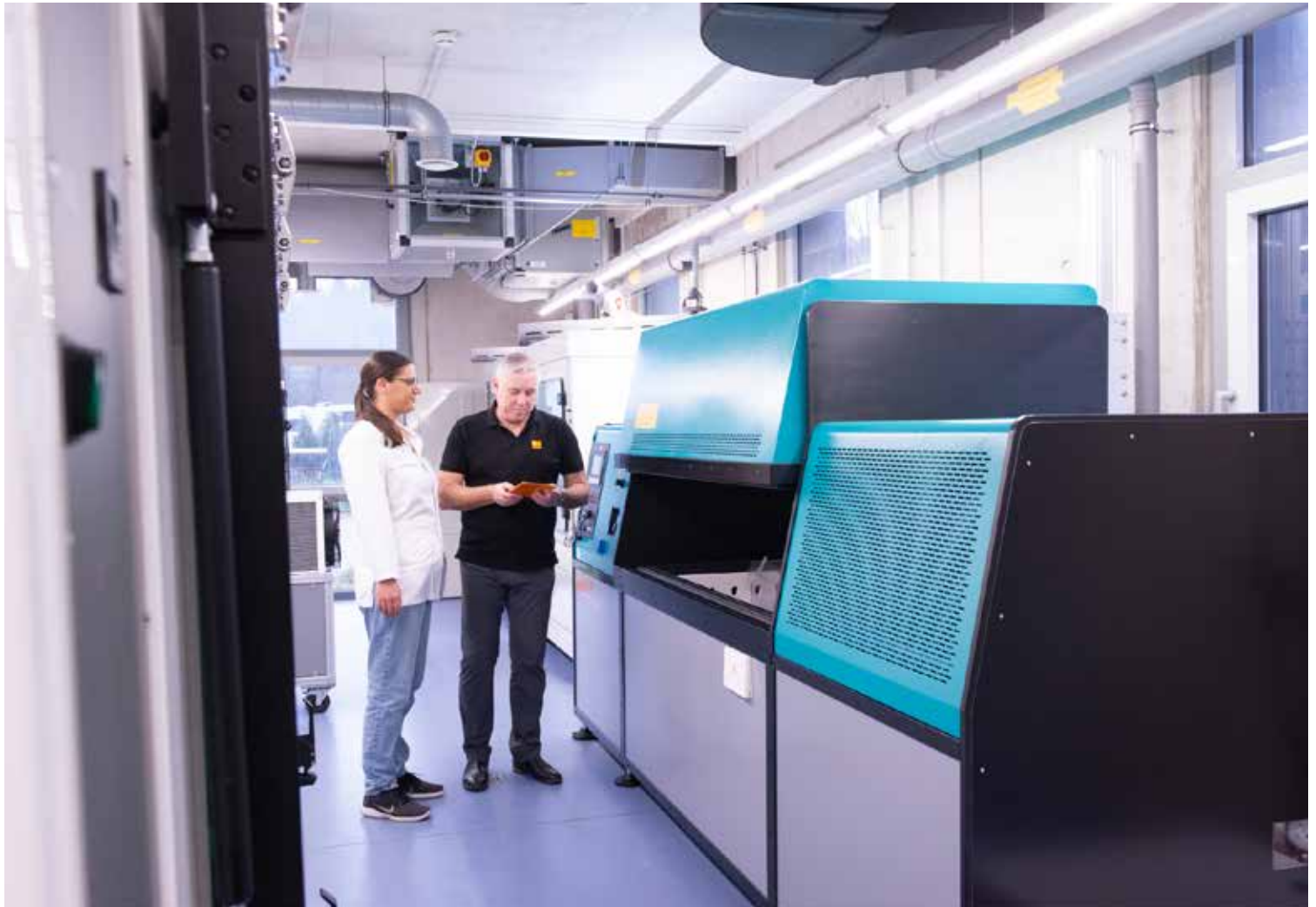




IFO SERVICES

Laboratory Services



IFO

Institut für
Oberflächentechnik
GmbH

OVERVIEW

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4 – 6

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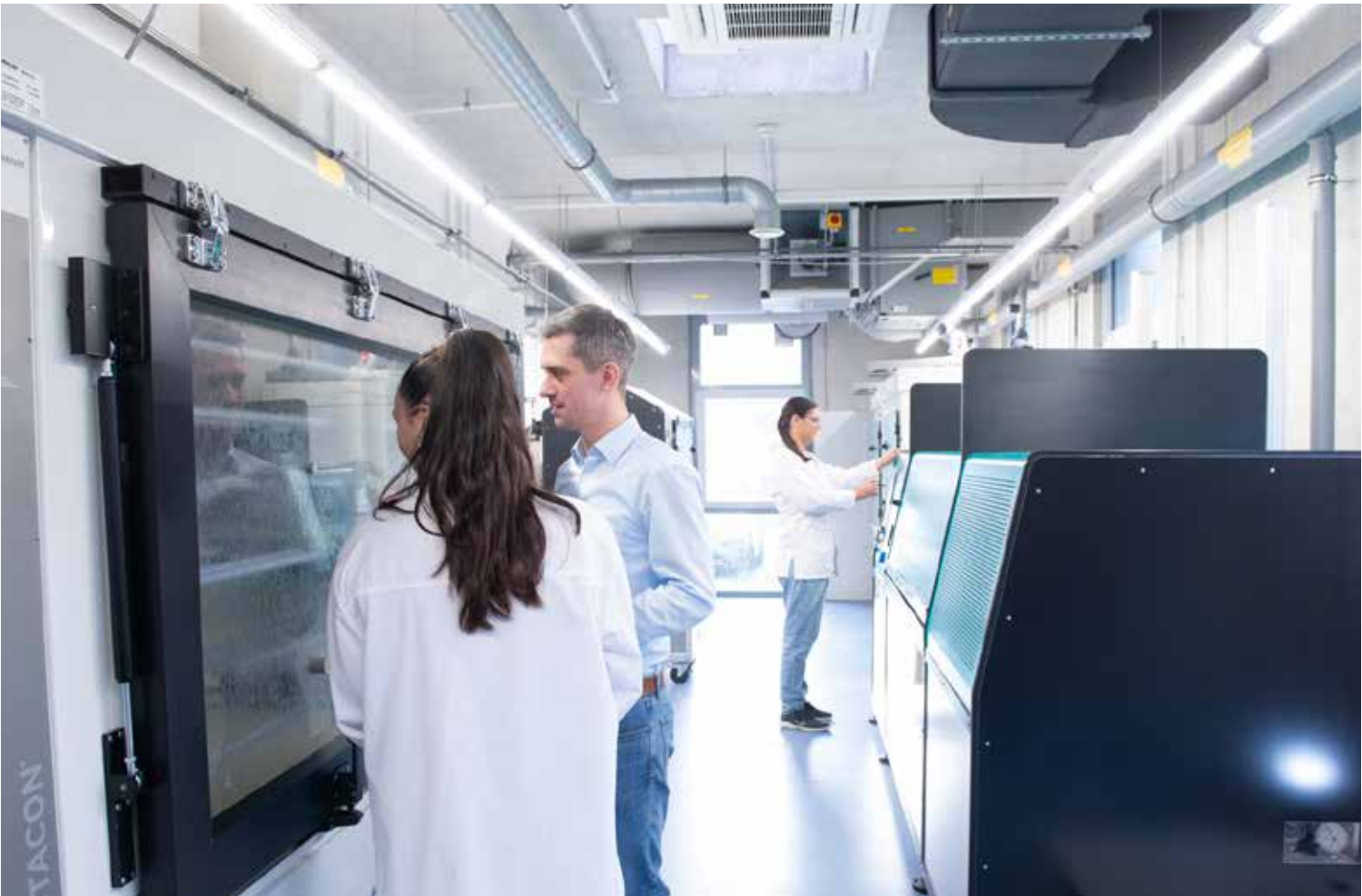
19

- Materialography (Microstructural Analyses)
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- Scanning Electron Microscopy (SEM)/Energy
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COATING

20

- Chemical and Mechanical Pre-Treatment
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- Liquid Coating Application
- Powder Coating Application



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Our in-depth understanding of production facilities and process engineering is an important pillar of our work.

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You can find our accreditations for
laboratory and certification body here:



PRODUCT-NO.

SERVICE DESCRIPTION



430142

ACCELERATED WEATHERING WITH XENON ARC LAMPS

The accelerated weathering tests are among the artificial forms of weathering. The destruction of the surface of plastics or coatings by filtered xenon arc irradiation together with cyclic deionized water spray is tested. This method, also known as “Sun Test”, is used to determine weathering resistance of coating materials for exterior and (with the corresponding filters) interior usage.

Among other things, we offer inspections in acc. with **DIN EN ISO 16474-2 Cycle 1, DIN EN ISO 4892-2, PV3930** and **SAE J2527**.



430127

ACCELERATED WEATHERING TEST WITH UV FLUORESCENT LAMPS

In contrast to accelerated weathering with xenon arc lamps, UV fluorescent lamps (UVA-340, UVB-313) are used as a light source. These lead to an even greater acceleration of decomposition processes of organic compounds. A heated water reservoir simulates formation of dew by condensation of water on the sample surface. After exposure to UV light and water condensate in cyclic alternation, the color and gloss stability of organic and metallic surfaces as well as textiles are tested.

Among other things, we offer inspections in acc. with **DIN EN ISO 16474-3, DIN EN ISO 4892-3, GSB AL 631-7** and **GSB ST 663-7**.



