

Reaction to fire testing and Euroclass classification

Assessing the reaction to fire, flammability and contribution to fire of construction products and other materials found in buildings and transport systems.



A material's fire performance is an extremely important factor in assuring public safety and evacuation in the event of a fire. As such, reaction-to-fire testing is a mandatory requirement of the technical codes, standards and regulations of the construction and transport industries.

In Europe, construction materials must be tested in line with the Euroclass system, which classifies a product according to its reaction to fire (flammability, smoke opacity and toxicity, etc.).

Each member state's national legislation incorporates this European classification and defines the permitted uses of each type of material, with the optional inclusion of supplementary requirements.

In the field of vehicles and transport systems (automotive, rail, maritime or aerospace), materials must be tested against the particular standards and requirements set by the sector or manufacturer (OEM) in question.

AN ENAC-ACCREDITED REACTION-TO-FIRE LABORATORY

Our fire laboratories in Barcelona, Spain (LGAI Technological Center S.A.) are ISO/IEC 17025 accredited by ENAC/ILAC (nº 9/LE895) and carries out more than 200 fire and thermal tests per year in accordance with European and national regulations. [See the complete list of our accreditations](#). We can provide our clients with:

- The **Euroclass reaction-to-fire classification** of their construction materials – a certification that is recognised at a pan-European level

- **Test reports** citing the flammability performance of materials used in a range of industries

APPLICATIONS AND PRODUCTS TESTED

- **Construction and industrial materials:** thermal insulation materials, panels and boards, sandwich panels, wood and plastic coatings, plastics, floors, suspended ceilings, structural-protection elements, paints, windows and partitions
- **Other products:** cables, electrical materials, toys, aerosols, textile coverings

REACTION-TO-FIRE TESTING CAPABILITIES

- Euroclass classification (A1, A2, B, C, D, E and F plus the following subclasses: "s" for smoke, "d" for droplets and "fl" for flooring)
- Materials classification (M0 to M4)
- Flammability (various) and oxygen index (LOI)
- Accelerated ageing and flammability of textiles (curtains, upholstered furniture, etc.)
- Fire behaviour of cables and electrical components
- Opacity of smoke emitted by burning materials
- Thermal tests: thermal resistance, U-value (thermal transmittance)

WE TEST TO SECTOR STANDARDS IN A WIDE RANGE OF SECTORS

Construction materials

- **EN ISO 1182:** Reaction to fire tests for products - Non-combustibility test
- **EN ISO 1716:** Heat of combustion
- **EN ISO 11925-2:** Flammability when subjected to direct impingement. Test on a single source of flame
- **EN ISO 9239-1:** Floor coatings. Reaction to fire through a radiant heat source
- **EN 13823:** Exposure to the thermal attack by a single burning item (SBI)
- **EN 13238:** Conditioning and general rules for the selection of substrates
- **CEN/TS 1187:** Roofs: External. Fire exposure. Burning torch method

Cables

- **EN 60332-1-2+A1+A11:** 1 kW pre-mixed flame
- **BS-EN 61034-2+A1:** Smoke density
- **EN 60754-2:** Determination acidity and conductivity

- **BS-EN 50399+A1:** Heat release and smoke production measurement on cables during flame spread test

Others (Marine, Railway and Aircraft)

- **IMO 2010 FTP code Part 1:** Non-combustibility
- **IMO 2010 FTP code Part 2:** Smoke and toxicity
- **IMO 2010 FTP code Part 5:** Test for surface flammability
- **IMO 2010 FTP code Part 7:** Test for vertically supported textiles and films
- **IMO 2010 FTP code Part 8:** Upholstered furniture
- **IMO 2010 FTP code Part 9:** Bedding components
- **EN ISO 5660-1:** Heat release rate (cone calorimeter method)
- **EN ISO 5659-2:** Smoke generation
- **ISO 5658-2:** Spread of flame
- **ISO 19702:** Toxicity
- **AITM 2.0002:** Flame Chamber
- **AITM 2.0003:** Flammability and flame propagation (wire)
- **AITM 2.0004:** Flame penetration
- **AITM 2.0005:** Flammability and flame propagation (wire)
- **FAA chap. 1:** Vertical Bunsen burner test for cabin and cargo compartment materials
- **RTCA/DO-160G:** Environmental conditions and test procedures for airborne equipment
- **FAR/CS 25/23 part 1:** Aircraft and helicopter cabin interior and cargo materials
- **DOT/FAA/AR-00/12:** Aircraft materials fire test

LABORATORY EQUIPMENT

- SBI
- Radiant panel
- Non-combustibility equipment
- Fire behaviour of cables and electronic components
- Fourier-transform infrared (FTIR) spectrometer
- Cone calorimeter

APPLUS+ SERVICES

Applus+ is one of the leading European reaction-to-fire laboratories in terms of equipment, number of tests carried out and accreditation scope. Our team of experts, versatile facilities and quality processes allow us to provide competitive services. We offer an online test-viewing service, enabling our clients to monitor the testing and performance of their products from the comfort of their own premises.

With more than 30 years' experience in the fire sector, we are members of EGOLF and our experts sit on the key technical and policy forums (CEN) that are involved in the development of new standards.

BENEFITS

- Assurance of a product's fire behaviour
- Access to the European market with a range of accredited tests and classification certificates that are recognised by European administrations
- Reduced testing time required
- The full evaluation of a product in a single centre and through a single point of contact, involving a combination of technologies (fire resistance, acoustics, thermal characterisation, physicochemical characterisation, mechanical resistance...)