

# LCM

Laboratory for material  
characterization

thermic

mechanical

environmental

electric

Services for sustainable development



# LCM

## Laboratory for material characterization

LCM carries on its activity in the field of the electro-technical material characterization, from the mechanical, electrical, heat and environmental viewpoints, ensuring the accuracy, impartiality, confidentiality and promptitude of the results through its skilled personnel and its endowments; the ICPE specialists also carry on research activities in the field of the material characterization and the environment protection.



LCM is accredited by the Romanian Accreditation Association RENAR for:

- electrical tests
- mechanical tests
- environmental tests

and is under accrediting for:

- estimation of the temperature value
- establishing the temperature index for the thin insulation wires
- establishing the temperature index of the electro-insulating varnishes through the method of the enameled wire support

(Accreditation certificate No. LI 796)

### Tests for establishing the electrical properties

Solid electro-insulating materials

surface resistivity, volume resistivity and insulation resistance within the temperature range: 20÷300 °C  
tgδ and ε<sub>r</sub> at 50 Hz÷1 kHz; 50 kHz÷300 MHz  
breakthrough voltage from 0 to 100 kV

Conductive and anti-electrostatic rubber  
Metallic materials (cables, wires)

surface and volume resistivity

### Tests for establishing the mechanical properties

Plastic materials

traction characteristics  
static bending and compression characteristics  
Rockwell hardness, ball penetration method

Rubbers

traction characteristics

Metallic materials

traction characteristics  
static bending and compression characteristics  
Brinell hardness Rockwell hardness and Vickers micro-hardness

Carbon materials;  
Ceramic materials

static bending characteristics

## Tests for establishing the physico-chemical properties

Solid, powdery and liquid materials

RoHS qualitative analyses  
Metallic alloy qualitative analyses  
Analyses of the heavy metals existing in the soils  
Contaminated soil elementary analysis ( qualitative and quantitative)

## Tests for establishing the heat properties

Impregnation compounds and varnishes  
Coating varnishes  
Varnished fabrics  
Enameled winding wires  
Flexible foils and foil-based materials  
Flexible insulating pipes  
Combinations of flexible materials  
Cable insulations  
Elastomers and extensible thermo- plastics

establishing the temperature index value  
evaluation of the heat class of the insulation systems for rotary electric machines

testing methods developed within the laboratory:

Method for the temperature index value estimation (the temperature range within which the temperature index value is placed);  
Method for establishing the temperature index of the thin insulation wires ;  
Method for testing the electro-insulating material compatibility

LCM has carried on activities in the field of the electro-insulating material heat endurance ever since 1964 and in the last 20 years it has implemented various testing methods in the field of the material quality certification.

## Tests for establishing the resistance to the action of the environment agents

Plastics  
Varnishes and paints  
Rubbers  
Various components, subassemblies and finished products

testing of the metal protection systems under severe climatic conditions.  
testing of the materials under laboratory accelerated conditions:  
cold (-50°C...0°C)  
dry heat ( 23°C...300°C)  
wet heat (max. 120°C / max. 98 % u.r.)  
saline fog  
artificial solar radiations  
chemical environments (ozone)  
combined tests

Photovoltaic modules

resistance to the heat cycle and to the humidity –frost cycle within the range: -40° C++ 85 °C  
resistance to continuous wet heat at 85°C ± 2 °C  
resistance to UV within the range 280 – 400 nm (UV-B: about 3.5 W/m<sup>2</sup>, UV –A: about 55 W/ m<sup>2</sup>, maximum total irradiance 1300 W/ m<sup>2</sup>)



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