



EMISSIONS AND ODOUR

IDENTIFYING AND REDUCING HAZARDOUS SUBSTANCES



OUR BENCHMARK: THE HUMAN BEING

Developing, simulating, testing and analysing for visions of the future. Our passion is mobility and sport.

imat-ue is a service provider with many years of experience in design, development, construction and testing of materials, components and systems. We support our customers along the process chain, from the first idea to the finished product or component part. Around 100 designers, chemists and engineers collaborate daily to find the best possible solutions for our customers. The focus is on the automobile industry and its suppliers, but also aviation, textile and building as well as the leisure industry.

IDENTIFYING & REDUCING HAZARDOUS SUBSTANCES

We put your materials and products to the test

TESTING MATERIALS WITH ALL SENSES

Testing and developing material is central to our work. The engineering of material and parts is combined with the sector of testing. The services of imat-ue gmbh are accredited according to DIN EN IOS/IEC 17025 as well as VDA 6.2 and ISO 9001 (headquarter) and are approved by many international car makers and suppliers. The branches in China and the U.S. also hold numerous OEM approvals. Our excellent experience allows us to determine customised material and component durability. Apart from tests for mechanical and chemical-reliability imat-ue uses test methods, which involve odour, visual and haptic testing.

ANALYSING EMISSIONS AND THEIR IMPACT

Material, e.g. plastics or rubber, might have polluting or even hazardous impact on the environment. Highly volatile hydrocarbons (VOC) as well as semi-volatile hydrocarbons (FOG/fogging) could cause serious health risks. To avoid any inconvenience or harm to the consumer, the automotive and building industries have decided to set up standard regulations and limit values for rife substances. The standard analysis comprises numerous tests for odour and emissions as well as fogging. imat-ue also provides knowledge about the legal regulations, locally and globally.





EMISSION TESTS / MATERIAL AND OVERALL VEHICLE

With imat-uve you will find a partner who is proficient in all relevant test specifications for material and component emissions of most automobile manufacturers in the world. And, at the same time, we can determine and assess the emission status of the overall vehicle and its interior. This applies to the volatile organic compounds (VOC) just as much as to the non-volatile hydrocarbons (FOG/fogging).

imat-uve offers the technical facilities and know-how for an overall vehicle assessment in accordance with the requirements of the globally harmonised ISO 12219-1, the Chinese HJ/T 400 as well as the specifications of JAMA for the Japanese market and the Korean MLTM Not. 649. We also offer a competent preparation of vehicles for measurements. This includes logistical support for automobile manufacturers as well as equipping the vehicle's interior with the necessary sensor systems and the corresponding control technology. Apart from know-how in overall vehicle measurements, you will also find competent support in identifying striking substances and odours from the materials used on



a component and material level. You hereby benefit from the fact that imat-uve has steadily built up and extended a collection of material data over the past 15 years which can be used for not only considerations of laws relating to hazardous substances but also to link striking substances to possible material and component sources. We help you optimise your manufacturing processes and develop emission-improved materials, components and vehicles. You can even have access to our competent engineers and involve them temporarily in your own task-forces and project teams.

EMISSION TESTS

**Odour tests // VOC // TVOC, Hydrocarbons // Ammoniac
Formaldehyde and other Aldehydes, Ketones // Amines
Phthalic Acid Esters // N-Nitrosamines // Phenols // FOG**



EMISSION TESTS / COMPONENTS

The test competency in the sector emission and odour tests on a material level is also applied in the examination of structural components. imat-uve operates several emission test chambers by Vötsch/Weiß with a test space volume of 0,25m³ up to 2m³. This allows the optimal (non-destructive) examination of most conventional component sizes and pre-products according to methods of VDA, ISO and CARB. The test results produced by imat-uve are accepted by most car manufacturers or are recommended and/or approved by OEMs. This includes highly volatile hydrocarbons (VOC) as well as semi-volatile hydrocarbons (FOG/fogging). imat-uve also plays a major role in motor vehicle odour test methods in connection with component emission tests in chambers, as well as the bag methods popular in the Asia-Pacific region.

Besides the accumulative values at VOC, the competencies of our engineers comprise the individual substance examination of VOC screenings, the amines and N-nitrosamines, the aldehydes and other carbonyl compounds and the phthalic acid esters (phthalates) required by some OEMs. Wherever required,



we also classify detected individual substances in the VOC screening according to internationally relevant statutory hazardous goods regulations. As well as competencies in emission checks from non-metallic materials on a component and pre-product level, you will also find expert support for emission and odour checks from material samples and the entire vehicle.

