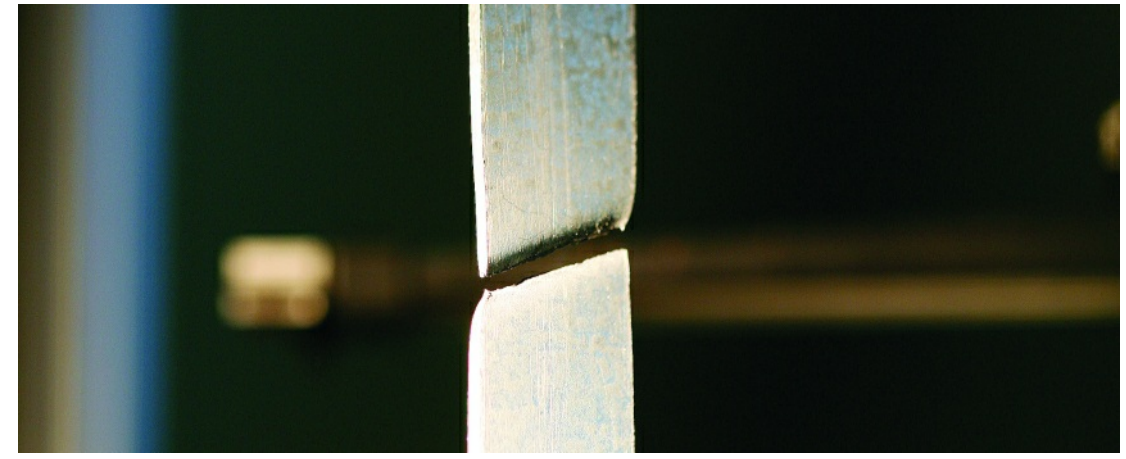


MECHANICAL PROPERTIES OF METALLIC MATERIALS

Measure the mechanical properties of a metallic material



Your expectations

- You are looking for the right materials for a given application
- You want to characterise the compatibility of your materials with their environment
- You want to carry out tests to determine the specific mechanical properties of your material
- You want to determine the grade of steel corresponding to your material
- You are looking for reliable analysis and characterisation methods
- You want to ensure the traceability of your mechanical tests

Our solutions

A specialised team and resources in the field of test and characterisation of metallic materials :

Static tensile tests to determine the mechanical properties (maximum strength, yield strength, module of elasticity, elongation, etc.), at room temperature, at high temperatures up to maximum 800°C, at low temperatures ranging to -196°C, in H2 environment.

Impact bending tests (measurement of notch impact strength) on previously notched metallic test specimen, between ambient temperature and -196°C,

Hardness measurements (Vickers, Brinell and Rockwell B and C)

Flattening, bending, flaring tests,

Tests and characterisation of many metals and alloys, either on standardised tests specimens or on products (tubes, bolts, etc.)

Characterisation of material ageing and prediction of service life

Characterisation of the environmental compatibility of materials

ZOOM ON HYDROGEN

[HyMEET](#), our technological platform dedicated to H2, provides mechanical engineering with resources and skills needed to master low-carbon hydrogen production, distribution, storage and utilization technologies. HyMEET combines an ambitious R&D program with a €25 million investment in resources dedicated to characterization and validation tests (up to 1000 bar and in a range of temperatures from deep cryogenics to high temperatures) as well as consulting and training.

Its activities are dedicated to:

Characterizing the behavior of materials in contact with hydrogen

Development of specific test methods

Characterization of specific mechanical equipment and systems in severe hydrogen environments.

Our equipment enables:



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Mechanical characterization of materials using fatigue machines in a high-pressure hydrogen environment
Control of sealing systems and plant containment, with test benches developed to study gas diffusion phenomena, resistance to rapid decompression and sealing performance under severe conditions
The study of the ageing of test specimens in high-pressure autoclaves
Tests under cryogenic conditions for the use of hydrogen in liquid form, with several cryostats fed by a helium-hydrogen liquefier
Multiphysics tests with pressure, temperature and cycling.
Manufacture of thermoplastic composite parts (tanks, tubes) by in-situ deposition and consolidation (in real time, with no further steps required) using our HySPIDE TP robotized cell.

Our specific services in the H2 environment:

Mechanical characterisation of materials in a hydrogen environment (high pressure, gas mixtures and wide temperature range)
Wide range of mechanical Fracture tests in H2 environments
Support in selecting and choosing compatible materials for H2 applications

Your benefits

Standardised mechanical tests or tests customised to meet your requirements
Development of specific test protocols
COFRAC accredited tests (accreditations COFRAC No. 1-1006 & No. 1-6755 - Scope available on www.cofrac.fr)
Tailored and responsive service providing you with 6 local laboratories
Access to the multidisciplinary skills of metallurgical teams to optimise your products
Environmental characterisation resources (H2 and mixtures) over a wide range of temperatures and pressures
Expertise relating to the whole of the usual metal processing (machining-bar turning, metallic additive manufacturing, welding, rolling, casting, forging, etc.).
An independent laboratory and a major player in the aerospace, energy, rail, automobile, medical and naval sectors).



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