



LABORATÓRIO NACIONAL  
DE ENGENHARIA CIVIL

**EM TESTING  
and METROLOGY**

**UPM**

Metallic Products Laboratory

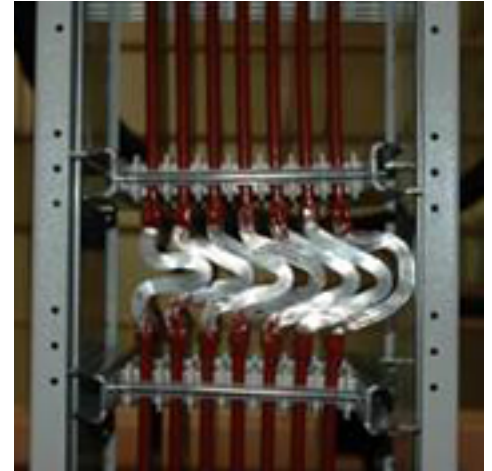
STRUCTURES DEPARTMENT

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## Scope

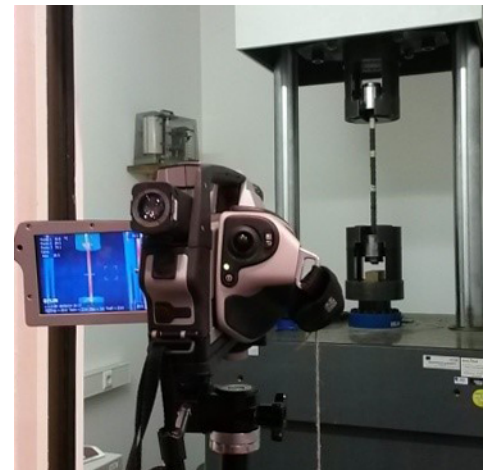
The Metallic Products Laboratory (UPM) is integrated in the Structures Department/ Structural Behaviour Unit of LNEC. From among many other fields of activity, UPM carries out the classification and delivers expert opinions within the certification of various steel products for reinforced and pre-stressed concrete, hence contributing, by carrying out mechanical tests and tests for the characterisation of the geometric measurement of ribbing, to the safety of structures, property and people. It has been an accredited laboratory since 1999 for the execution of various mechanical/dimensional tests on steel for ordinary reinforcing bars and for application of pre-stressing.



Apart from the characterisation studies referred to above, UPM develops activities in distinct fields such as research and development studies in the framework of the characterisation and technical appraisal of new materials and metallic products. This laboratory also has the appropriate technical capacity and the qualified human resources to provide support to the preparation of MSc and PhD theses.

## Highlights

UPM has state-of-the-art equipment for performing the measurement of the geometrical characteristics of bars for reinforced concrete, by making it possible to carry out the geometric characterisation of these elements with a level of accuracy and quickness unequalled by the manual method. UPM also has the electromagnetic equipment for carrying out axial force fatigue tests on metallic elements with a frequency of up to 300Hz. It has also force and displacement controlled equipment, with the capacity to perform tensile tests of up to 2500kN and 5000kN in compression.



## Field of expertise

UPM is mainly devoted to the mechanical characterisation and the quality control of metallic materials, in particular reinforcing bars and pre-stressed concrete.

UPM performs the following tests for the mechanical characterisation of ordinary reinforcing bars and steel for pre-stressed concrete:

Tensile testing; deflected tensile test; cyclic load test; folding test; axial force fatigue test; measurement of ribbing; weld shear test and isothermal stress relaxation test.