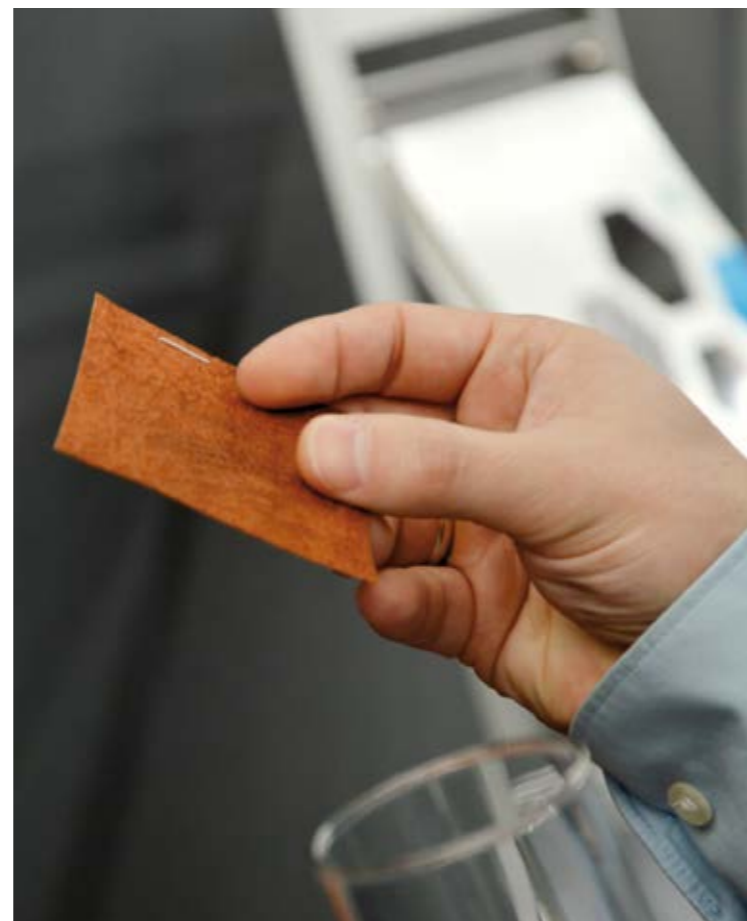
METHODS

**Gravimetric and reflectometric tests // Thermal desorption
Thermal extraction // Chamber tests // Static Headspace GC/FID
Bottle and pouch methods
For material, component parts and overall vehicle**



ODOUR TESTS

Odours can be soothing and stimulating, but also disturbing or even harmful. Therefore, strong efforts are made to minimize unpleasant odours indoors. imat-uve performs the usual tests with trained testers for the construction and automotive industries to identify the sources of unwanted scents. At least 3-5 auditors rate odour samples after a defined period of storage with the help of scales and comparative odours. The well trained “noses” are able to perform most of the required standard methods for odour tests. imat-uve participates regularly in proficiency tests conducted by OEMs and independent organisations. The company is also approved by several Asian OEMs for the specific bag methods used in the Asia-Pacific region.



DEVELOPMENT OF LOW-EMISSION MATERIALS

The portfolio of imat-uve includes the support of OEMs and suppliers in the development of low-emission and low-odour materials. The experts at imat-uve know about the global strategies as well as the regional differences of the required or common standards. Knowledge of local “olfactory habits” is even essential to rate unwanted odours and to create required scents.



RESEARCH AND DEVELOPMENT

imat-uve is engaging in research and development projects that deal with innovations of test methods and material optimisation. One of these projects is the development of a specific test equipment for olfactory tests with the University of Kassel. Its aim is to use the digital electroencephalography (EEG) to measure the perception of seating comfort concerning odour in a more objective way. Classic odour tests are designed to meet the subjective-individual evaluation by a single person or test collectives. The olfactory performance of individuals is subject to training effects, cognitive performance and strong individual variations of the sense of smell. To minimise the effects of suggestibility, in this project the sensory information is indirectly derived from the human cerebrum (cortex) by means of EEG.



KNOWLEDGE TRANSFER / SHARING EXPERIENCE

To participate from its knowledge, imat-uve offers individual trainings and workshops to its clients. As far as emissions and odours are concerned, imat-uve organises the yearly event “Workshop: Emissions and odour of plastics” in Shanghai where experts in this sector gather for professional exchange and presenting innovations.