430124

ALTERNATING CLIMATE TEST (ACT)

The test includes a repeating (cyclic) different temperature and humidity values to simulate environmental conditions close to reality. The sample is tested for visual changes (color and gloss change), damage (formation of blisters and cracks) or deformation resistance.

Among other things, we offer inspections in acc. with **PV 1200, PV 2005-A, DBL 5471, PTL 8140** and **BMW PR 303.6**.



430129

430130

ALTERNATING CONDENSATION CLIMATE TEST CONTAINING SULPHUR DIOXIDE (KESTERNICH)

By adding sulphur dioxide to the alternating condensation climate test, an industrial atmosphere or acid rain can be simulated. This produces sulphureous acid on the sample surface and triggers corrosion reactions.

Among other things, we offer inspections in acc. with **DIN EN ISO 22479 Cycle B, DIN 50018** (withdrawn) and **DIN EN ISO 6988**.

PRODUCT-NO.

SERVICE DESCRIPTION



430126

430125

CONDENSATION WATER CLIMATE TEST

With condensation climate testing, a test specimen is continuously exposed to either one-sided (ISO 6270-1) or all-encompassing (ISO 6270-2 CH) water condensation load. In addition, depending on the requirements, cycles with alternating exposure (ISO 6270-2 AHT / AT) can be realized.

Among other things, we offer inspections in acc. with **DIN EN ISO 6270-1** and **DIN EN ISO 6270-2**.



430127

CYCLIC CORROSION TEST (CCT)

Cyclic corrosion testing (CCT) was developed to reconstruct corrosion damage close to occurrences in the field under accelerated laboratory conditions and is mainly used in the automotive industry. The test cover various temperature and humidity conditions in combination with corrosive atmospheres (salt spray).

Among other things, we offer inspections in acc. with **VDA 621-415, DIN EN ISO 11997-1, DIN EN ISO 12944-6:2018, PV 1209** and **PV 1210**.



430143

EXTENDED CYCLIC CORROSION TEST

Extended cyclic corrosion testing combines cyclic corrosion testing with climate change testing. This method was developed to meet the high durability requirements of components and is primarily used in the automotive industry. It covers a wide temperature range and various humidity conditions in combination with corrosive atmospheres (salt spray). In contrast to conventional cyclic corrosion testing, extended cyclic corrosion testing also allows the simulation of low-temperature conditions.

Among other things, we offer inspections in acc. with **VDA 233-102** and **DIN EN ISO 11997-3**.



430122

FILIFORM CORROSION TESTING

This test evaluates the protective effect of coatings on metal substrates against filiform corrosion. For this purpose, the coating of a test specimen is scribed to the substrate. Corrosion is initiated by applying chlorides. After storage in a climate chamber with constant conditions, the resulting emerging corrosion is evaluated.

Among other things, we offer inspections in acc. with **DIN EN ISO 4623-1, DIN EN ISO 4623-2, DIN EN 3665** and **QUALICOAT**.

PRODUCT-NO.

SERVICE DESCRIPTION



SALT SPRAY TEST

With salt spray testing, the corrosion behavior of metallic or non-metallic layers can be determined in an accelerated manner. Either neutral (NSS) or acidic (AASS containing acetic acid) corrosion-promoting atmospheres are created in a chamber containing a 5 % sodium chloride solution. The corrosiveness of the spray medium can be enhanced even further by adding copper chloride (CASS) to the salt spray.

Among other things, we offer inspections in acc. with **DIN EN ISO 9227** and **ASTM B117**.

430128
430120
430121

PRODUCT-NO.

SERVICE DESCRIPTION



ALLOY COMPOSITION WITH X-RAY FLUORESCENCE ANALYSIS (XRF)

Alloy composition is determined using XRF to quickly and non-destructively determine the elemental composition of materials, particularly metals. This process involves the qualitative and quantitative detection and analysis of the elements present. The method is suitable for identifying alloys and material compositions.

430801



ASH CONTENT

The ash content determination measures inorganic residues in sample materials. The sample is incinerated under defined conditions, and the remaining residue is analyzed gravimetrically. (This method is used to assess fillers and impurities or to determine the inorganic content in coating and material systems.)

Among other things, we offer inspections in acc. with **DIN EN ISO 3451-1**.

430803

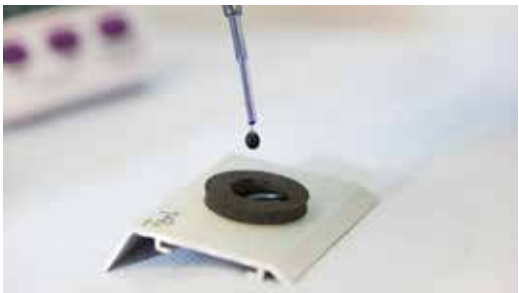


BOILING WATER TEST

The boiling water test is used to evaluate the quality of the pretreatment of a coating within a short period of time. Test panels are immersed in boiling deionized water and kept there for a dwell time defined by the respective exposure class. The elevated water temperature accelerated the diffusion of water through the coating down to the substrate. In the case of inadequate pretreatment, water accumulates at the interface between the coating and the substrate, leading to blister formation.

