



ISTITUTO ITALIANO DEI PLASTICI SRL
Certifications, Inspections, Tests and Training

Thanks to advanced and qualified test laboratories for the mechanical-performance and chemical characterization of materials and products in plastic, rubber, paper and cardboard, we support companies in testing activities.

TESTS LIST



PRODUCT CERTIFICATION

BRCGS, CE marking for building products, IIP UNI, PIIP, Eucerplast, ...

MANAGEMENT SYSTEMS CERTIFICATION

Quality, Automotive Quality, Environment, Safety, Energy, ...

SUSTAINABILITY

ISCC PLUS Certification, Second Life Plastic (PSV),
Life Cycle Assessment (LCA),
Environmental Product Declaration (EPD), ...

TRAINING AND TECHNICAL SUPPORT

Provide useful notions to improve the knowledge of professionals
and to make them a key resource within the organization in which they operate.

TESTING

IIP has laboratories accredited by Accredia (National System for the accreditation of certification and inspection bodies) in compliance with the UNI CEI EN ISO / IEC 17025: 2018 standard, for the measurement-determination of the physical-mechanical and chemical characteristics of various materials:

In the **Materials Laboratory** we perform the necessary tests for the characterization of polymeric materials, for the determination of their physical-mechanical, chemical, rheological and thermal properties, for their behavior to aging and for their resistance to fire.

In the **MOCA / Packaging Laboratory**, all the tests required by the mandatory legislation in the MOCA field are carried out on plastic, paper and cardboard products, poly laminates, metals ... (chemical and sensory tests). Furthermore, it is possible to perform a whole series of chemical analyzes that involve the use of techniques, such as, for example, gas and liquid chromatography, ICP-OES spectroscopy, UV-VIS spectroscopy.

In the **Mechanical Laboratory**, tests are carried out on pipes, fittings and systems in plastic material (PE, PP, PVC ...) to verify their performance (for example resistance to hydraulic and pneumatic pressure, shocks, deformations, environmental stress ...). These tests can also be used for the issue and subsequent maintenance of Product certifications or for the testing / verification of specific production batches.

FOR INFORMATION:

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Check out our website: www.iip.it and our **LinkedIn page**

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CHARACTERIZATION OF MATERIALS:

- Infrared spectroscopy (FT-IR) with ATR or in transmission for identification of the chemical nature of the materials
- Raman spectroscopy for point analysis with determination of the chemical nature and size of defects / inclusions
- Raman spectroscopy for stratigraphic analysis with determination of thickness and chemical nature of the various layers
- XRF spectrophotometry (X-ray fluorescence analysis) for elemental qualitative analysis
- UV-VIS spectroscopy for transmittance analysis
- Differential Scanning Calorimetry (DSC) from - 40 ° C to + 600 ° C for the determination of the thermal transitions of materials (glass transition temperature, crystallization temperature, melting temperature, crystallinity) and related energies involved
- Differential Scanning Calorimetry (DSC) for determining the oxidation induction time (OIT)
- TGA (Thermogravimetric Analysis) for the quantification of additives, plasticizers, fillers and carbon black content
- Determination of ashes in the muffle to search for mineral fillers and glass fiber

FLAMMABILITY TESTS:

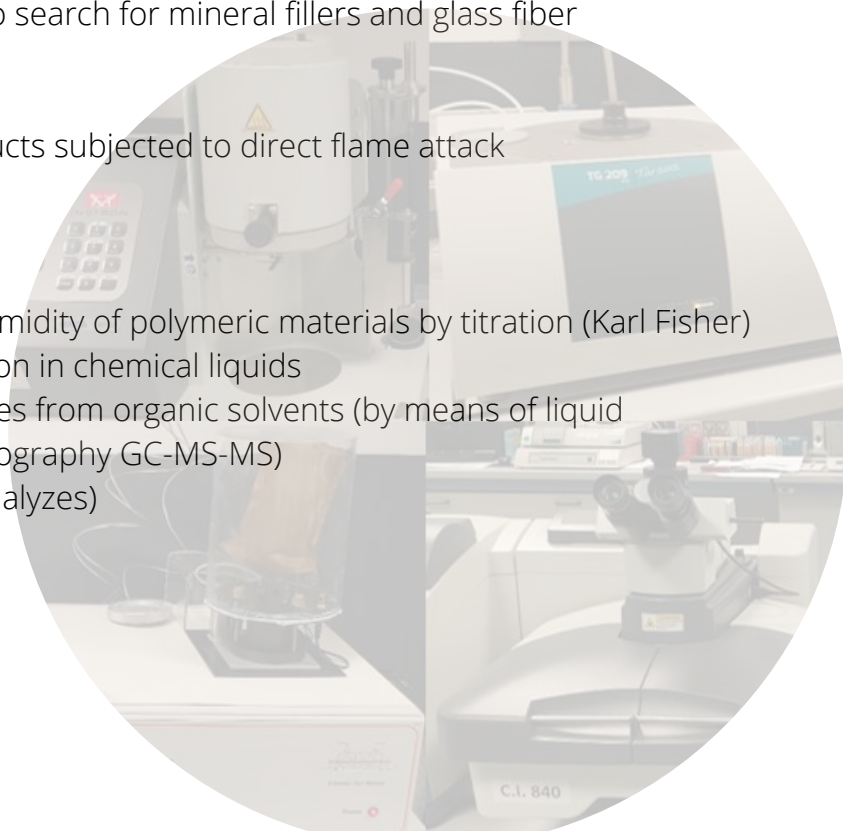
- Fire reaction tests - Ignitability of products subjected to direct flame attack
- Fire classification according to UL94

