

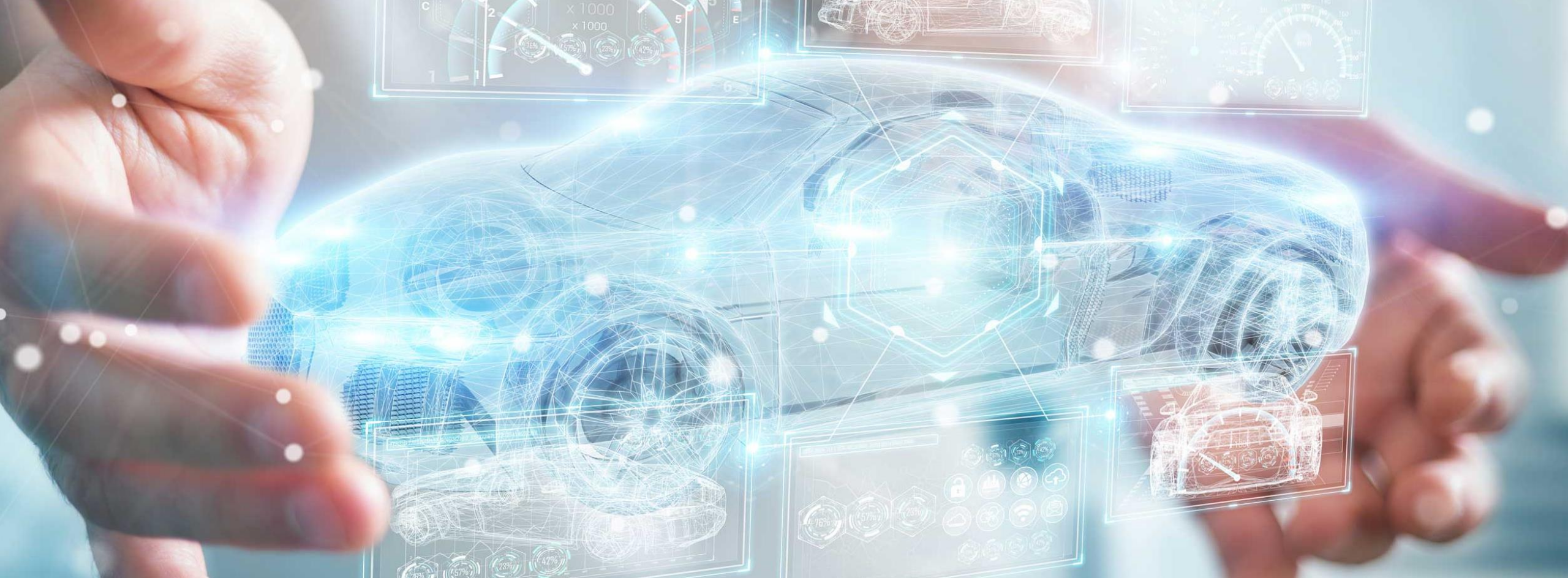
# Material Testing of Vehicle Components