Among other things, we offer inspections in acc. with **DIN EN 12206-1**, **GSB**, **QUALICOAT**, **QUALIDECO** and **QIB**.

430415



DYE SPOT TEST

The dye spot test determines the quality of the sealing of anodization layers. The anodized layer is first exposed to an acid treatment and then treated with a dye solution. The degree of (irreversible) staining is assessed by a characteristic value and serves to classify the sealing quality.

Among other things, we offer inspections in acc. with **DIN EN ISO 2143**.

430411

PRODUCT-NO.

SERVICE DESCRIPTION



430142

ELECTROCHEMICAL MEASUREMENTS: POLARIZATION MEASUREMENTS, IMPEDANCE SPECTROSCOPY, CORROSION POTENTIAL DETERMINATION

Electrochemical measurements are used to comprehensively characterize the corrosion behavior of metallic and coated surfaces. Various methods are used for this purpose: In corrosion potential determination, the equilibrium potential of the surface in a defined electrolyte is measured against a reference electrode to obtain information about passivation and corrosion tendency. Polarization measurements enable the determination of corrosion current density, corrosion rate, and electrochemical behavior under load through targeted anodization or cathodization. Impedance spectroscopy (EIS) also provides frequency-dependent information about layer structure, porosity, and barrier properties. All measurements are performed under controlled conditions in a three-electrode setup to ensure reproducible and comparable results. The methods provide crucial information for assessing the corrosion stability, passivation, and suitability of surfaces for subsequent coating or manufacturing processes.

Among other things, we offer inspections in acc. with **ASTM G69**.



430418

MACHU-TEST

The Machu test serves as a rapid corrosion test. Initially, the sample is scribed with an X-shape down to the substrate. This sample is then exposed to a test solution containing sodium chloride and hydrogen peroxide for 48 hours. The corrosion protection can be assessed by the infiltration at the scribe.

Among other things, we offer inspections in acc. with **QUALICOAT**.



430401

MASS LOSS TEST

The mass loss test is used to determine the quality of anodization layers, which is significantly influenced by the sealing of its pores. The test specimen is immersed in acid solution for a defined time and the resulting mass loss in relation to the sample surface is determined.

Among other things, we offer inspections in acc. with **DIN EN ISO 3210**, **ASTM B680** and **ASTM B137**.

PRODUCT-NO.

SERVICE DESCRIPTION



430425

MORTAR TEST

With the mortar test, the resistance of organic layers against mortar can be assessed. Since mortar is alkaline, it must be tested whether the paint layer is damaged by exposure. For this method, a standardized mortar is prepared and applied to the surface. After 24 hours of storage under specified conditions, the exposed area is cleaned and inspected. The test is mainly required by specifications focused on construction and façades, e.g. Qualicoat, GSB and AAMA specifications, and is evaluated accordingly.

Among other things, we offer inspections in acc. with **DIN EN 12206-1**.



430802

PARTICLE SIZE DISTRIBUTION

The particle size distribution of powder coatings is determined by using sieve analysis. In this process, the sample is separated using sieves with defined mesh sizes, allowing the particle size distribution to be reliably measured and quantitatively evaluated. The analysis provides parameters for assessing the processability and application properties of powder coating systems.

Among other things, we offer inspections in acc. with **DIN EN 8130-1**.



430433

POLYMERIZATION TEST

The polymerization test is used to test the complete curing of organic coatings on aluminum surfaces. The coated sample is treated under defined thermal conditions, and the curing is checked using standardized test methods such as scratch resistance, film hardness, and solvent resistance. The procedure ensures that the coating achieves the required strength, adhesion, and chemical resistance.

Among other things, we offer inspections in acc. with **QUALICOAT**.



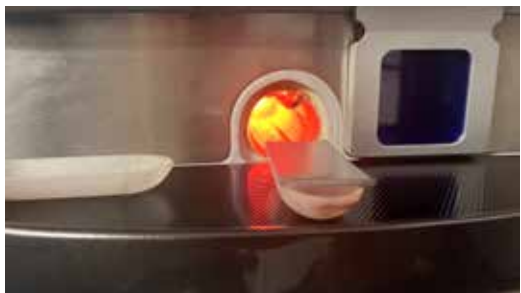
430800

POWDER CHARGING BEHAVIOR

The powder charging behavior is evaluated as part of an electrical characterization of particle properties. This process examines the ability of powder particles to build up and maintain a stable electrostatic charge under defined conditions. The results provide important information regarding suitability for application and coating behavior in electrostatic testing procedures.

PRODUCT-NO.

