

MATERIALS TESTING METALLIC MATERIALS

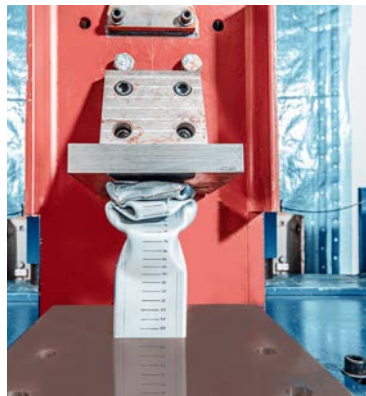
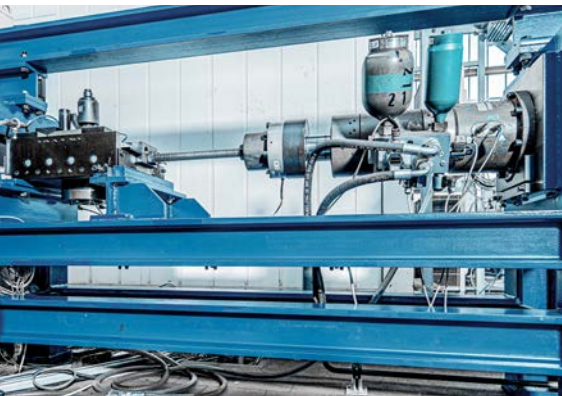
We are the partner you can contact when it comes to national and international testing requirements, whether you are dealing with materials, components or entire structures.

Our engineers look forward to help to you run your testing programs and to standardise and certify materials.

We identify material parameters comprehensively and determine the loading capacity of metallic materials, joined connections or hybrid material combinations.

We are available to assist you throughout the entire testing process: starting with consultation, test planning and test execution up to the final test report. Our qualified test engineers are at your disposal. The test spectrum of our accredited laboratories covers all industrial sectors.

MECHANICAL-TECHNOLOGICAL TESTS



At the beginning of a design phase, the question of materials selection arises. The selected material forms a basis and must withstand a wide variety of stresses and strains in later use.

Mechanical testing provides you with the ideal basis for determining the material performance that you require for your project.

STATIC LOAD TESTING

- Tensile test
- Fracture toughness test
- Compression test
- Bending test
- Torsion test
- Shear test
- Stress rupture test
- Bearing test
- Hardness test (HB, HRC, HV, HK)

IMPACT LOAD TESTING

- Charpy impact test
- Pellini test
- Impact/crash test

CYCLIC LOAD TESTING

- Fatigue test (HCF, LCF, TMF)
- Determination of cyclic deformation curves
- Determination of S-N curve (Wöhler)
- Crack propagation (da/dN)
- Determination of threshold value (ΔK_{th})

TECHNOLOGICAL TESTING

- Junkers test (bolted joints)
- Soldered, brazed and welded joints
- Riveted and adhesively bonded connections
- Component testing

SURFACE QUALITY TESTING

- Profilometry
- Roughness parameters

CHEMICAL ANALYSIS

The laboratory is equipped with various spectrometers for qualitative and quantitative element analysis.

We can identify materials and components with regard to the type of material or check the element content requirements. By local analysis, it is possible to identify corrosion products, operating residues or wear particles, for example.

TEST SPECTRUM

- Optical emission spectroscopy (Al, Cu and Fe materials)
- EDX analysis (local element analysis)

TRIBOLOGICAL TESTING

Friction and wear behaviour of materials or coatings may have a considerable influence on the functionality of a part or of the entire component.

Our test laboratory determines the application behaviour of the test objects regarding to technological parameters, and advises you on how to optimise the service life of your product.

TEST SPECTRUM

- Abrasion resistance testing (of metals, plastics, ceramics and coatings)
- Determining of the friction coefficient
- High-speed abrasion testing
- Component oriented test rigs

TESTING UNDER ENVIRONMENTAL INFLUENCE

Environmental and chemical influences during the production and use of your materials and components can adversely affect the quality of the products.

In our test laboratory, we determine the loading capacity of the test objects under real and extreme conditions in accordance with generally accepted standards or to your individual specifications.

TEST SPECTRUM

- Steels (intergranular corrosion: Huey test or Strauss test, for example)
- Aluminium materials (intergranular corrosion: ASSET test, for example)
- Aluminium materials (exfoliation corrosion, e.g. NAMLT test)
- Metals (stress corrosion, dezincification)
- Metals used in aerospace applications (intergranular corrosion, pitting corrosion)
- Mechanical-technological with medial influences

SAMPLE MANUFACTURING

Our machining centre enables us to produce samples according to your requirements. From raw materials, semi-finished products and components, we produce high-quality test specimens according to national and international regulations or according to your specifications, regardless of whether the materials are high-strength metallic materials, ceramics, plastics or composite materials.

