



Laboratory Offer

The range of research

1. Making samples for research (dumbbell, bar)

Standard/Norm/Test method: PN-EN ISO 3167, PN-EN ISO 294

2. Material identification - Fourier Transform-Infrared Spectroscopy

A test using the infrared spectroscopy method with Fourier transform. Allows to obtain spectra enabling effective identification of compounds that are part of the tested substances.

Test method: own method

Equipment: The Thermo Scientific Nicolet iS5 FT-IR Spectrometer

3. Determination of Mass (MFR) and volume (MVR) melt flow rate

Melted material is extruded through a plastometer nozzle at a predetermined temperature under a given load and the rate of flow is measured.

Equipment: Zwick/Roell Mflow extrusion plastometer

Standard/Norm/Test method: PN-EN ISO 1133

4. Determination of mechanical properties when stretching

The test specimen is extended along its major longitudinal axis at a constant speed until the specimen fractures or until the stress (load) or the strain (elongation) reaches some predetermined value.

Equipment: Zwick/Roell Static Materials Testing Machine

Standard/Norm/Test method: PN ISO 37, PN-EN ISO 527-1, PN-EN ISO 6259-1

5. Determination of tensile modulus when stretching

Determination of stress at a given strain and determination of E material constant.

Equipment: Zwick/Roell Static Materials Testing Machine + extensometer

Standard/Norm/Test method: PN-EN ISO 6259-1

6. Determination of mechanical properties when bending

A test specimen is resting on three supports and it is bended with constant speed until it brakes or until it reaches predetermined value of deformation.

Equipment: Zwick/Roell Static Materials Testing Machine

Standard/Norm/Test method: PN-EN ISO 178

7. Determination of flexural modulus

Determination of modulus of the flexural test.

Equipment: Zwick/Roell Static Materials Testing Machine

Standard/Norm/Test method: PN-EN ISO 178

8. Determination of mechanical properties of compression

The sample is pressed between two flat plates until it brakes or until it obtains predetermined deformation values.

Equipment: Zwick/Roell Static Materials Testing Machine

Standard/Norm/Test method: PN-EN ISO 604

9. Determination of Charpy's impact strength

The test specimen (bar shaped - supported near its ends and set horizontally) is hit by a single strike of hammer between the supports, and is bent at a high, nominally constant speed.

Equipment: Zwick/Roell Pendulum impact testers (Charpy 1J, 2J, 4J)

Standard/Norm/Test method: PN-EN ISO 179-1

10. Determination of Izod impact strength

The test specimen (bar shaped) is set vertically and hit by hammer until it brakes with high, nominally constant speed.

Equipment: Zwick/Roell Pendulum impact testers (Izod 2,75J, 5,5J)

Standard/Norm/Test method: PN-EN ISO 180-1

11. Determination of hardness with Shore method

The measurement determines the recess of indenter pushed into the material under specified conditions.

Equipment: Zwick/Roell analog Shore (A&D) hardness testers

Standard/Norm/Test method: PN-EN ISO 868

12. Thermal analysis of the polymers by differential scanning calorimetry (DSC)

Measuring the change in heat flux causing difference between the test sample and the reference sample material during thermal transition.

Test method: Differential Scanning Calorimetry DSC

Equipment: NETZSCH / DSC Phox 200 P

13. Dynamic mechanical analysis (DMA)

Measurement of the mechanical properties of polymers, depending on the temperature and frequency distortion.

Test method: Dynamic mechanical analysis (DMA)

Equipment: NETZSCH / DMA 242 C

14. Examination of the oxidation induction time (OIT)

Determination of the oxidative stability of materials.

Test method: Differential Scanning Calorimetry DSC

Equipment: NETZSCH / DSC Phox 200 P

15. Thermogravimetric analysis (TGA)

Measurement of sample mass in a strictly defined atmosphere, provides the detection of endothermic and exothermic effects.

Test method: Thermogravimetric analysis (TGA)

Equipment: TGA 4000 thermogravimetric analyzer

16. The density of plastics

The sample is weighted in air, its volume in water is defined, then its density is calculated as the quotient of mass and volume.

Equipment: Radwag analytical balances with an attachment for measuring the density

Standard/Norm/Test method: PN-EN ISO 845, PN-EN ISO 1183

17. Determination of water absorption

The dried and weighted samples of test material are stored in water at a specific time and at proper temperature. Then, after the sample is out of the water, the change in weight of the sample is checked.

Equipment: Radwag analytical balances, dryer with forced air, water container

Standard/Norm/Test method: PN-EN ISO 62

18. Determination of the mechanical properties of the samples conditioned to a certain moisture content

Comparison of the mechanical properties before and after conditioning.

Test method: own method

Equipment: Zwick/Roell Static Materials Testing Machine, Zwick/Roell Pendulum impact testers, Zwick/Roell analog Shore (A&D) hardness testers

19. Determination of moisture content in granulate

Determination of mass loss of the sample at an elevated temperature after the moisture evaporation.

