

# Services of the Central Laboratory

## Material Consulting

The determination of the material components is carried out according to the requirements of drawings, technical specifications or order sheets (foams, nonwovens, films, fibers, adhesives, multi-layers).

## Audits

The development of the supplier concerning the process and product optimization is based on the conducted external audits (support in FMEA). Besides advising on and the carrying out of any materials testing in the interior or engine compartment of road vehicles, our central laboratory offers support in the use of the International Material Data System (IMDS), a requirement of the automobile industry.

## Workshops International Material Data System (IMDS)

Each and every supplier to the automobile industry is required to supply certain information on any material used in their product. In order to make optimum use of the required system, TechConsult offers support in the integration of IMDS (International Material Data System) into your processes and also in the preparation of electronic Material Data Sheets. The central laboratory runs a workshop on the basics of using the system. Additional internal or external workshops can be offered in the range of material trainings.

## Material Testing

The Central Laboratory possesses an modern equipment and tests against customer specifications or technical standards.

### Thermal tests:

By means of these tests methods thermal properties of the material can be determined:

- **Environmental chambers** up to 8m<sup>3</sup>  
Parts and components could be stored in the range from -40°C up to 180°C at variable humidity (10 – 95%),  
Max. of sample size 1500 x 1500 x 1500 mm<sup>3</sup>
- **Burning chambers**  
This test method is used to determine the burning rate, measured in mm/ min as well as the burning behavior  
(e.g. horizontal or vertical )

The ageing properties of the different materials could be determined using oven, steam autoclave etc.

## Physical-mechanical tests

By means of different tests methods a lot of material properties can be determined and processing behaviour can be predicted.

- **Universal Testing Machine**  
This test equipment is used for the determination of different physical parameters like tensile strength, compressive strain etc., following different standards. In addition it is possible to determine the adhesive force under temperature by means of an integrated oven up to 150 °C. This testing instrument is used as a test device for serial production.
- **Air permeability**  
This test method enables conclusions about the absorption as well as filter characteristics of different materials
- **Abrasion behaviour**  
Different testing devices can be used to evaluate the abrasion behaviour of e.g. carpets under constant load and to get information about surface changes:
  - Taber Abraser
  - Pedal Wheel tester
  - Heel tester
  - Schopper

## Color Fastness tests

- **Color Matching System**  
The color matching cabinet is used for the visual assessment of shade and color differences. This equipment provides controlled reproducible lighting conditions with four lamp types:
  - artificial daylight (D 65)
  - evening light standard (A)
  - department store (TL 84)
  - long wave UV (can be switched separately or additionally)

A neutral lighting environment and a constantly illuminated room provide comparative color matching evaluation under reliable conditions.

- **Crockmeter - Manual Model**  
This testing device is used for determining the color fastness of textiles irrespective of their composition and their form to crocking.



## Instrumental Analytic

- **DMA ( Dynamic Mechanical Analysis)**  
By means of this thermo-analytical method the mechanical behaviour of a sample - dependent on a special temperature program and changing load - can be characterized. Determination of storage and loss modulus, as well as the damping factor of a sample, can be conducted as a function of temperature, time and frequency dependent on an applied oscillating load. These results characterize the viscoelastic properties of parts and materials as well as stiffness and damping behavior. Changes of the mechanical properties are recorded to determine the temperature dependency of relaxation processes, modulus as well as transition points (e.g. glass transition) or the compatibility of polymer blends. The point of the relaxation peaks at low temperatures can be used for analyzing the impact strength of a material.
- **DSC (Differential Scanning Calorimetry)**  
The Differential Scanning Calorimetry is a technique by which the difference in heat flow to or from a sample and to or from a reference is monitored as a function of temperature or time, while the sample is subjected to a controlled temperature program. The heat-flow difference between the sample and the reference material is measured quantitatively. The measurement of the melting point and the glass transition temperature can be conducted for liquid, pulverized and compact materials from -170°C up to 630°C (cooling by liquid nitrogen). This test equipment delivers important information about the behavior of the materials, which are important for our production (melting point, glass transition, crystallization, aging and reaction behavior, defectiveness, the influence of cooling and tempering, stability).
- **FT- IR Spectroscopy**  
This test equipment is used for analyzing chemical substrates. The absorption of light is measured within the infrared. The evaluation is carried out by determination of the single band or by means of an individual data base which contains approx. 6000 substances. This testing device can be applied for serial controlling, to determine the ingredients of fogging condensates and for competitor analysis. The measurement accounts to less than 1 min including data base research ( sample size approx. 1 mm<sup>2</sup>). Therefore interesting results are immediately available.

## Emission testing

- **Foggingtest**  
This testing device is used to determine the volatile condensable materials of polymers, especially used in the interior of motor vehicles
- **Additional testing methods: Odour test, Amine-missions-test**

## Thermographic and 3D-Messung

- 3D-measurement  
By means of the programmable 3D-table samples parts and serial parts are tested according to their geometry. These data could be compared to CAD-Data.  
Maximum range of measurement:  
X 1850mm    Y 1500mm    Z 1300mm  
This testing method is applicable to construction (vehicle, machines, model and mould making).
- Thermal imaging  
The thermal imaging is a contactless testing method and is used for the non-destructive testing of materials and parts. The heat emission could be determined by means of the infrared camera. Fast information about the heat distribution are able by using the equipment on site (locally). Leakage could be detected at processing equipments and in tools.  
Possibilities of application:
  - heat build-up at electrical parts, at electric cables
  - heat radiation in motor vehicles
  - development of humidity behind ceiling linings
  - demonstration of heat or cold bridges

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