SERVICE DESCRIPTION



430086

RESIDUAL CARBON ANALYSIS

The quantitative determination of organic residues on surfaces is carried out using thermogravimetric analysis (TGA) or infrared spectroscopy to determine the residual carbon content after thermal oxidation. The released CO₂ quantities are measured to enable precise determination of the residual carbon content. The results can be used to predict the adhesion performance of coatings.

Among other things, we offer inspections in acc. with **DIN EN ISO 12677:2014**.



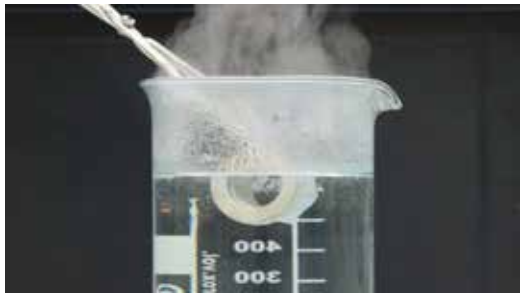
430405

RESISTANCE TEST

In these tests, coatings are tested for their resistance to chemicals, operating fluids and detergents – with or without additional temperature stress, depending on the requirements. Special tests are alkali and acid-heat-alkali (SWA) resistance tests.

Typical test media are defined e.g. by the VW 50002 factory standard.

Among other things, we offer inspections in acc. with **DIN EN ISO 2812**, **VW TL 212**, **VW TL 182**, **DBL 9201**, **GMW 14665** and **BMW AA-0055**.



430016

THERMAL SHOCK

In thermal shock testing, especially electroplated coatings are tested for their adhesive strength by heating and subsequent quenching in cold water. Due to the different thermal expansion coefficients as well as the present temperature gradient, there is a short-term mechanical stress between coating and base material. No cracks or chipping must occur in the process.

Among other things, we offer inspections in acc. with **DIN EN ISO 2819**.



430086

WATER SPOT TEST

The water spot test is used to evaluate the resistance of surfaces to water deposits and drying residues regarding visual changes such as spotting, loss of gloss, or discoloration. Defined water droplets are applied to the test surface, dried under specified climatic conditions, and subsequently assessed visually and, if required, by instrumental measurement.

Among other things, we offer inspections in acc. with **QUALICOAT**.

PRODUCT-NO.

SERVICE DESCRIPTION



430086

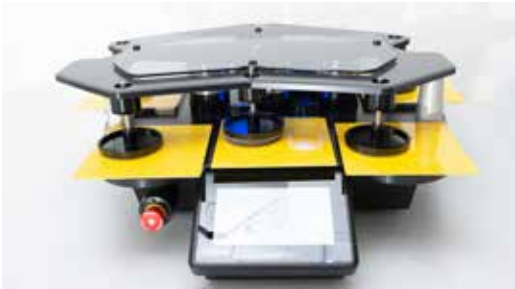
WATER VAPOR DIFFUSION RESISTANCE

The determination is carried out using the cup method. The specimen is mounted airtight over a defined humidity or desiccant medium and stored under constant climatic conditions. Based on the resulting water vapor transmission, the water vapor diffusion resistance is determined.

Among other things, we offer inspections in acc. with **EN ISO 12571** and **ASTM 96**.

PRODUCT-NO.	SERVICE DESCRIPTION
	ABRASION TEST WITH SANDPAPER This test is suitable for aluminum and its alloys. The method is used to evaluate surface abrasion resistance. A glass-coated abrasive paper is used for this purpose. Among other things, we offer inspections in acc. with ISO 18771-2019.
420016	
	ABRASION TEST WITH TABER-ABRASER This standard method is used to quantitatively determine the abrasion resistance of organic coatings under defined conditions. The sample is subjected to stress on a Taber abrasion tester, using a standardized abrasive and defined loads over a specified number of cycles. The measurement provides the amount of material abraded or the loss of coating thickness and allows the mechanical resistance to wear to be evaluated. Among other things, we offer inspections in acc. with ASTM D4060.
430435	
	ADHESIVE STRENGTH TEST In the crosscut test (layer thicknesses $\leq 250 \mu\text{m}$), a single- or multi-bladed knife is used to cut through the coating down to the substrate at specified spacings and the paint adhesion is evaluated over the proportion of the detached surface inside the incision grid. For layer thicknesses above $250 \mu\text{m}$, an incision like a St. Andrew's cross with an opening angle between 30° and 45° is cut down to the substrate with a single-bladed knife and the damage from the intersection is evaluated based on comparative images from the standard. Among other things, we offer inspections in acc. with DIN EN ISO 2409, DIN EN ISO 16276-2, GB/T 5237.4-2017 5.4.5.2. and QUALICOAT.
430414	
	CUPPING TEST The cupping test is used to test the resistance of a coating to cracking or detachment from a metallic substrate that is gradually deformed by deepening. A hemispherical die is pressed against the test plate until a crack forms, the coating detaches from the metallic substrate, or the required cupping depth has been achieved. Among other things, we offer inspections in acc. with DIN EN ISO 1520.
430432	

