

The complete service offering of TITK and OMPG is listed in the following overview:

## Development of compositions and processes

### Material testing of...

- plastics / compounds
- plastic parts
- plastic films
- fibre compounds
- foam plastics
- textile area-measured materials / non-wovens
- fibres / yarns / filaments
- leather / leatherette
- polymer solutions
- electrical and electronic equipment with take-back obligation (RoHS)

### ...in the fields of

- physical - mechanical tests / rheology
- chemical analysis (analysis of materials and hazardous substances)
- microscopy
- thermal characterisation
- colour determination
- determination of electrical properties
- optical tests
- energetic surface characterisation
- particle analysis
- dynamic ESR-spectroscopy

### Subsequent processing of materials

- production of non-wovens (needle, wet, spin)
- compound production (pressing, injection moulding, winding)
- film production
- laminate production
- dry, wet and melt spinning
- comminution

Visit us on [www.titk.de](http://www.titk.de) for more details.

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**East Thuringian Materials Testing Company**

**Service on research, development and material testing for**

**polyamide**



## Research and development

The Thuringian Institute for Textile and Plastics Research and its subsidiary, the East Thuringian Materials Testing Company, can benefit from long experience in the fields of synthesis, investigation and analysis as well as material tests on polyamides in Rudolstadt-Schwarza.

The know-how in polyamide production and research, obtained since 1958, has been transferred to new aspects of development.

Since then, the TITK has done research into the improvement of plastics properties. The polymer materials specifications according to their application are basic principles of each development.

Based on this, additives are purposefully used and compounds are produced respectively to achieve these aims. At this, properties being contrary up to now are combined in one plastic material more and more.

Polyamides belong to the technical plastics and are used in various applications in automotive and electric industry.

Benefit from our staff's knowledge and experience and the modern equipment of the Institute to solve your problem in the best way.

**We support you in research and development to modify your polyamide material.**



Extrusion

## Synthesis / processing technology

### Autoclave technology

#### • for syntheses and modifications of polyamides

- 5L - Autoclave  
overpressure up to 20 bar  
polymer yield up to 3 kg



Autoclave

### Equipment for resin drying

Drying chambers (air circulation and vacuum)  
Continuous drying plant for extrusion

### Extrusion

- twin screw extruder ZSK 40
- twin screw extruder ZSK 25  
- inert gas conditions are possible
- plate and film extrusion plants  
(single- and multi-layer)

### Dosing system und pelletizing

gravimetric dosing system for resins, powder, liquids and fibroid materials  
strand, underwater and drop pelletizing

### Equipment for specimen production

- hydraulic press  
production of plates of thermoplastic materials  
area 250 x 250 mm  
thickness 1, 2, 3 or 4 mm
- CNC-specimen mill  
production of specimen from plates or parts
- injection moulding machine Arburg Allrounder 320M  
production of DIN-standard specimen using CAMPUS-mould inserts for tensile bar ISO-Standard, standard short bar as well as UL 94-specimen,  
plate size 80 x 80 x 1 mm  
80 x 80 x 4 mm  
60 x 60 x 1 mm  
60 x 60 x 2 mm

## Service offering (abridged version)

### ■ characteristic material data

- viscosity complying with ISO 307
- determination of end groups, as  $\text{NH}_2$ ,  $\text{COOH}$
- determination of extract content, caprolactam content and oligomer content
- density / water content, water absorption
- melting point, melting temperature by DSC
- MVR / MFR / ash content
- grit size fraction / dust concentration of resins
- filter test

### ■ mechanical tests

(dry as moulded and conditioned):

- tensile test
- flexural test
- impact strength – Charpy, Izod, Dynstat – (un)notched
- falling weight test / plate puncture test

### ■ temperature / climatic / light exposure tests

- warm storage temperature
- ball drop test

### ■ fire behaviour

- flammability,
- oxygen index,
- fire simulation by Cone-calorimeter
- glow wire resistance

### ■ electrical properties

- creepage current fastness,
- dielectric loss factor,
- volume resistance,
- surface resistance

### ■ resistance / surface tests

- chemical resistance,
- ageing stability,
- light and weather fastness, sunlight simulation
- friction fastness / abrasion behaviour

### ■ emission and harmful substance analysis

### ■ gas permeability

(nitrogen, oxygen, carbon monoxide, water vapour)

### ■ component tests according to automotive standards

#### ■ Daimler Chrysler

- DBL 5403 bis 5406
- DBL 5410
- DBL 5416
- DBL 5420

#### ■ Volks- wagen

- VW 50125
- VW 50127
- VW TL 52440
- VW TL 52288
- VW TL 52062

#### ■ andere

- Ford WSS-M4 D 665
- Ford WSS-M4 D 673 et al.
- Opel / GM QK 001226
- Opel / GM QK 003000
- Bosch – BN 0214

■ test standards: VDA, Volvo, BMW, Porsche, Renault u.a.