TECHNICAL FEATURES AND TEST METHODS

CHAMBERS FROM 0,26m³ UP TO 2m³

Emission chambers

- DIN EN ISO 16000-9
- DIN ISO 12219-4
- VDA 276
- GS 97014-2 (BMW)
- GS 97014-3 (BMW)
- VCS 1027,2769 (Volvo)
- PV 3942 (Volkswagen/Audi)
- PPV 8041 (Porsche)
- PPV 4050 (Porsche)
- TPJLR 52.107 (Jaguar/Land Rover)
- Methods for the analysis of specific substances and substance groups
- Carbonyl compounds (aldehydes and ketones)
- Phthalates / amines / N-nitrosamines
- Glycol ethers / Glycol esters

Overall vehicle emission tests

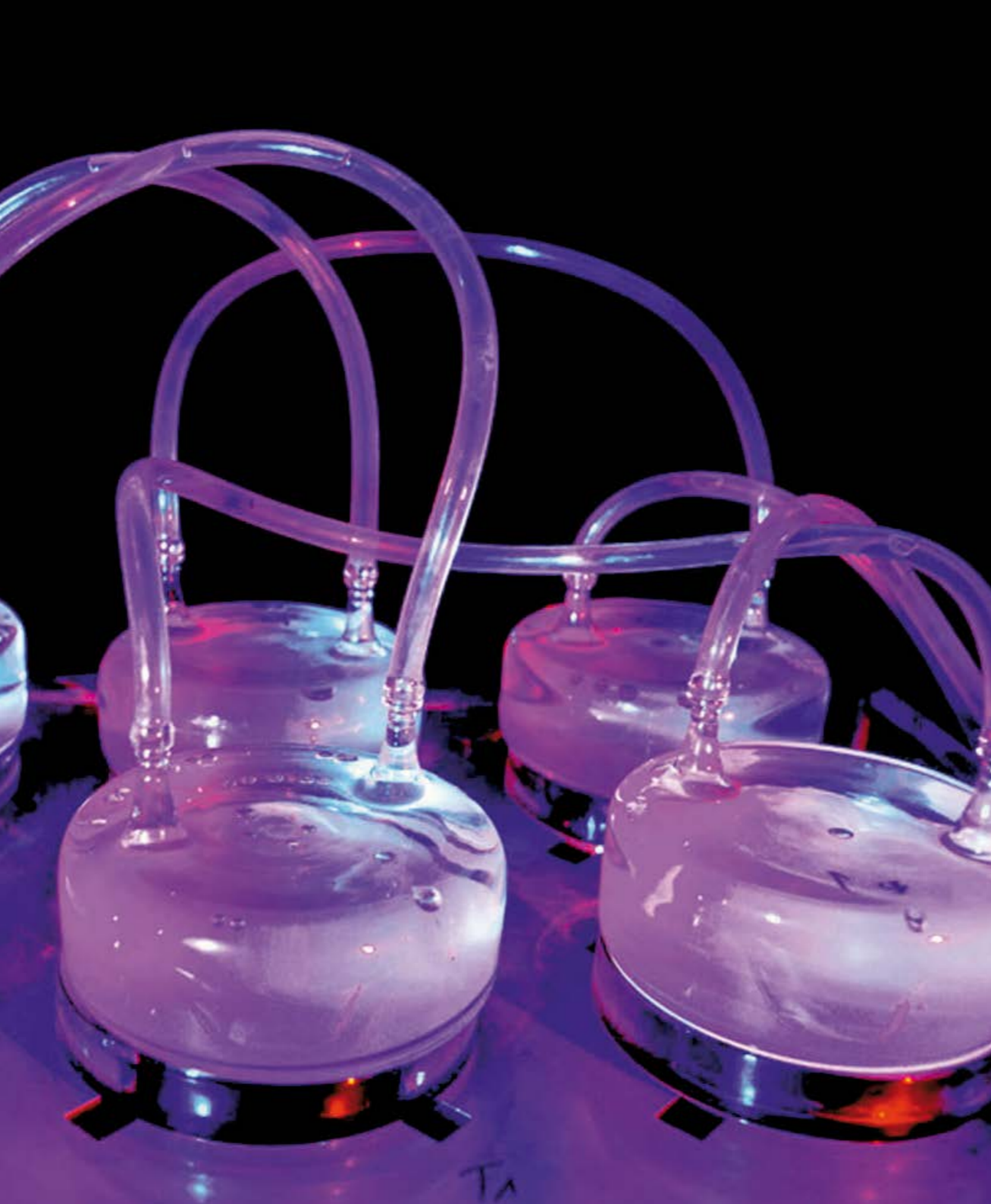
- ISO 12219-1
- HJ/T 400 (GB T 27630)
- MLTM Not. 649/2009 (MOLIT Not. 2013-549)
- Individual setup according to customer specifications
- Various sampling techniques, e.g. by heated sampling probe or by capillaries
- HC total concentration by means of a flame ionisation detector (FID)

Odour tests

- VDA 270 (various, e.g. Daimler, BMW)
- GS 97014-4 (BMW, along with chamber tests)
- PV 3900 (VW, Audi)
- BMW PR 397
- GMW 3205, GME 60276 & 14131 (GM, Opel)
- FLTM BO 131-01 and -03 (Ford)
- TSM 0505 G (Toyota)
- VCS 1027/2729 and STD 1027/2712 (Volvo)
- D10 5517 (PSA)
- TPJLR 52.457 (Jaguar)
- QCC-JT001
- MS 300-34 (Hyundai/KIA)
- NES M0160 (Nissan)
- SES N 2405 (Suzuki)

