Materials Testing and Research Institute
MPA Karlsruhe

main areas of research

mechanical/technological, chemical and physical investigations of building materials and building constructions, examination and monitoring of products regarding their agreement with technical requirements, standards, terms of delivery, quality specifications or arrangements, consultation of industry partners, examination and evaluation of materials regarding legal demands, certification of new building products and designs, member of normative committees (standards and guidelines), investigation of the durability of building materials regarding the protection and repair of construction members

equipment

mechanical/technological tests and measurement equipment

14 x 24 m² strong floor including all necessary devices to test structural members under static and dynamic loading, tensile and compressive capacity up to 8 MN, mechanical testing machines up to 10 and 250 kN, 12 hydraulic testing machines with a maximum tensile capacity of 3 MN and a maximum compressive capacity of 15 MN, testing machine with high loading velocity for impact and tearing tests, impact tube, eccentric mass vibrator, air pressure gun, various constant environment units, weathering units, curing rooms, hardness tests, concreting facilities, measurement of creep and strength under sustained loading

multipoint measuring equipment for strain, stress and temperature, computer controlled data acquisition and test control systems for static and dynamic testing, measuring instrument for dynamic processes, transient-recorder and equipment for recording high frequency signals, digital high-speed-camera, various non-destructive test methods (ultrasonic testing apparatus, impact-echo, inductive methods for the identification of reinforcement, etc.)

physical lab

measuring devices for permeation, permeability and diffusion, helium pycnometer, polarizing microscope with transmitted- and direct-light technique, mercury intrusion porosimeter, X-ray diffractometer, thermogravimetry (TG/DTA), nuclear magnetic resonance spectrometer, small angle scattering (SAXS), specific surface by gas adsorption measuring device (BET), airvoid counting device, image analysis device, rheometers for measurements on fresh pastes, mortars and concretes

chemical lab

laboratory for wet analytical chemistry, infrared spectrophotometer, atomic absorption spectrometer, carbon-sulphur analyser, UV-VIS-photometer, electrochemical equipment (potentiostat, galvanostat).
service, cooperation and further training

material testing

certification of new building materials, type of construction, measuring techniques, concrete, reinforced concrete and prestressed concrete structural members, high performance concrete, self-compacting concrete, lightweight aggregate concrete, shotcrete, autoclaved concrete, tendons, prestressing methods, grout anchor, dowels, bridge bearings, protection and repair of reinforced concrete members, coatings, mortars

quality control of ready-mixed concrete, concrete aggregates, concrete admixtures, autoclaved concrete, restoration materials, recyclable construction materials, coatings, masonry, structural bearings, external supervision

cooperation

cooperation with industry in development and research, technology transfer, member of several standards bodies and specialist commissions, workshops, conferences

expert's report and consulting

in the field of reinforced and prestressed concrete and structural dynamics, building inspection, concrete technology, preservation of structures, building physics, building damage, conservation of evidence, restoration concepts, construction supervision

research

research in the whole field of building materials and building components
contact

people

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www.mpa-karlsruhe.de
Facilities at the MPA Karlsruhe for Full Scale Testing

14 x 24 m² strong floor for variable testing of structural members

LOS UBP 15000 kN pressure testing machine
(height of testing room approx. 7 m)

MTS 2500 kN testing machine for tension and pressure up to a load velocity of 1800 mm/s

www.mpa-karlsruhe.de
Selected Testing Facilities at the MPA Karlsruhe

Stone Specimen under Tensile Load
(paramater evaluation of masonry wall)

X-Ray Diffraktion
(characterisation of building materials)

Digital High-Speed-Camera
(visualisation of a test with an explosive load on a concrete slab)

Thermographical Analysation
(detection of temperature and humidity)

Cracking and Leakage Testing Facility
(investigation of leakage rates of containment walls under the loads of air-steam-mixtures)

Hg-Pressure Porosimetry and Gas Adsorption
(measurement of pores and specific surfaces of mineralic materials)