PRODUCT-NO.	SERVICE DESCRIPTION
	FALLING SAND ABRASION The falling sand abrasion test is used to determine the resistance of organic coatings to abrasion. Abrasives (standardized sand grains) fall from a defined height onto a coated sample plate at a specified angle and gradually erode the surface. Among other things, we offer inspections in acc. with ASTM D968.
430042	
	FASTNESS TO RUBBING The rubbing fastness test is used to determine the color fastness of a surface against rubbing with a cotton fabric. A cylindrical test stamp with rubbing cloth, either dry or wet, travels a certain number of double strokes over the sample surface with a defined applied weight force. Subsequently, both the exposed area and the used cotton fabric are evaluated for visual changes via grey scale comparison. Among other things, we offer inspections in acc. with ISO 105-X12.
430437	
	IMPACT TEST With the impact test, the physical resistance and ductility of a coating can be tested in the event of sudden deformation. A standardized body is dropped onto the sample from a variable height to examine the deformed area for cracking or layer detachment after the impact. Among other things, we offer inspections in acc. with DIN EN ISO 6272-1, DIN EN ISO 6272-2 and ASTM D2794.
430417	
	INDENTATION TEST (BUCHHOLZ HARDNESS) The film hardness of a single-layer or multi-layer coating structure can be determined by the Buchholz indentation test. Here, an indenter is placed shock-free on the horizontally aligned surface of the organic coating to be tested and lifted off after a load period of 30 seconds. The length of the lenticular impression in the coating is measured and the indentation resistance according to Buchholz is calculated. Among other things, we offer inspections in acc. with DIN EN ISO 2815.
430403	

PRODUCT-NO.	SERVICE DESCRIPTION
 430409 430439	MANDREL BENDING TEST The mandrel bending test is used to determine the ductility and adhesion strength of paints, varnishes, or similar products on metallic substrates. The sample is bent around a cylindrical or conical mandrel and then examined for cracking or detachment. The cylindrical mandrel bending test can be carried out according to specifications with different bending radii. In conical mandrel bending test, the bending radius decreases along the longitudinal axis of the sample. Among other things, we offer inspections in acc. with DIN EN ISO 1519 (cylindrical mandrel) and DIN EN ISO 6860 (conical mandrel).
 430419	MANUAL SCRATCH TEST With the manual scratch test, the coating is scraped off to the substrate by pulling a special cable stripper's blade over the surface. Subsequently, the edges of the scraped coating are assessed and assigned to a characteristic value based on comparative images. Among other things, we offer inspections in acc. with MBN 10494-5.
 430420	MARTINDALE TEST he Martindale test is an abrasion resistance test of powder coatings within the scope of the Qualicoat specification. In this method, an abrasive pad is moved over the samples in a defined pattern. Finally, the gloss level is measured and compared with an unexposed area. Among other things, we offer inspections in acc. with QUALICOAT and based on DIN CEN/TS.
 430402	PENCIL HARDNESS This test method covers a procedure for rapid determination of hardness of an organic coating on a substrate using pencil leads of known hardness. The hardness of the pencil leads is gradually increased until the coating surface shows visible damage. Among other things, we offer inspections in acc. with DIN EN ISO 15184 and ASTM D3363.

PRODUCT-NO.	SERVICE DESCRIPTION
 430424	PISTOL TEST In the pistol test (referred to as "(single) impact test" in some standards), a sphere made of hardened steel with a diameter of 5 mm is shot at the sample surface with a specified force (up to 90 N). The coating is then checked for cracks or chips. Among other things, we offer inspections in acc. with DIN EN ISO 4532.
 430408	PRESSURE WATER-JETTING TEST The pressure water-jetting test is a type of adhesion test for coatings. For this purpose, the sample are scribed and then exposed to a high-pressure water jet with defined parameters. Either the maximum detachment of the coating from the scribe (VW TL 52451) or a characteristic value of the damage, determined with comparative images (DIN EN ISO 16925) are presented. Among other things, we offer inspections in acc. with DIN EN ISO 16925, VW PV 1503, MBN 10494-5, BMW AA-0136 and TSA 900046.
 430430	PULL-OFF TESTING With pull-off testing, the adhesive strength of a single- or multi-layer system can be determined quantitatively. In Method B, which is particularly suitable for rigid structures, a standardized die made of aluminum is glued to the surface and mechanically torn from the sample after the curing process of the adhesive. The force required for this is measured and normalized on the tested surface. The given results are the tensile stress, as well as a fracture pattern which provides insight whether it ruptured between two layers (adhesive fracture) or within a layer (cohesive fracture). Among other things, we offer inspections in acc. with DIN EN ISO 4624 Method B and ISO 16276-1:2007.
 430416	SCRATCH RESISTANCE TEST In scratch resistance testing, a standardized cemented carbide tip is pulled over the coated surface with constant force. Depending on the requirements, the tip must not reach the base material or leave a permanent impression. Among other things, we offer inspections in acc. with DIN EN ISO 1518-1 and DIN EN ISO 22557 Test A.

