

Your partner for all aspects of rubber technology

The performance of elastomeric materials and components with regard to resistance, elasticity, lifetime and functional reliability depends on many factors. Most significant are the quality of the raw materials used, the constituents and the processing method in all its individual stages such as mixing, extruding, shaping and vulcanization.

In this and many other branches of rubber technology, DIK offers an extensive range of services.



Experienced chemists, physicists and engineers work at DIK in well equipped labs, dealing with orders from all over the world. Modern project management ensures smooth work sequences and high quality results. The accuracy and reliability of the testing is guaranteed by application of a broad spectrum of test procedures accredited. DIK uses state of the art equipment to carry out contracted work and for interdisciplinary problem solving.

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Testing - developing - optimizing

Advance with proven quality



Offered services

DIN, ISO, ASTM and industry specific standards

- hardness: Shore A, IRHD
- rebound resilience, temperature dependent
- abrasion resistance
- stress-strain behavior, temperature dependent
- tear growth resistance, temperature dependent
- compression set and tension set
- compression strength, tensile strength, environment and temperature dependent
- density measurement
- ageing and endurance behavior
- temperature, ozone, xenon, media resistance
- filler dispersion
- flex-fatigue testing (de Mattia)
- flexometer test, setting behavior, "heat build up"
- "fogging"-tests (DIN 75201 or VDA 278)
- determination of "VOC"
- pyrolysis GC-MS
- thermogravimetry

Mechanic-dynamical testing

- storage modulus, loss modulus, temperature, amplitude and frequency dependent
- elastic and shear modulus
- component testing, sinusoidal and pulsed load
- biaxial part testing
- high frequency properties (kHz-, MHz-range)
- material characterization considering rotating loading directions

Wear behavior

- dynamic crack propagation ("Tear Analyzer"), mechanical characteristics
- fracture mechanical calculations, lifetime predictions
- static and dynamic friction measurements
- evaluation of hysteresis and adhesion friction, fatigue properties, Wöhler- und Haigh-diagrams

Surface properties

- chemical composition of surfaces
- ATR-FT-IR-spectroscopy
- surface roughness - μm - to mm-range
- surface tension - contact angle measurements
- plasma treatment at atmospheric pressure
- scanning electron microscopy (SEM)
- element analysis (EDX)

Vulcanization

- kinetics and efficiency
- vulcameter curves
- scorch behavior of compounds (Mooney-Scorch)
- crosslinking density measurements and network structure analyses

Dielectric properties

- relaxation spectroscopy, wide temperature and frequency range
- complex conductivity and permittivity

Rheology

- viscosity as a function of shearing velocity and temperature
- parameters for flow models
- wall slippage
- mooney-viscosity
- rheometry in combination with dielectric spectroscopy
- magnetorheology

Processing technology

- strategies for discontinuous and continuous mixing process
- compounding of thermoplastic vulcanisates, mixing, extrusion, calendaring and injection molding
- rheological measurement and assessment of the processability of compounds
- process analysis and process optimization
- process development
- manufacturing of samples or products
- mold filling simulations

Material testing

- compound and elastomer composition
- raw material analyses
- polymer characterization
- quality control

Failure analyses

- high resolution computed tomography
- clarification of component or material failure
- characterization of ageing behavior
- chemical resistance of elastomer
- rubber-metal bonding
- microscopy (Digital-Microscopy, SEM-EDX)

Trace analyses for pharmaceutical and food contact applications

- migration tests according to official methods
- purity tests of polymers and elastomers
- "Leachable"-analyses of polymer materials

Environmental and workplace air measurements

- emissions of elastomers
- curing fumes (analysis and sampling)
- nitrosamine analyses
- analyses of PAH (polycyclic aromatic hydrocarbons)

Material development

- specifications and functional requirements
- tailor made recipes

Finite elements calculations

- definition of problem types
- parameter identification
- component design/optimization
- shape and functional optimization
- lifetime prediction
- expert advice for in-house finite element simulations