



LABORATÓRIO NACIONAL  
DE ENGENHARIA CIVIL

TESTING  
and METROLOGY

UMRI

Metal and Inorganic  
Coatings Laboratory

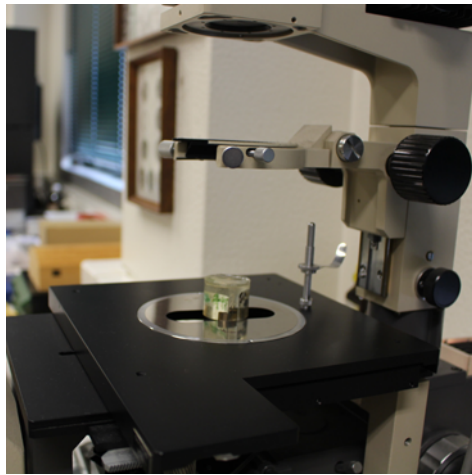
MATERIALS DEPARTMENT

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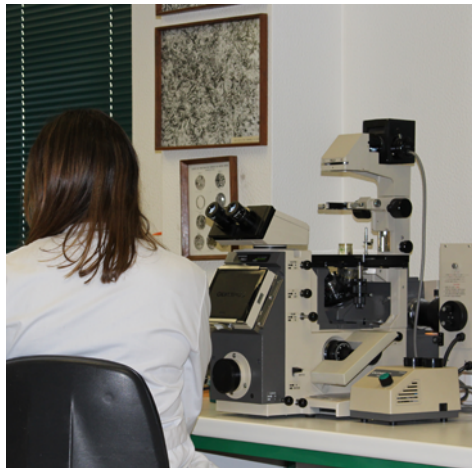
[www.lnec.pt](http://www.lnec.pt)

## Scope

The Metal and Inorganic Coatings Laboratory (UMRI) is integrated in the Materials Department/Organic and Metallic Unit of LNEC (DM/NMOM). It has been an IPAC accredited body (Technical Annex L0116) since 1994.



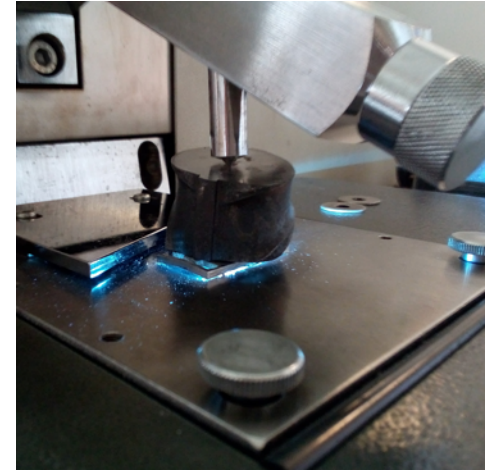
Metallic materials are extensively used in civil engineering for bridges, viaducts, dams, and buildings, both for structural and aesthetic purposes. UMRI's activity focuses mainly on the chemical and physical characterization of materials used in construction, as well as on the development and qualification of new products, contributing to the durability and safety of structures.



## Field of expertise

UMRI carries out experimental activities within the framework of the chemical and physical characterization of metals and inorganic coatings, including classical and instrumental chemical analysis and physical characterization of metallic and anodic coatings, using both destructive and non-destructive methods, in particular:

- Chemical analysis: determination of the content of several elements in metals and metal alloys;
- Inorganic and anodic coatings: measurement of coating thickness;
- Metallic and anodic coatings: determination of coating thickness by gravimetric method;
- Anodic coatings: verification of sealing quality.



## Highlights

The activity of UMRI is mainly focused on the certification of metallic products and quality control of materials applied on site. This laboratory also performs tests for controlling the factory anodising procedures within the framework of the QUALANOD Quality Label, for sulfuric acid-based aluminium anodizing. In this context, it is the only European laboratory that performs the abrasive wheel test.

