

TESTS OF MECHANICAL PROPERTIES OF MATERIALS

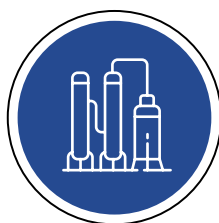
We have available the most complexly equipped laboratory for mechanical tests in Central Europe, regarding the scope of tests.

Our domain range consists in a complex set of services in the field of technological processing of metals, which is available directly without the necessity of subdeliveries.

The specialised test equipments are manufactured to measure for the desired type of experiment.



**conventional
mechanical
tests**



**testing pressure
vessel by internal
overpressure**



**toughness tests
of sizable bodies
(9500J)**



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DETERMINATION OF MECHANICAL PROPERTIES OF MATERIALS IS OF PRIMARY IMPORTANCE FOR A COMPLEX BRANCH OF ENGINEERING, NOT ONLY IN THE FEASIBILITY STUDY BUT ALSO FOR THE PURPOSES OF CONFORMITY ASSESSMENT AND/OR PRODUCTION PROCESS AND SUBSEQUENT TREATMENT.



MATERIAL TESTS:

» Static tensile test at standard and increased strain rate

It determines the basic mechanical properties of metallic materials, composites, plastics, ceramics, glass, fabrics (for example the airbags).

» Tests of high-cycle and low-cycle fatigue at variable mechanical loading

Suitable for life estimation of a tested subject and/or determination of laws for propagation of fatigue cracks.

» Resistance tensometry

Is oriented to experimental analysis of mechanical stress in the machines, machine structures, equipments and/or as a part of measuring elements for the pressure, force, torque, speed, acceleration and flow rate. It allows sensing of mechanical variables: strain, mechanical stress, deflection.

» Mechanical tests at extreme loading performed on physical simulator type Gleeble 3800 + Hydrowedge

Physical simulation of thermal, stress and strain cycles in technological processes. It is used for simulation of treatment processes for materials and/or material tests.

» Deep drawing test by Erichsen

It determines the deep drawing property by deepening the sheets and strips in the thickness from 0.1 to 2 mm. It serves for assessment of formability of thin sheets in thickness up to 2 mm, for estimation of feasibility for deep drawing and repeated bending.

» Simulation of welding processes

Serves for determination of material susceptibility to liquation cracking. Estimation of weld metal susceptibility to crack formation owing to DDC – ductility-dip -cracking. Simulation of arc and/or laser welding with subsequent structural analysis of the simulated heat affected zone, eventually the tests of mechanical properties of material and estimation of welded joint susceptibility to cracking.

» Hardness measurement by Rockwell and Vickers

Hardness value depends on complex properties of the surface of material tested and on test conditions at which the hardness is determined.

» Bend test

In this test, the deformability of metal loaded by the static bend at room temperature is estimated.

» Fracture toughness

The fracture toughness is a material characteristic which must be determined experimentally by testing of a real material (cannot be calculated).

» Creep

Exact material research extraordinary important mainly in the field of automotive industry, which output data comprise the determination of suitability of material used in service, regarding the effect of time dependent plastic strain of materials.

» Impact bend test (notch toughness)

This test is performed with a pendulum hammer called Charpy hammer: Principle of this test consists in breaking the test piece by a single impact of pendulum hammer, whereby the notch is situated on the opposite side of the hammer.

» Tests with inner overpressure

The purpose of these tests is to assure testing of storage tanks, pipelines, transition joints, welds in containers and pipelines. The tests are performed prior to putting the products to service and/or for qualification approval.

