SHINI EUROPE

Laboratory

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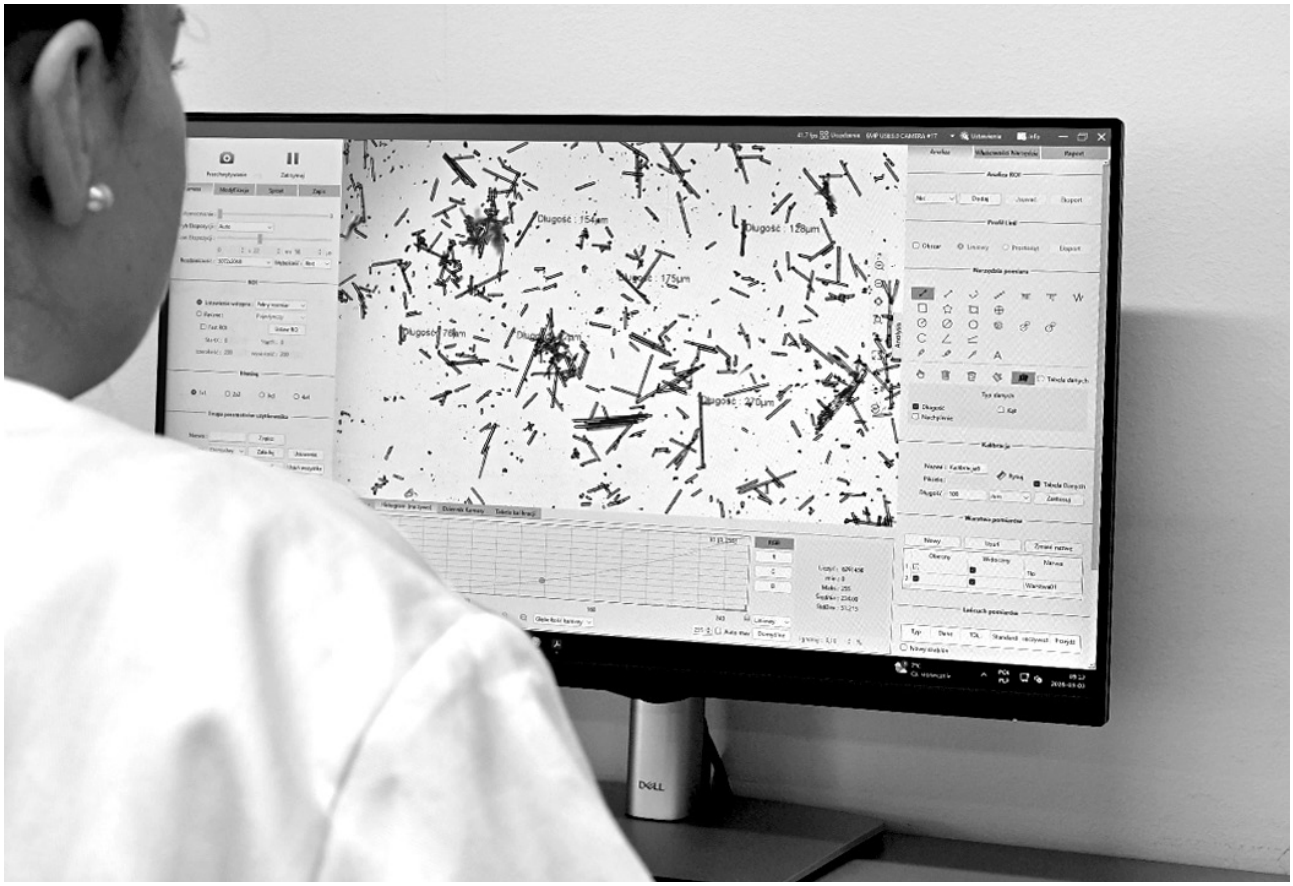
Choose from more than 30 different tests designed to improve the quality of your products. Verify raw materials and test finished products to ensure full repeatability and the highest manufacturing standards.



1. Production of standardized plastic test specimens (dumbbell, bar)

Standards: PN-EN ISO 3167, PN-EN ISO 294

2. FTIR spectroscopic analysis – identification of the base polymer

Based on spectra recorded using Fourier Transform Infrared Spectroscopy, the base polymer of the tested sample can be identified.
Method: ATR technique
Equipment: Thermo Scientific Nicolet iS5 FTIR spectrometer

3. Comparative material composition analysis using FTIR spectroscopy

Qualitative analysis of compliant and non-compliant materials and comparison of IR spectra by determining the spectral correlation coefficient.
Method: ATR technique
Equipment: Thermo Scientific Nicolet iS5 FTIR spectrometer

4. Differential scanning calorimetry (DSC) – determination of thermal properties

Recording phase transitions occurring in polymers during controlled heating and cooling. Determination of characteristic parameters (Tm, Tg, ΔHm, ΔHc) enables identification of the polymer type, assessment of crystallinity, and detection of contamination by other polymers.
Equipment: Mettler Toledo DSC 3
Standard: PN-EN ISO 11357-1