PRODUCT-NO.	SERVICE DESCRIPTION
	STONE CHIP TESTING (MULTI-IMPACT TEST) The resistance of coatings to stone chip damage is of particular interest to the automotive industry. To simulate stone chipping, a defined amount of angular iron grit is shot at the surface under defined conditions. The evaluation of the stone chipping resistance is carried out with the help of standardized comparative images. Among other things, we offer inspections in acc. with DIN EN ISO 20567-1.
430013	

PRODUCT-NO.	SERVICE DESCRIPTION
	ADMITTANCE MEASUREMENT The admittance measurement is used to facilitate a quick statement about the quality of sealed anodization layers. The conductivity between an electrolyte measuring cell on the anodized layer and the base material (aluminum) is measured when alternating current is applied. Among other things, we offer inspections in acc. with DIN EN ISO 2931.
430428	
	COLOR MEASUREMENT In the CIELAB color space, each perceptible color is defined in a three-dimensional coordinate system. For the measurement, both the illumination (light type and angle) and the measurement geometry are decisive. With the 45°/0° geometry, a circular directional illumination at a 45° angle and a view perpendicular to the same plane (0°) is realized. This takes the influence of the surface structure into account. In the case of the d/8° geometry, the surface is measured at an 8° angle to the vertical under diffuse illumination. By standard, samples are illuminated with D65 daylight beneath 10° normal observers. Among other things, we offer inspections in acc. with DIN EN ISO / CIE 11664-4.
430410	
	DETERMINATION OF LAYER THICKNESS BY CROSS-SECTION ANALYSIS In this method, a section of the specimen is cut and embedded in a synthetic resin. A cross-section of the area to be analyzed is prepared through defined grinding and polishing steps and examined under a light microscope at an appropriate magnification. In addition to imagining, the method also allows measurement of individual layer thicknesses as well as an evaluation of coating edge profiles. Among other things, we offer inspections in acc. with GB/T 6462-2005, DIN EN ISO 1463 and DIN EN ISO 2808 Test 6A.
430421	
	GLOSS MEASUREMENT With a reflectometer, the gloss of a coating can be measured with standardized measuring geometries. The gloss is determined by the reflected portion of a light beam through the surface of the sample at 20, 60 and 85° measuring angles and given in gloss units. Among other things, we offer inspections in acc. with DIN EN ISO 2813.
430412	

PRODUCT-NO.

SERVICE DESCRIPTION



420021

LAYER THICKNESS MEASUREMENT (COULOMETRIC METHOD)

In the coulometric method, the film thickness is measured by anodic dissolution.

Among other things, we offer inspections in acc. with **GB/T 4955-2005** and **ISO 2177:2003**.



430429

LAYER THICKNESS MEASUREMENT (MAGNETIC METHOD/EDDY CURRENT METHOD)

The magnetic-inductive method is one way of non-destructive layer thickness measurement, in which the thickness of non-magnetic layers on magnetic substrates (e.g. steel) can be determined.

For the measurement of thicknesses of non-conductive layers on non-magnetic metal substrates (e.g. aluminum), the so-called eddy current method is used.

Among other things, we offer inspections in acc. with **DIN EN ISO 2178** and **DIN EN ISO 2360**.

PRODUCT-NO.

SERVICE DESCRIPTION



430421

MATERIALOGRAPHY

In addition to coating thickness determination via cross-section preparation, material analysis is also possible. Through suitable etching procedures, microstructural analysis of metals and alloys can be performed. It is also possible to examine small specimen sections directly and generate three-dimensional topographic images at magnifications of up to 6000x.

Among other things, we offer inspections in acc. with **DIN EN ISO 1463** and **DIN EN ISO 2808 Test 6A**.



430802

RAMAN SPECTROSCOPY

The method of laser-based Raman microscopy combines the imaging of a light microscope with the analysis of organic and inorganic compounds. Certain bonds in organic molecules are excited with monochromatic light and the resulting energy difference is registered – the resulting Raman spectrum is considered a chemical finger-print of the investigated sample.



4300801

SCANNING ELECTRON MICROSCOPY (SEM) / ENERGY DISPERSIVE X-RAY MICROANALYSIS (EDX)

With scanning electron microscopy (SEM), the surface of a sample can be viewed with high magnification. A finely bundled electron beam scans the surface and interactions of the electrons with the object are used to create an image. Energy dispersive X-ray spectroscopy (EDX) is a form of elemental analysis by detecting characteristic X-ray radiation of the elements comprising the sample.

