

# High durability sustainable bio-based anticorrosion coatings: Portuguese scientific research institute is looking for partners for research and development.

## Summary

Profile type	Company's country	POD reference
<b>Technology offer</b>	<b>Portugal</b>	<b>TOPT20230530018</b>
Profile status	Type of partnership	Targeted countries
<b>PUBLISHED</b>	<b>Research and development cooperation agreement</b>	<b>• World</b>
Contact Person	Term of validity	Last update
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## General Information

### Short summary

A Portuguese scientific research institute with expertise in the area of durability of materials and anticorrosive protection assessment, in particular in accelerated and outdoor ageing tests, is interested in integrating research teams or consortiums (companies, research centres, universities) aiming at the development of sustainable anticorrosion bio-based coatings in the context of Horizon Europe or other suitable financing programme for a research cooperation agreement.

### Full description

The Portuguese institute develops R&D activities in energy production systems, energy efficiency, energy analysis, hazards and environment and materials for energy. It has a network of accredited laboratories according to ISO/IEC 17025 on the areas of biofuels and biomass, solar energy, and materials and coatings. A field of work is durability of materials and anticorrosive protection assessment, and they have the capacity to evaluate the performance of anticorrosion coatings under relevant environmental and atmospheric parameters. Coatings preventing or slowing down the corrosion of metallic structures are an important segment of coatings market, their applications comprising a large range of end-user industries such as construction, transportation, energy, and others. Increasingly, anticorrosion coatings must have additional features, for example, specific optical properties. Nowadays anticorrosion coatings reached high standards of performance and very high durabilities even

in environments of extreme atmospheric corrosivities.

However, they heavily rely on non-renewable sources with high carbon footprint, are based on hazardous substances with environmental and human health impact and their disposal is a serious non resolved environmental problem.

Academia, companies and funding entities are well aware of the urgency of changing to a new status of sustainable and safer coatings and a lot of work pursuing these objectives has been done.

Coatings based on natural renewable sources although being not an entirely new concept, are emerging. However, to the development of anticorrosion bio-based coatings with similar performance to the current ones and similar cost, from sources not competing with the food chain, having low carbon footprint and being recyclable a long way of research is still ahead.

An important component in the development process of coatings is testing the performance of the various solutions prepared at the laboratory scale comparatively with a reference coating for screening and selecting the most promising ones.

Also the performance of the developed final products must be evaluated against reference coatings through a set of well-defined tests specified in international standards. For that end accelerated ageing tests are a valuable mean to obtain results in a relatively short period of time. Since not all the stress factors and weathering variables can be reproduced in accelerated tests, outdoor exposure, although taking more time, is the most reliable way of predicting the behavior of the coatings outdoors being essential in a complete scheme of tests of a new coating.

The R&D institute has equipment to carry out accelerated ageing tests for a fast evaluation of the susceptibility of the coatings to environmental stress factors such as temperature, humidity, solar radiation and contaminants (salt spray, sulfur dioxide, nitrogen oxides).

The institute has also two outdoor testing sites for evaluating the coatings on real world weathering tests, with monitorisation of temperature, humidity, wetness time, radiation, rain and atmospheric chloride ions, sulfur dioxide and nitrogen oxides. The sites, differing in corrosivity (urban site with low-medium corrosivity and marine/industrial site in the southern Europe Atlantic coast with very high-extreme corrosivity) allow to test coatings with different performance requirements. The institute has the means to evaluate the effects of the ageing tests through mechanical, physical and chemical characterisation of the coatings thus contributing to the identification of failure causes and to set the way for the necessary improvement.

The R&D institute would like to cooperate with companies, research centres and universities with expertise in binder synthesis from bio-based sources and anticorrosion coatings formulation having the means to prepare coatings to be tested aiming at the development of sustainable bio-based coatings.

#### Advantages and innovations

The expertise of the R&D institute supported by laboratory and outdoor facilities for anticorrosion coatings assessment can contribute to the development of more sustainable coatings with less impact on human health and on the environment.

Complementarily they also have the means to determine the optical properties of anticorrosion coatings, in particular reflectance and emissivity. These characteristics are to become of great relevance in the next future specially in the fields of anticorrosion coatings for construction and transportation, since optical properties of the coatings can contribute to energy savings and to reduce urban heat islands.

#### Technical specification or expertise sought

#### Stage of development

**Available for demonstration**

#### IPR Status

**No IPR applied**

#### Sustainable Development goals

- **Goal 7: Affordable and Clean Energy**
- **Goal 12: Responsible Consumption and Production**
- **Goal 13: Climate Action**
- **Goal 6: Clean Water and Sanitation**

## Partner Sought

#### Expected role of the partner

Integrate research teams or consortia in order to develop sustainable anticorrosion bio-based coatings in the context of Horizon Europe or other suitable financing programme.

#### Type of partnership

#### Type and size of the partner

**Research and development cooperation agreement**

- **Big company**
- **R&D Institution**
- **SME <=10**
- **SME 11-49**
- **Other**
- **University**
- **SME 50 - 249**

## Dissemination

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Technology keywords

- **10002007 - Environmental Engineering / Technology**

Targeted countries

- **World**

Market keywords

- **08001007 - Coatings and adhesives manufactures**

Sector groups involved

- **Energy-Intensive Industries**
- **Renewable Energy**