5. Comparative DSC analysis

Determination of differences in thermal properties between a tested material and a reference material based on recorded DSC thermograms.
Equipment: Mettler Toledo DSC 3
Standard: PN-EN ISO 11357-1

6. Oxidation induction time (OIT) test

Determination of the oxidative stability of polymer materials.
Equipment: Mettler Toledo DSC 3
Standard: PN-EN ISO 11357-6

7. Thermogravimetric analysis (TGA)

Measurement of sample mass change during heating to determine thermal resistance, mineral filler content and moisture content. Comparative analysis can also reveal contamination by another polymer.
Equipment: PerkinElmer TGA 4000
Standard: PN-EN ISO 11358-1

8. Density determination

Determination of density using the immersion method by measuring sample mass in air and after immersion in a liquid of known density.
Method: Immersion
Equipment: Radwag AS 82/220.5Y analytical balance with density kit
Standards: PN-EN ISO 845, PN-EN ISO 1183

9. Bulk density determination

Determination of the mass of freely poured material in a cylinder of known volume using a standardized funnel.
Equipment: COESFELD apparatus
Standard: PN-EN ISO 60

10. Melt Mass-Flow Rate (MFR) and Melt Volume-Flow Rate (MVR)

Measurement of the flow rate of molten plastic through a plastometer die under specified temperature and load conditions.
Equipment: Zwick/Roell Mflow plastometer
Standard: PN-EN ISO 1133

11. Tensile properties

Measurement of tensile strength, yield point, stress and elongation at break during a static tensile test.
Equipment: Zwick/Roell universal testing machine
Standard: PN-EN ISO 527-1, -2

12. Tensile modulus

Measurement of the longitudinal modulus of elasticity (E-modulus) of the plastic during a static tensile test of the fitting using an external extensometer.
Equipment: Zwick/Roell universal testing machine and extensometer
Standard: PN-EN ISO 527-1, -2

13. Flexural properties

Measurement of flexural strength, deflection, flexural stress and strain during a three-point bending test.
Equipment: Zwick/Roell universal testing machine
Standard: PN-EN ISO 178

14. Flexural modulus

Determination of flexural modulus during a bending test.
Equipment: Zwick/Roell universal testing machine
Standard: PN-EN ISO 178

15. Compression properties

Measurement of compressive strength, compressive strain and maximum compressive force during a static compression test.
Equipment: Zwick/Roell universal testing machine
Standard: PN-EN ISO 604

16. Charpy impact strength

Measurement of the impact strength of a plastic, expressed as the ratio of the fracture energy to the cross-sectional area of the specimen during dynamic bending of a horizontally positioned specimen by a single impact of a pendulum hammer.
Equipment: Zwick/Roell Charpy pendulum impact tester (1J, 2J or 4J)
Standard: PN-EN ISO 179-1

17. Izod impact strength

Measurement of the impact strength of a plastic material, expressed as the ratio of the fracture energy to the cross-sectional area of the specimen during dynamic bending of a vertically oriented specimen by a single impact of a pendulum hammer.
Equipment: Zwick/Roell Izod impact tester (2.75J or 5.5J)
Standard: PN-EN ISO 180-1

18. Hardness testing using the Shore method

Measurement of surface hardness expressed on the Shore A or D scale.
Equipment: Zwick/Roell Shore A and D hardness testers
Standard: PN-EN ISO 868

19. Vicat softening temperature (VST)

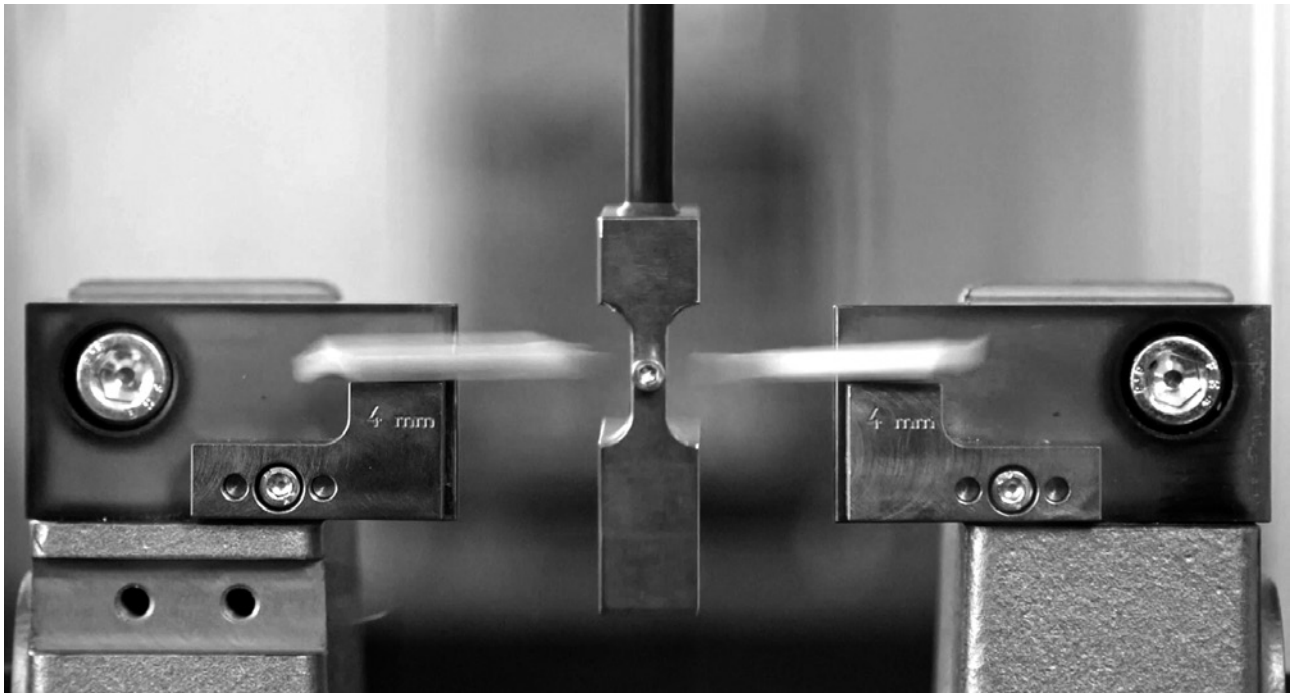
Determination of the temperature at which a standardized needle penetrates the surface of a specimen to a depth of 1 mm under a specified load, as the temperature rises at a constant rate.
Methods: A50, B50, A120, B120
Equipment: Instron CEAST HV3 HDT/VICAT
Standard: PN-EN ISO 306