PRODUCT-NO.	SERVICE DESCRIPTION
	CHEMICAL AND MECHANICAL PRE-TREATMENT Test panels are pretreated mechanically or chemically using defined processes such as grinding, blasting, brushing, degreasing, and pickling. The goal is to achieve a reproducible surface roughness and cleanliness, as well as to remove contaminants.
	CHEMICAL PRETREATMENT PLANT For experimental purposes, a chemical pre-treatment plant is available for simulating industrial pre-treatment processes in surface technology. It enables common cleaning, degreasing, and conversion steps to be reproduced under defined process parameters.
	LIQUID COATING APPLICATION We offer the professional application of liquid coatings on test panels under controlled laboratory conditions. The application is tailored to the respective coating systems and testing requirements, thereby providing an ideal basis for subsequent investigations.
	POWDER COATING APPLICATION We perform powder coating application on test panels under controlled laboratory conditions. Defined process parameters are used to ensure a uniform coating thickness and reproducible coating results.



We test to many testing standards specifically designed to meet the requirements of the automotive, commercial vehicle, rail vehicle, construction or military industries.

Daimler Among others: - DBL 1650 (formerly DBL 8440) - DBL 1651 (formerly DBL 8451) - DBL 1740 (formerly DBL 9440) - DBL 1761 (formerly DBL 9441)	BMW Among others: - BMW GS 90011 - BMW GS 94007	Volkswagen Among others: - VW TL 256 - VW TL 211 - VW TL 244 - VW TL 227
Porsche Among others: - PTL 5580 - PTL 5536 - PTL 5538 - PTL 8140	Ford Among others: - WSS-M2P190-A	GM Among others: - GMW 14444 - GMW 16929
Tesla Among others: - TM 5017	Jaguar/Land Rover Among others: - STJLR-51-5241	Deutsche Bahn Among others: - DBS 918300 - DBS 918340
Liebherr Among others: - LH11007172	Deutsche Aircraft Among others: - TP-001F000A002	EvoBus Among others: - EVO 132.21

Our test results are approved by the following organizations:
AAMA/FGIA, Bundeswehr, Caterpillar, GSB, MIL, NATO, QIB, QUALICOAT, QUALIDECO, QUALANOD, QUALISTEELCOAT.

For testing in accordance with other standards, please feel free to contact us!



IFO-Quality Mark

Our customers can use the quality mark to highlight the quality of their product and advertise with tested quality.



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(DAkkS) according to DIN EN ISO/IEC 17025
accredited test laboratory.

BUSINESS UNITS

IFO

Institut für
Oberflächentechnik
GmbH



Laboratory Services

- Accelerated weathering test with xenon and UV fluorescent lamps
- Adhesive strength test
- Admittance measurement
- Alkali resistance
- Alternating Climate Test (ACT)
- Colour Fastness
- Colour measurement
- Corrosion testing
- Cupping test
- Cyclic Corrosion Test (CCT) VDA 621-415
- Dye spot test
- Falling sand abrasion test
- Gloss measurement
- Impact test
- Indentation test (Buchholz hardness)
- Layer thickness measurement
- Liquid coating application
- Machu test
- Mandrel bending test
- Mortar test
- Materialography
- Mass loss test
- Metallography
- Microstructure analysis
- Pencil hardness
- Powder coating application
- Pull-off testing
- Pressure water-jetting test
- Scanning Electron Microscopy (SEM) / Scratch resistance test
- Stone chip testing
- Raman spectroscopy
- Resistance tests
- Test installation for coating and pretreatments

Claims and Experts

- Corrosion protection and coating consultancy services
- Existing facades: assessing and evaluating the condition of facade surface finishes
- Investigation of damage claims
- Cleaning work or site measurements
- Experts opinions for courts
- Experts opinion on corrosion resistance of materials and material combinations with and without coating

Quality Supervisions

- QUALANOD – Quality check
- QUALISTEELCOAT – Quality check
- QUALICOAT – Quality check
- QUALIDECO – Quality check
- Quality Association for coating of individual components (GSB International)
- Quality Association for Industrial Coating (QIB)

Coating Inspections

- Maintenance of aluminium and steel structures
- Corrosion protection for new projects
- Implementation monitoring

Coating Research

- Material investigations
- Coating Research
- Expert reports

Certification Authority

- Certification of hot-dip galvanisation companies in acc. with DAST Guideline 022
- Certification for metal construction companies in acc. with DIN EN 1090
- Monitoring of factory production control systems in acc. with DIN EN 1090
- Certification of coating companies using liquid coating in acc. with DIN EN ISO 12944
- Certification of powder coating companies in acc. with DIN 55633
- Certification of powder coating and liquid coating companies in acc. with DIN 55634
- Certification of galvanisation companies in acc. with ISO 1461
- Monitoring of coating companies in acc. with DBS 918340
- Monitoring of national technical approvals (AbZ)



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