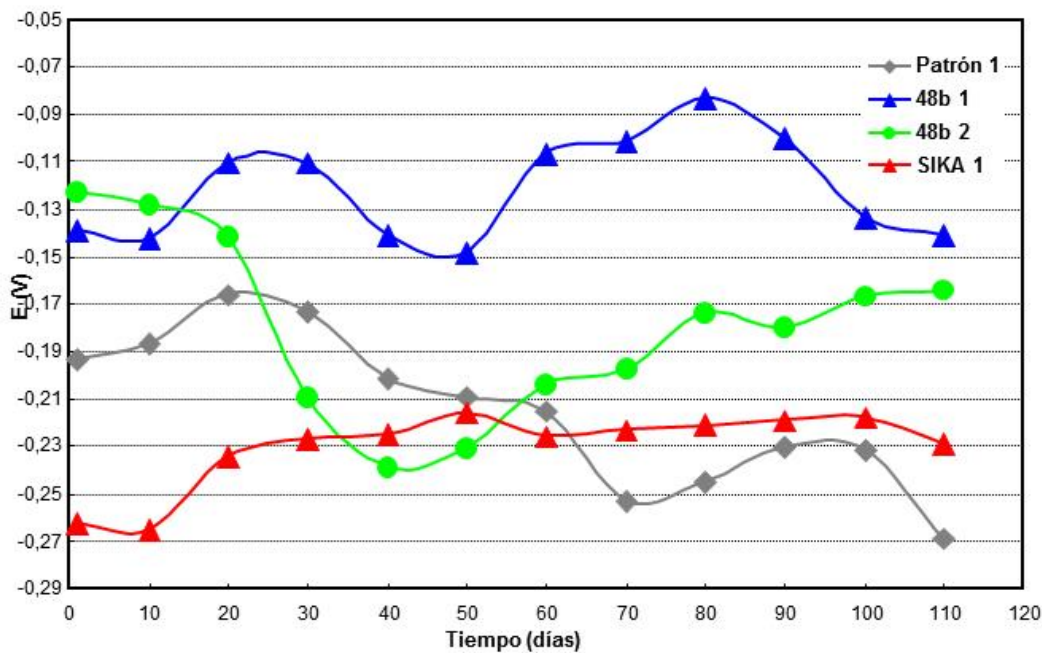


Figure 1: Evolution with time of corrosion potential

NOTE: If potential values of the samples are more positive than -250 mV, the corrosion occurrence probability is very low.

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PILOT TEST IN REAL CONSTRUCTION SITE:

Images taken during the preparation of pilots composed by prismatic specimens 40x40x100 cm, exposed to real environment.



Image 2: Pilot specimens with the monitoring systems installed



Image 3: Pilot specimens installed in demonstrator