



**POLYMER TESTING, INSPECTION
& PROBLEM SOLVING
GLOBAL SOLUTIONS**

intertek
Total Quality. Assured.



Polymer Testing, Inspection & Problem Solving

Materials Tested:

Polymers and Plastics, Elastomers, Composites, Films, Nanomaterials, Foams, Coatings, Adhesives, Textiles and Biopolymers.

Industries Served:

Aerospace, Automotive, Building Products, Consumer Goods, Electronics, Energy, Food, Medical, Packaging.

Chemical Analysis: Intertek offers extensive chemical analysis of polymers, resins, plastics, biopolymers and composites to support deformation, problem-solving, quality and regulation. (Sequencing and Structure, Molecular Weight and Distribution, Chemistry of Fractions, End Groups, Tacticity, Unreacted Monomer and Oligomers, Co-monomer, Copolymer Contents and Blend Composition, Additives, Filler Materials, Catalyst Residues, Contaminants, VOCs, Degradation, Cure).

Analytical: Intertek experts' years of experience combined with state-of-the-art techniques and equipment offers extensive analytical testing for additives, metals, toxics, impurities, and blends. (Gas Chromatography, Liquid Chromatography, ICP-OES / ICP-MS, GPC / HT- GPC, XRF,

Know-how in polymers and plastics testing.

Chemical Analysis:

Intertek offers extensive mechanical testing capabilities including microstrain measurements using bonded strain gages and environmental chambers for high and low temperature testing for plastics, composites, elastomers, films, adhesives, textiles, and foams. (Tensile, Tear, Shear, Flexural, Impact, Compression, Creep, Fatigue, Friction, Wear, Adhesion)

Materials Tested:

Failure Investigation involving fracture and failure of materials such as fibers, films and membranes, polymers, engineering plastics, composites, coatings and paints all represent Intertek's competency. Intertek's investigative success is based on intimate knowledge of raw material production processes, polymerization technology, molding processes and end-user applications that vary from simple packaging films through consumer goods to advanced aerospace materials.

Regulatory Support

Intertek offers extensive regulatory support, including REACH, to those using polymers, resins, plastics and composites in industries where compliance with polymer definitions, food contact regulations, drug packaging requirements, import regulations and VOC emission standards are crucial. (Migration, Specific migration, Extractables and leachables, Polymer definition, Monomer, Additives, Heavy metal residues, Contaminants, SVHC content, VOCs).

Processing:

The resources, capabilities and expertise offered by Intertek processing services, e.g. extruder and compounding facilities, help clients develop new products, troubleshoot production processes and provide quality control and research support. (Injection Molding, Blown Film, Cast Film).

Surface Properties and Analysis:

Examining material surfaces provides key information to compatibility, chemical changes, contamination, migration, laydown of layers, wettability, tribology, adhesion and degradation. (Contact Angle and Surface Free Energy measurements, X-ray Photoelectron Spectroscopy (XPS or ESCA) and Imaging, Static Secondary Ion Mass Spectrometry (SIMS) and Imaging, Fourier Transform Infra Red (FTIR), Spectroscopy, Microscopy and Imaging, Raman Spectroscopy and Mapping, Surface Profilometry, Elemental Mapping by EDX).

Flammability:

Flammability properties such as burn rate, self extinguishing, smoke generation and toxicity of polymers are important in a wide range of

industries including aerospace, automotive, building products and consumer goods. (Small Scale Flammability, Room Burn Apparatus, Open Calorimeter, Intermediate Scale Calorimeter (ICAL))

Exposure Programs:

Intertek conducts aging and exposure testing of products under defined conditions. (Accelerated Weathering by Fluorescent UV, Accelerated Weathering by Xenon-Arc, Carbon Arc, Chemical Resistance, Corrosion, Cycling, Environmental Stress Cracking Resistance, Humidity, Oven Aging, Salt Spray, Sterilization).

Thermal:

Thermal analysis techniques available include melting and crystallisation characteristics (enthalpy of fusion or recrystallisation, thermal history of the material, nucleation of polymer), crystallinity studies, curing reactions and degradation analysis in different atmospheres. (Differential Scanning Calorimetry (DSC), Dynamic Mechanical Analysis (DMA or DMTA), thermomechanical Analysis (TMA) Thermogravimetric Analysis (TGA), DETA, dielectric Spectroscopy).

Optical:

Optical properties of polymers are important in a wide range of applications, ranging from packaging – where the aesthetics of an underlying product must be maintained – through to glazing products in both the automotive and the construction industry. (Color, Gloss, Haze, Clarity, Refractive index).

Rheology:

Intertek laboratories test the rheological properties of polymeric materials and liquids over a wide variety of temperatures and deformation rates (both shear and extensional). Understanding rheological properties enables our clients to optimize process conditions, thus saving costs and potential waste. (Capillary Rheology, Rotational Rheology, Melt Flow Index, Intrinsic Viscosity, Relative Viscosity, Instrumented Injection Molding (Spiral Flow)).

Morphology:

Optical and electron microscopy and XRD techniques are key to the understanding of the structure and properties of polymer materials, including composites and adhesives. (Optical Microscopy, Confocal Scanning Microscopy, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Hot-Stage Microscopy, WAXS and SAXS).

Electrical:

Electrical tests, in general, are measurements of the resistance, conductivity or charge storage either on the surface or through the polymer material. (Dielectric Constant/ Dissipation Factor, Dielectric Strength, Volume Resistivity, Surface Resistivity, Charge Decay).



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