Accredited and Recognized  
Laboratory Tests

Dr. Ing. Thibaut Gérard  
Technical Sales

Plastics Technology – Polymer Science





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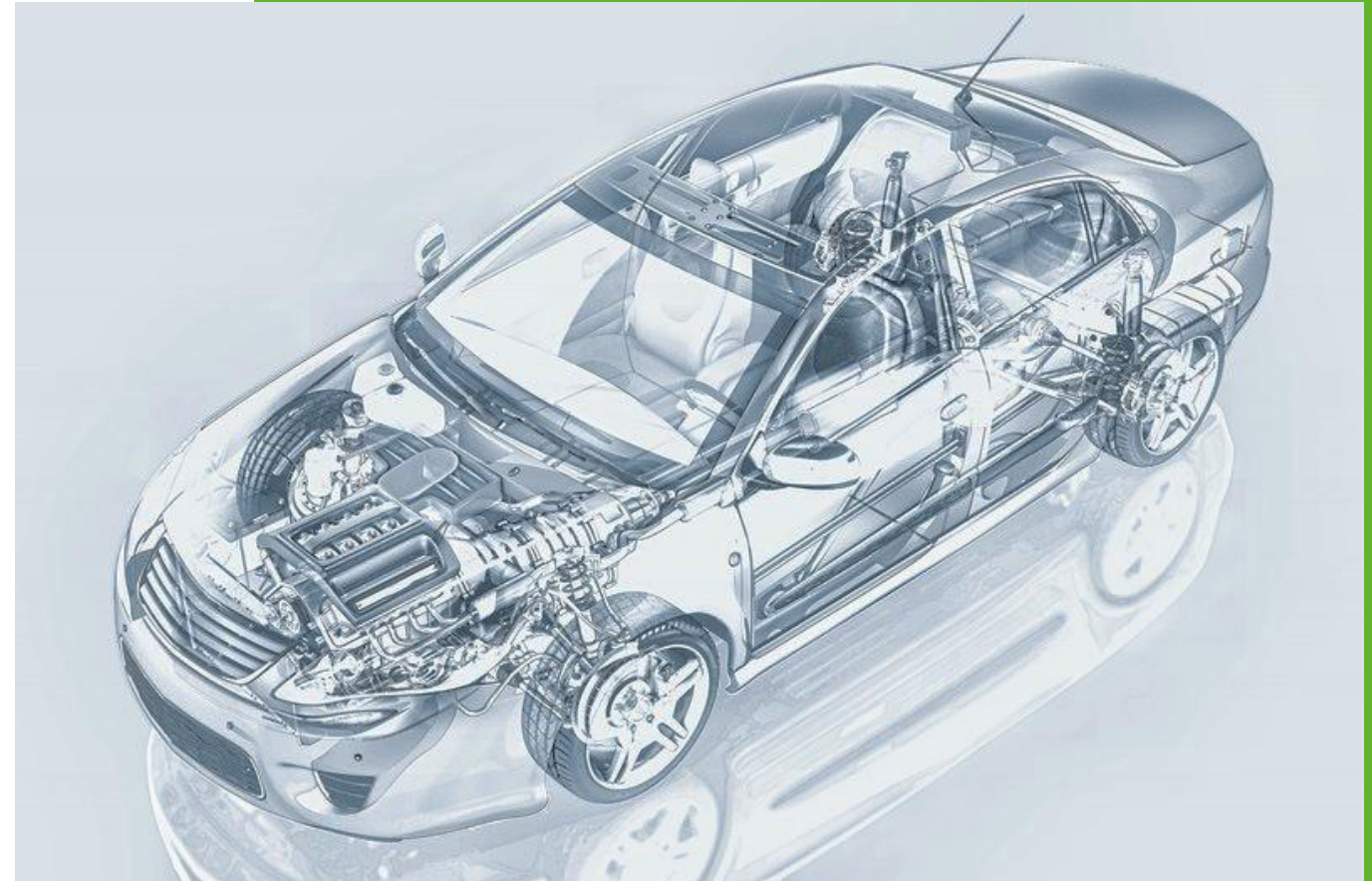


# Testing Interior and Exterior Components

We help you achieve a **delivery license according to OEM standards** for your component.

## Our goal:

- For automotive suppliers we perform **accredited and recognized tests** according to automotive standards and manufacturer specifications.
- **Our services** range from the preparation of a test plan, the compilation of the required test workload, and the timely execution of testing through to the creation of recognized test reports.