Test method: own method

Equipment: Radwag moisture analyzer

20. Determination of plasticizer migration

Determination of mass loss of the sample at higher temperature and at an appropriate load. Plasticizer from the sample is absorbed into the two plates which are in contact with the sample from the top and bottom during the analysis.

Equipment: Radwag analytical balances, dryer, weights

Standard/Norm/Test method: PN-EN ISO 177

21. The filler content of the test material

Evaluation of content percentage of filler material.

Equipment: muffle furnace Snol

Standard/Norm/Test method: PN-EN ISO 3451-1

22. The chemical composition of the test materials (GC-MS)

Qualitative and quantitative analysis of chemical substances occurring in complex matrices. Identification of an unknown substance by comparing the measured spectrum with the standard spectra.

Test method: Gas Chromatography/Mass Spectrometry

Equipment: gas chromatograph with mass spectrometer SCION TQ

23. Determination of chemical elements using XRF

Determination of the elements of the characteristic fluorescence X-ray dispersive wavelength - WDXRF.

24. The intrinsic viscosity of the test materials

Determination of intrinsic viscosity as a measure of resistance posed by the material flow.

Equipment: Ubbelohde viscometer, thermostat LAUDA

Standard/Norm/Test method: PN-EN ISO 1628

25. Examination of thermal aging

Evaluation of impact of an accelerated aging on the properties of the product. Determination of mechanical properties, color and gloss with an assessment of changes in the surface using a microscope.

Test method: own method

Equipment: Thermal chamber with registration of temperature and instrumentation depends on research

26. Examination of chemical aging

Determination of resistance to chemicals (including fuels and cleaning agents) in tension state.

Test method: own method

Equipment: Chemical cleaning and instrumentation depends on the range of research

27. Examination of UV aging

Determination of the material UV radiation resistance.

Test method: own method

Equipment: UV Test ATLAS with three possible types of lamps (350 nm, 340 nm, 313nm).

28. Microscopic investigations for surface defects of plastic parts

Analysis of process defects, tools and raw materials through the use of the microscope with the registration, operating in the magnification range from 8x to 64x.

Test method: own method

Equipment: Stereo Microscope with a visual inspection system

29. Microscopic analysis of correctness of plastics connections

Microscopic observation in reflected light and UV resistance of welded and glued joints, with the possibility of image recording.

Test method: own method

Equipment: Stereo Microscope with visual inspection system

30. Determination of moulding shrinkage

Appraisal of changes in the dimensions of flat samples or finished product due to the shrinkage processing.

Equipment: Mitutoyo Digimatic Caliper and Digital altimeter

Standard/Norm/Test method: PN-EN ISO 294

31. Determination of foil shrinkage (longitudinal and transverse)

Assessment of changes in dimension of the foil before and after heating in the thermal chamber.

Equipment: Thermal test chamber, Mitutoyo Digimatic Caliper

Standard/Norm/Test method: ASTM D2732

32. Determination of the foil weight

Evaluation of weight of the foil with reference to the unit area.

Test method: 100 cm² foil sample mass measurement.

Equipment: Radweg analytical balances and rule to cut workpieces 100x100 mm

33. Determination of Glow-wire flammability index

Flammability rating in order to determine the rate of Glow-wire flammability index (GWFI).

Test method: Flammability measurement of the samples (dimensions: 60 x 60mm) determined by the rate of glow-wire test.

Equipment: Test site to measure the flammability of the samples with glow-wire (temp. range 550-960°C)

34. Determination of Glow-wire ignition temperature

Flammability rating of materials in order to determine the ignition temperature of the Glow-wire (GWIT).

Test method: flammability test of samples with dimensions of 60x60 mm

Equipment: Test site to measure the flammability of the samples with Glow-wire measurement temperatures in the range 500 - 960°C

35. Determination of the flammability of fittings exposed to an ignition source with a small flame

Flammability ratings of foil and mold treated with a small source of ignition flame.

Test method: flammability test of films and mold plastic

Equipment: Test site to measure the flammability equipped with a Bunsen burner and laboratory hood for exhaust.

36. Color measurement in CIE lab L*a*b* and others set up (whiteness, yellowness degree)

The sample is illuminated with light in the visible spectrum spread and examined by an optical system at a constant angle of view at a predetermined light source.

Equipment: X-rite, SP62 Portable Sphere Spectrophotometer

Standard/Norm/Test method: PN ISO 7724, ASTM E 308, ASTM E 313

37. Determination of total color difference ΔE in relation to pattern

Determination of color difference or contrast between the sample after the test and before the test: load, exposure to sun or aging.

Equipment: X-rite, SP62 Portable Sphere Spectrophotometer

Standard/Norm/Test method: PN-EN 20105

38. Analysis of surface gloss in plastic components

Determination of difference between the light illuminating the sample and reflected from its surface.

Equipment: IGT Gloss Meter

Standard/Norm/Test method: PN-EN ISO 2813

For more details please contact **ShiniEurope Office:**

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