Material emission VOC

- VDA 278, VDA 277
- PV 3015, PV 3925, PV 3341
- PPV 8042
- VDA 275 (Formaldehyd)
- DIN EN 13130-4 (1,3-Butadien)
- DIN 75201-A/-B (Fogging)
- DIN EN 14288-A/-B
- QCC-JT146, QCC-JT321
- Fogging as gravimetric or reflectometric determination

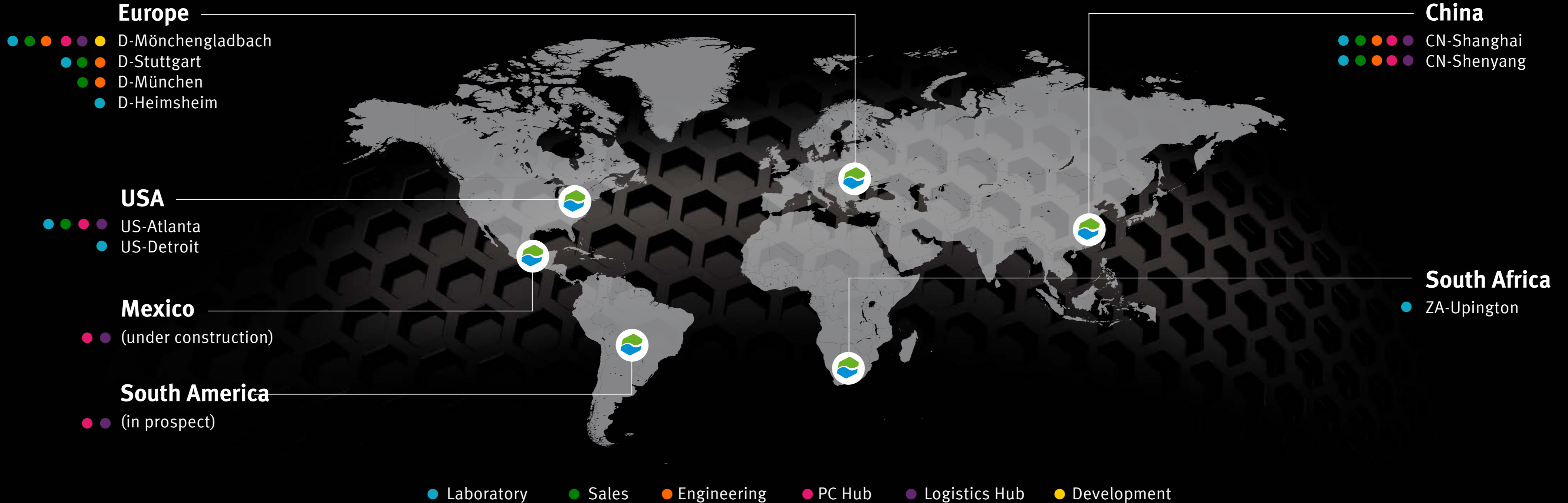


APPROVALS / CERTIFICATION / MEMBERSHIPS

IMAT-UVE GMBH IS ACCREDITED ACCORDING TO DIN EN ISO / IEC 17025

- Certification according to VDA 6.2 and ISO 9001 (headquarter)
- Approved for examination of emissions and odours of car interior trim components and materials
- Approved for examination of emissions of building products
- Approved as Daimler A-class laboratory for emission testing according to VDA 270, VDA 276-1 , ISO 12219-4 and VDA 278 (applies also to Shanghai imat)
- Regular participation in proficiency tests
- ISO 27001 audit concerning IT-security (by VW)
- Member of the programme committee of Workshop “Odour and emissions of plastics” at University of Kassel/Germany
- Organiser of the Workshop: “Emissions and odour of plastics” in Shanghai/China
- Emissions testing according to VDA 278 for BMW, Daimler and GM
- OEM approved bag methods
- GM/Opel approval for emission testing of material and components according to GMW 8081 and ISO 12219-4
- GM/Opel/Vauxhall approval for material tests with focus on textiles
- Reference laboratory for tests on upholstery and carpets
- Member of the VDA working group for textiles and foams
- Member of various DIN committees
- OEM-certified test site in South Africa
- Our clients: car manufacturers and suppliers

Comprehensive one-stop services – that means reducing costs and time for our clients. We provide services that ensure easy processing of your projects. We would be pleased to work with you.





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Our services are certified according to DIN EN ISO 17025, ISO 9001 and VDA 6.2.

Read more: www.imat-uve.com