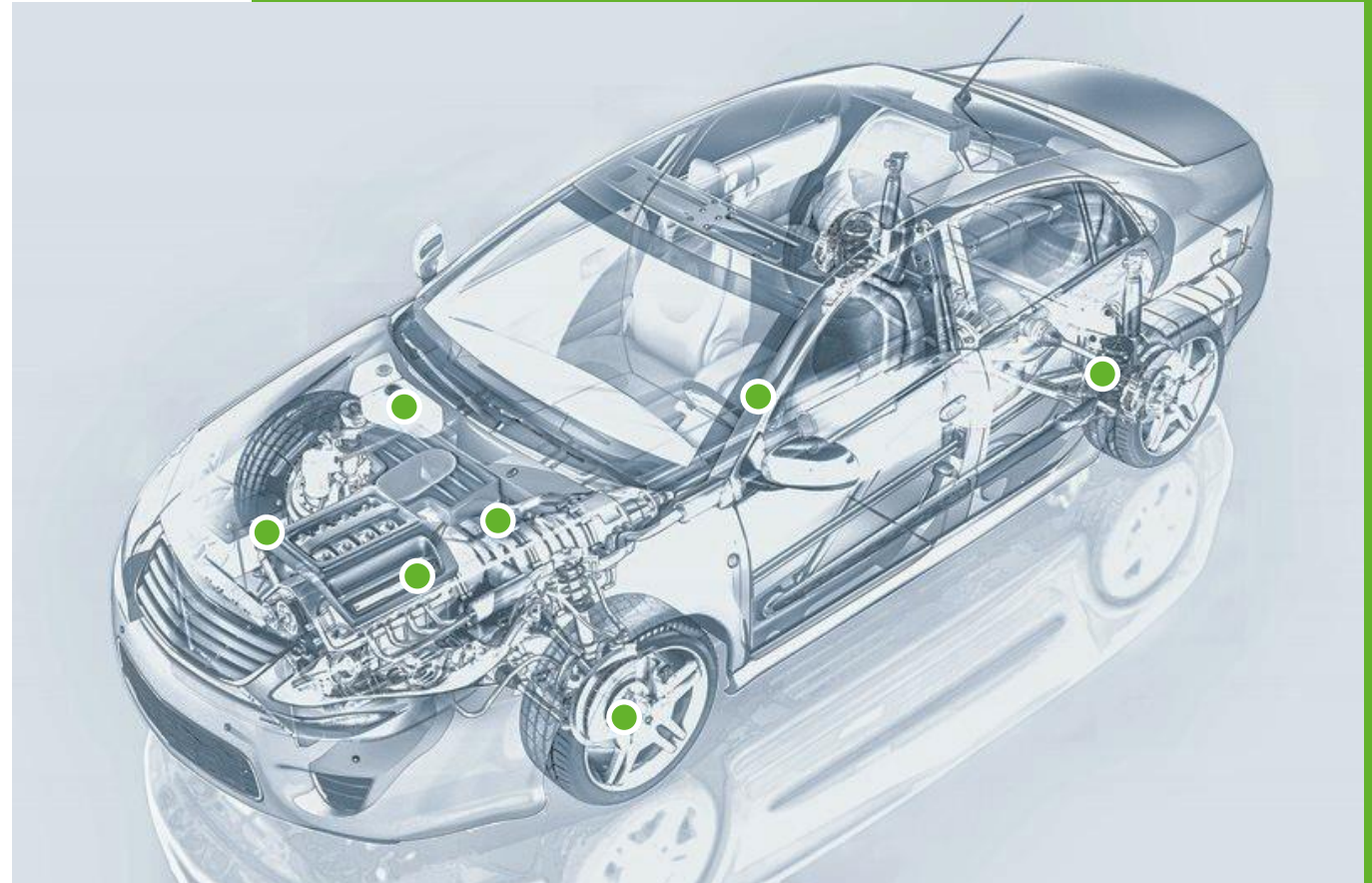


# Material Testing of Vehicle Components

We help you achieve a **delivery license according to OEM standards** for your component.

## Our laboratory services at a glance

- Material properties
- Mechanical component testing
- Resistance to environmental influences
- Corrosion resistance
- Media resistance and behavior against abrasion
- Burning behavior of plastics
- Emission behavior of plastics
- Technical cleanliness of components



# Testing the Material Properties

## Physical properties

- DSC, IR, TGA, OES,
- EDX analyses
- Determination of density, determination of filler content (annealing residue)
- MVR, Vicat heat distortion temperature, viscosity number
- Porosity analysis, metallographic microstructure assessment

## Mechanical properties

- Charpy, Izod, and Dynstat (notched bar) impact strength
- Tensile and compressive strength
- Flexural strength
- Hardness test according to Vickers, Brinell, Rockwell on metallic components
- Shore and IRHD hardness testing on plastics



# Mechanical Component Testing

## Functional tests on the component

- Vibration tests
- Mechanical shock
- IPX tests
- Push-out forces of interference fits
- Adhesive force between soft and hard component
- Abuse tests on components
- Determination of assembly forces on components
- Cyclic functional tests



# Testing Resistance to Environmental Influences

## Temperature and moisture resistance

- Heat aging of plastics
- Thermal behavior of plastics
- Cold behavior of plastics
- Alternating climate tests from  $-75^{\circ}\text{C}$  to  $+180^{\circ}\text{C}$
- Thermal shock test
- Hydrolysis storage



# Testing Resistance to Environmental Influences

## Resistance to weathering and aging

- UV resistance
- Hot light aging
- Stickiness of surfaces
- Sunlight simulation
- Resistance to ozone
- Harmful gas tests
- Artificial weathering by means of xenon arc lamps



