

Anticorrosive coatings modified with aloe



TYPE OF R&D RESULT

New technology
New product
New service
New knowledge or skill



DEGREE OF COMMERCIAL MATURITY

Conceptual idea
Proof of concept (design)
Validated in a controlled
environment
Validated in a real environment
Successfully implanted



PROTECTION

non-applicable
Patent
Software
Know-how
Utility model

INVENTION TITLE: PROCEDIMIENTO
PARA LA FUNCIONALIZACIÓN DE
PINTURAS CON ALOE VERA
(PROCEDURE FOR THE
FUNCTIONALIZATION OF PAINTS WITH
ALOE VERA)
FILE NUMBER: P202630214
PRIORITY DATE: 19/02/2026
STATUS: PENDING
COUNTRY: SPAIN

Description of the solution. Problem solved

Anticorrosive coatings are widely used to protect metal surfaces against oxidation and deterioration processes caused by environmental factors such as humidity, salinity, pollutants, or prolonged exposure to outdoor conditions. These formulations usually incorporate corrosion inhibitors, synthetic resins (such as epoxy, acrylic, or polyurethane resins), organic solvents, and various additives.

Many of these solutions present limitations from an environmental and toxicological point of view, due to the use of volatile organic compounds (VOCs), heavy metals, and other synthetic additives that may have negative effects on health and the environment. For this reason, there is growing interest in developing more sustainable coatings that maintain their anticorrosive effectiveness without relying on highly toxic components.

In this context, Juan José Santana, Full Professor from the Energy, Corrosion, Waste and Water (ECRA) research group of the Department of Electronic and Automatic Engineering, has explored the use of plant extracts with antioxidant, antimicrobial, or chelating properties as possible alternatives or complements to conventional additives. Plants of the Aloe genus contain a variety of bioactive compounds, including polysaccharides, anthraquinones, flavonoids, and phenolic compounds, which are known for their antioxidant and

protective effects against environmental stress.

As a result of this line of research, the researchers have developed a technology consisting of an additive composition based on gel from plants of the Aloe genus and preservatives, packaged as a separate component and intended to be added extemporaneously to already formulated commercial coatings or paints. It may also be added at the factory and supplied as part of the base formulation.



Figure 1. Aloe Vera Gel.

Competitive advantage

Currently, there are numerous anticorrosive coatings that incorporate synthetic additives of different types. However, these solutions are usually based on

preformulated systems that are difficult to adapt to other solutions, or they present problems related to the stability of the Aloe additive during storage.

These limitations of the currently available solutions are overcome by the present technology, which offers the following benefits:

- Lower environmental and toxicological impact compared to traditional anticorrosive formulations.
- High compatibility with a wide variety of commercial paints and solutions.
- Greater stability of the additive during storage, facilitating its preservation and subsequent use.
- Reliable and predictable anticorrosive performance after its incorporation into complex polymeric matrices.
- It can be added to the coating during manufacturing, with the product being supplied in the base formulation.

Stage of development

Laboratory tests have been carried out to validate the technology, including immersion, corrosion, adhesion, rheological behaviour, UV ageing, and electrochemical analyses, as well as the development and production of the aloe gel and extract.

AUTHOR
Juan José Santana Rodríguez

CONTACT
Oficina Transferencia de
Conocimiento (OTC)
otc@fpct.ulpgc.es
928 45 99 43
<https://otc.ulpgc.es/>