TEST SPECTRUM

- Abrasive cutting methods
- Waterjet cutting
- Automated grinding, turning, milling and drilling machines
- Electrical discharge machining
- Blast cleaning
- 3D coordinate measurement of sample tolerances
- Application of strain gauges and crack monitoring films

MATERIALOGRAPHY

Whether the objective is quality assurance, damage analysis or research and development, in our accredited materialography laboratories we examine both metallic and non-metallic materials of different compositions using the appropriate qualitative and quantitative characterisation procedures.

From sample preparation to microscopy and material analysis, we evaluate the material condition, surfaces, edge layers, joints and fracture surfaces for you. As part of our overall approach to the materials, we offer you the opportunity to assess the relationships between the technology parameters and the structural properties, for example when optimising your production technologies.



TEST SPECTRUM

- Optical and scanning electron microscopy
- Evaluation of the microstructure
- Evaluation of the welded, soldered and brazed seam quality
- Determination of grain size
- Determination of inclusion content
- Measurement of layer thickness
- Surface layer characteristics (decarburisation, alpha case, corrosion, oxidation)
- Determination of cell sizes (PUR)
- Determination of homogeneity and carbon black dispersion (PE)
- Roughness and profile measurements
- Microhardness test (HV/HK)

DAMAGE ANALYSIS

Despite new, innovative production technologies and manufacturing routines, cases of damage are still occurring as a result of product defects, installation errors or incorrect operation.

Causes may be material based and/or production related. In addition, a faulty design can cause product failure or damage can result from overloads or external influences. In some industries, damage tolerance is part of the safety concept.

We will identify the type of damage for you and determine the reason why this occurs. In doing so, we also utilise mechanical-technological related, physical, material analysis and materialographic examination methods.



ADDITIONAL SERVICES

In our own NDT laboratory, but also at your premises, we can make statements regarding the quality of your metal and plastic test objects. Our test personnel are qualified according to ISO 9712 and EN 4179.

NONDESTRUCTIVE TESTING

- Ultra sonic test (UT)
- Eddy current test (ET)
- Magnaflux test (MT)
- Penetration test (PT)
- Optical test methods (ARAMIS, PONTOS)
- Visual inspection
- Tap test
- Thermography (TT)
- FEM-Analyses



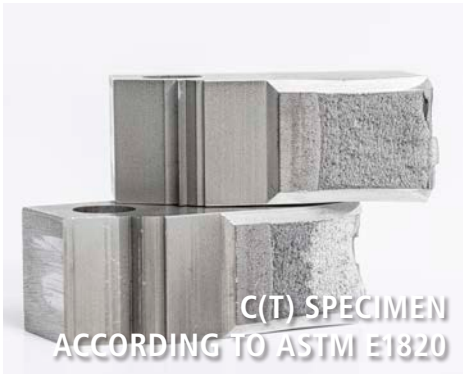
EMISSION SPECTROSCOPY (OES)



SPECIMEN MACHINING



TESTING UNDER ENVIRONMENTAL CONDITIONS



C(T) SPECIMEN ACCORDING TO ASTM E1820



VICKERS AND KNOOP HARDNESS TEST



FATIGUE TESTING



DETERMINATION OF FRACTURE TOUGHNESS



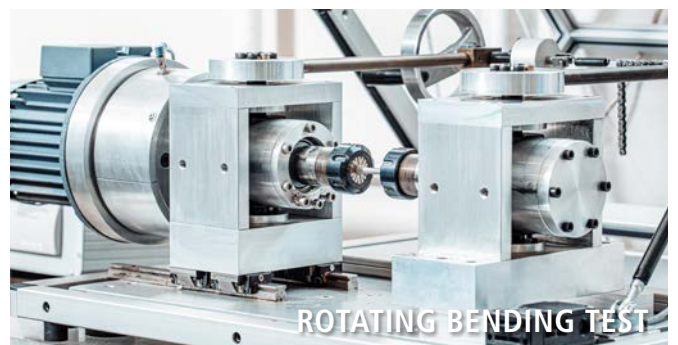
FATIGUE CRACK GROWTH RATE TESTING



UNDER OPERATING LOAD SEQUENCES



WEAR TEST



ROTATING BENDING TEST

BENEFIT FROM THE COMPETENCE OF APPLUS+ IMA DRESDEN FOR YOUR MATERIAL TESTING.

As an independent test provider we guarantee reliable results and strict confidentiality. Our credo of thinking and acting like our customers was not carelessly formulated. It contains an earnest pursuit of engineering perfection, which merges intelligent solutions with sustainable usable

result at fair prices. This, of course, also includes the flexibility to respond to all kinds of request and, in doing so, to provide peak performances which are not possible elsewhere. Each of our employees bears a portion of this responsibility.

Since May 2021, IMA Dresden is part of Applus Laboratories.

Please do not hesitate to contact us for any questions or inquiries at sales@ima-dresden.de

The testing services of Applus + IMA (IMA Materialforschung und Anwendungstechnik GmbH) are accredited in accordance with the DAkkS accreditation certificate.



PHOTO CREDITS

Photographer Andreas Scheunert (Lichtwerkedesign)



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