# Testing Corrosion Resistance

## Coated metallic components

- Salt spray test
- Condensation water test
- Corrosion change test
- Corrosion tests combined with alternating climate tests
- Resistance to sulfurous atmosphere
- Determination of intergranular corrosion resistance (Strauss test)
- Infiltration at the crack incl. determination of rust degree and degree of blistering



# Testing Media Resistance and Behavior against Abrasion



## Media resistance

- Testing media resistance in connection with mechanical stresses
- Hand and sun cream resistance
- Chemical resistance to cleaning agents
- Verification of processing quality by means of stress crack testing

## Surface testing

- Abrasion behavior and adhesion
- Surface roughness – surface waviness
- Scratch and write resistance of surfaces
- Color measurement and gloss measurement



# Emission Behavior and Burning Behavior of Plastics

## Odor and emission behavior

- Test chamber measurements (ISO 12219-4 / -7, VDA 276)
- VOC/FOG (VDA 278), fogging, formaldehyde (VDA 275)
- Odor (VDA 270)
- also pollutant content in materials according to e.g. GADSL, ELV

## Burning behavior

- Horizontal and vertical fire test (DIN 75220, FMVSS 302, TL 1010, TL 1011, PTL 8501, DBL 5307, GS97038)

## Manufacturer approvals are available from

- BMW, Daimler, VW / Porsche / Audi



# Technical Cleanliness – Cleanliness Inspection

## Residual dirt test

- VDA 19 / ISO 16232
- Particle sizes and particle distribution
- Metallic / non-metallic particles, fibers
- SEM/EDX (scanning electron microscopy)
- Residual oil and organic contaminants
- Particles in hydraulic fluids  
(ISO 4406 / ISO 4407)
- LABS testing / VDMA 24364  
(paint wetting impairment substances)



# Specific Requirements of the Automotive Industry



## Material testing

according to OEM requirement

### Material identification

- DSC-, IR-, TGA-, OES-, EDX-Analyse

### Material requirement

- VW 2.8.1 / VW 50123 / VW 50125 / VW 50133 / VW 44045 / Porosität / TL 52231 / TL 52388 / TL 52704 / DBL 5410 / DBL 5562 / GS 93010 / ISO 1133 / ISO 1172 / ISO 1183-1 / ...

### Mechanical properties

- ISO 527 / ISO 6892 / ISO 178 / ISO 179 / ISO 180 / DIN 53452 / ISO 306 / ISO 34-1 / ISO 815 / ISO 6506-1 / ISO 6507-1 / ISO 6508-1 / ISO 48 / ISO 2039-1

### Burning behavior

- TL 1010 / PTL 8501 / DBL 5307 / GS 97038 / DIN 75200 / FMVSS 302 / GB 8410 / UL 94 / ...



## Component testing

according to OEM requirement

### Surface testing

- TL 226 / GS 97034 / GS 94007 / TL 211 / PTL 4025 / DBL 7384 / PV 1309 / PV 3906 / 3932 / TL 52447 / PV 3905 / PV 3966 / PV 3952 / PV 3974 / ISO 20567-1

### Emission behavior

- PN 780 / VW 50180 / GS 97014 / PV 3900 / VDA 270 / VDA 275 / VDA 278 / PV 3015 / PV 3341 / PV 3925 / ...

### Mechanical properties

- PV 1200 / Kalahari- & Florida PV 3929 & 3930 / PV 1303 / PV 1306 / PTL 8140 / PR 303.5 / PV 1209 / PV 1210 / Ozon-prüfung / Wärmealterung / DBL 9202 / ...

### Media resistance

- PPV 7750 / VW 50002 / PV 3964 / PV 3983 / Pflegemittelbeständigkeit / ...



## ASSY component testing

according to OEM requirement

### Chamber testing

- PN 780 / VW 50180 / GS 97034 / ...

### Climate & corrosion testing

- PV 2005 / GS 95024 / DIN 75220 / PTL 10105 / ISO 9227 / ISO 4892-2 / VDA 621-415 / ISO 6270-2 / ...

### Functional testing of electrical components

- VW 80000 / GS 95003 / Vibration / mechanischer Schock / IPX-Prüfungen / ...

### Technical cleanliness

- VDI 19 / DBL 6516 / PV 3347 / VW 96006 / ...

# Thank You for your Interest in our Laboratory Services

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