20. Heat deflection temperature (HDT)

Determination of the temperature at which a standardized member (beam) undergoes a specific deflection under a given bending load, with a constant increase in temperature.
Methods: A – 1.80 MPa, B – 0.45 MPa, C – 8.00 MPa
Equipment: Instron CEAST HV3 HDT/VICAT
Standard: PN-EN ISO 75-1, -2

21. Volatile compounds content

Measurement of moisture and volatile substances by infrared drying until constant mass is achieved.
Equipment: RADWAG MA 200.3Y moisture analyzer



22. Mineral filler content

Determination of the percentage content of inorganic fillers after thermal decomposition of the polymer matrix (ashing).
Equipment: SNOL muffle furnace
Standard: PN-EN ISO 3451-1

23. Thermal aging of plastics

Assessment of resistance to thermal degradation through comparative analysis of mechanical properties, colour and surface morphology.
Equipment: Pol-Eko SLW 115 smart thermal chamber
Standard: PN-EN ISO 2578

24. Accelerated UV aging

Assessment of a material's resistance to UV-induced degradation through a comparative analysis of selected properties—mechanical properties, colour, and surface morphology - of samples subjected to accelerated UV aging, in comparison with reference samples.
Equipment: UV chamber with fluorescent lamps (313 nm, 340 nm)
Standard: PN-EN ISO 4892-3

25. Macroscopic and microscopic analysis of surface defects

Preparation of photographic documentation of surface defects in products using light microscopy techniques across a wide range of magnifications (from 8x to 1000x). The analysis also includes the identification of defects such as microcracks, streaks, foreign matter inclusions, and burn marks.
Equipment: OPTA-TECH X2000 stereoscopic microscope and LAB40M metallographic microscope

26. Testing the flammability of materials using the glow-wire method (GWFI)

Determination of the GWFI index - the highest temperature at which a material, upon contact with a glow-wire, self-extinguishes in less than 30 seconds, and any dripping molten material does not ignite the tissue paper substrate.
Standard: PN-EN ISO 60695-2-12

27. Glow-wire ignition temperature (GWIT) test of materials

Determination of the GWIT index - the temperature that is 25°C higher than the highest temperature of the incandescent wire at which the material does not ignite, or at which the duration of any burning does not exceed 5 seconds during contact with the glow-wire and after it has been removed.
Standard: PN-EN ISO 60695-2-13

28. Flammability classification (UL94)

Determination of flammability class (V0 to V2, HB) for plastics exposed to a small flame ignition source.
Standard: PN-EN ISO 60695-11-10 / UL94

29. Colour measurement in the CIE L*a*b* system

Quantitative determination of colour coordinates in the three-dimensional CIE L*a*b* colour space.
Equipment: x-Rite SP62 spectrophotometer
Standards: PN ISO 7724-1, -2, -3

30. Determination of the total color difference ΔE relative to a reference

Determination of the color difference ΔE between the reference sample and the sample after testing, loading, sun exposure, or aging.
Equipment: x-Rite SP62 spectrophotometer
Standards: PN ISO 7724-1, -2, -3

31. Elemental analysis by XRF and ICP-MS

Determination of elemental content using X-ray fluorescence spectrometry and inductively coupled plasma mass spectrometry.
Standards: PN-EN 62321-3-1, PN-EN ISO 17294-2

32. Determination of phthalates and PAHs by GC-MS

Determination of phthalates and polycyclic aromatic hydrocarbons using gas chromatography – mass spectrometry.
Standards: PN-EN 62321-8, PN-EN 17132

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