CHEMICAL TESTS:

- Determination of the percentage of humidity of polymeric materials by titration (Karl Fisher)
- Determination of the effect of immersion in chemical liquids
- Determination of extractable substances from organic solvents (by means of liquid chromatography, HPLC or gas chromatography GC-MS-MS)
- ICP-OES spectroscopy (for inorganic analyzes)
- VOC (Volatile Organic Compound)
- Analyses SVHC, REACH e ROHS

SPECIMEN PREPARATION:

- Specimen molding with injection press
- Realization of samples from artifacts



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PHYSICAL-MECHANICAL TESTS:

- Determination of density (density)
- Determination of hardness by penetration of a durometer (hardness Shore A-D)
- Determination of the static and dynamic friction coefficient of films or sheets
- Dart Drop Impact Test for the determination of the impact resistance of packaging materials such as plastic films, laminates and paper by means of a dart in free fall from a certain height.
- Determination of the oxygen / carbon dioxide / water vapor permeability of films
- Determination of oxygen / carbon dioxide / water vapor permeability of food packaging
- Determination of longitudinal shrinkage (Shrinkage of Plastic Film and Sheeting)
- Resistance test of welds
- Resistance to delamination (peeling)
- BCT (Box Compression Test)
- Cross-cut test to evaluate the resistance of paints and varnishes to detachment from substrates
- Determination of the hardness of a coating by testing with pencils
- Determination of tensile properties (load-elongation / elastic modulus)
- Determination of bending properties (strength / elastic modulus)
- Determination of compression properties (strength / elastic modulus)
- Determination of Izod impact resistance
- Determination of Charpy impact characteristics
- Determination of the impact-tensile strength

AGING:

- Accelerated aging in hot or cold environments
- Accelerated aging in the climatic chamber
- Accelerated aging in the Xenon arc chamber
- Accelerated aging in the UV room

RHEOLOGICAL TESTS:

- MFI (Melt Flow Index) for the viscosity properties of polymers
- Polyamides - Determination of the viscosity number
- Polyesters (e.g. PET) - determination of intrinsic viscosity



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THERMAL TESTS:

- Determination of the Vicat softening temperature (VST)
- Determination of the bending temperature under load (HDT)

SPECIFIC TESTS FOR THERMAL INSULATION FOR BUILDING:

- Determination of thermal conductivity
- Determination of long-term water absorption by immersion
- Fire classification of construction products and building elements - Part 1: Classification based on the results of reaction to fire tests
- Determination of the compression behavior
- Determination of the tensile strength perpendicular to the faces
- Determination of the transmission properties of water vapor
- Determination of the bending behavior
- Determination of dimensional stability under constant and normalized laboratory conditions (temperature 23 ° C / relative humidity 50%)
- Determination of length and width
- Determination of the thickness
- Determination of orthogonality
- Determination of flatness
- Determination of the shear behavior
- Determination of dimensional stability under specified conditions of humidity and temperature



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TESTING IN THE FIELD OF MOCA LEGISLATION

- Global migrations in simulants A, B, C, D1, D2, E and oil substitute simulants (isooctane and ethanol)
- Specific migrations of substances subject to legal limits according to legislation in simulants A, B, C, D1, D2, E and oil substitute simulants (isooctane and ethanol)
- Content of substances subject to legal limits according to legislation
- Specific migration of primary aromatic amines (spectrophotometric and chromatographic method)
- Specific migration of metals
- Specific color migration (spectrophotometric method)
- Screening test for NIAS determination
- Analyses SET-OFF
- Performance tests
- Sensory olfactory and gustatory tests

SOME OF THE MAIN ANALYTICAL TECHNIQUES:

- Gas chromatography (HS-GC-FID / ECD, HS-GC-MS, HS-GC-MS-MS ...)
- Liquid chromatography (HPLC)
- ICP-OES spectroscopy
- UV-VIS spectroscopy
- XRF spectrophotometry
- Microwave mineralization
- Accelerated solvent extraction (ASE)



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SPECIFIC TESTS FOR PIPES, FITTINGS, SYSTEMS:

- Determination of dimensions
- Determination of resistance to internal pressure
- Determination of the resistance to slow propagation of the crack of a notched pipe (SCG)
- Determination of resistance to rapid fracture propagation (RCP)
- Determination of resistance to external shocks (watch face method)
- Determination of the impact resistance of a T-branch take-off
- Determination of water and air tightness of piping systems for non-pressure applications
- Determination of the tightness with internal pressure and angular deflection and / or with negative pressure, angular deflection and deformation of pipe systems with cup joints with elastomer seals
- Determination of the tightness of piping systems with elastomeric ring seal type joints for non-pressure applications
- Determination of resistance to slow propagation of the fracture-cone method
- Determination of resistance to cracking under stress (stress - cracking)
- Determination of Environmental Stress Cracking (ESC) Resistance of Polyethylene (FNCT)



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