

KEYWORDS

- Concrete/mortars
- Conservation materials
- Materials characterization
- Diagnosis
- Accessibility and safety use
- Living conditions

POTENTIAL END USERS

- Engineering/Architecture Studios
- Conservation companies
- Public and private entities that own cultural real estate
- Construction/conservation products companies
- Building companies

TECHNIQUES

- Characterization techniques: FTIR, DTA-TG, XRD, XRF, FSEM/EDX, mercury intrusion porosimetry (MIP), ultrasonic pulse velocity test (UPV), isothermal conduction calorimetry, TOC
- Physical tests: Mechanical strength (Flexural/compressive), friction pendulum, rugosimeter.
- Rheological tests: paste and mortar rheometers, fluidity of pastes, mortar and concrete, minislump test, Abrams cone.
- Thermography

Conservation of heritage works from architectural and materials research perspective

Need of problems that solves

The Architecture and Materials group (ARCH&MAT):

- Develops new mortars with specific properties (desalination, biocide, fissure sealant, water repellents, repair mortars...).
- Assesses risks and defines safety conditions for monument accessibility.
- Evaluates the efficacy of impregnations on deteriorated stone surfaces.
- Studies the protection against aggressive natural agents or vandalism (graffiti) that protective treatments can provide.
- Determines treatment-substrate chemical interaction.
- Analysis of the living conditions of inhabited spaces in heritage buildings. Acoustic conditions, thermal and energy performance, air quality and radon contamination.

Innovative aspects

- Multidisciplinary team (architects, chemists, biologists and geologists) specialized in the conservation and evaluation of the built heritage of the twentieth century.
- Development and validation of new repair products.
- Analysis of the safety risks of use and the accessibility of monuments.

Equipment

- Thermal imaging camera; rugosimeter, friction pendulum.
- FTIR/ATR/EGA; DTA-TG; Isothermal conduction calorimetry; Optical microscope; Total carbon analyzer (TOC).
- Physical and mechanical testing laboratory; Ibertest 20/200 Press, Ultrasonic Pulse Speed Ultratest V.9; Retraction meters; hydric properties (Karsten tube, sponge test, water vapour permeability etc.).
- Rheology laboratory. Mortar and paste rheometers.
- Synthesis laboratory; high temperature furnaces (1 600°C); Reactor.
- Curing and carbonation chambers.
- Radon sensor, thermohygrometer.

Contact

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