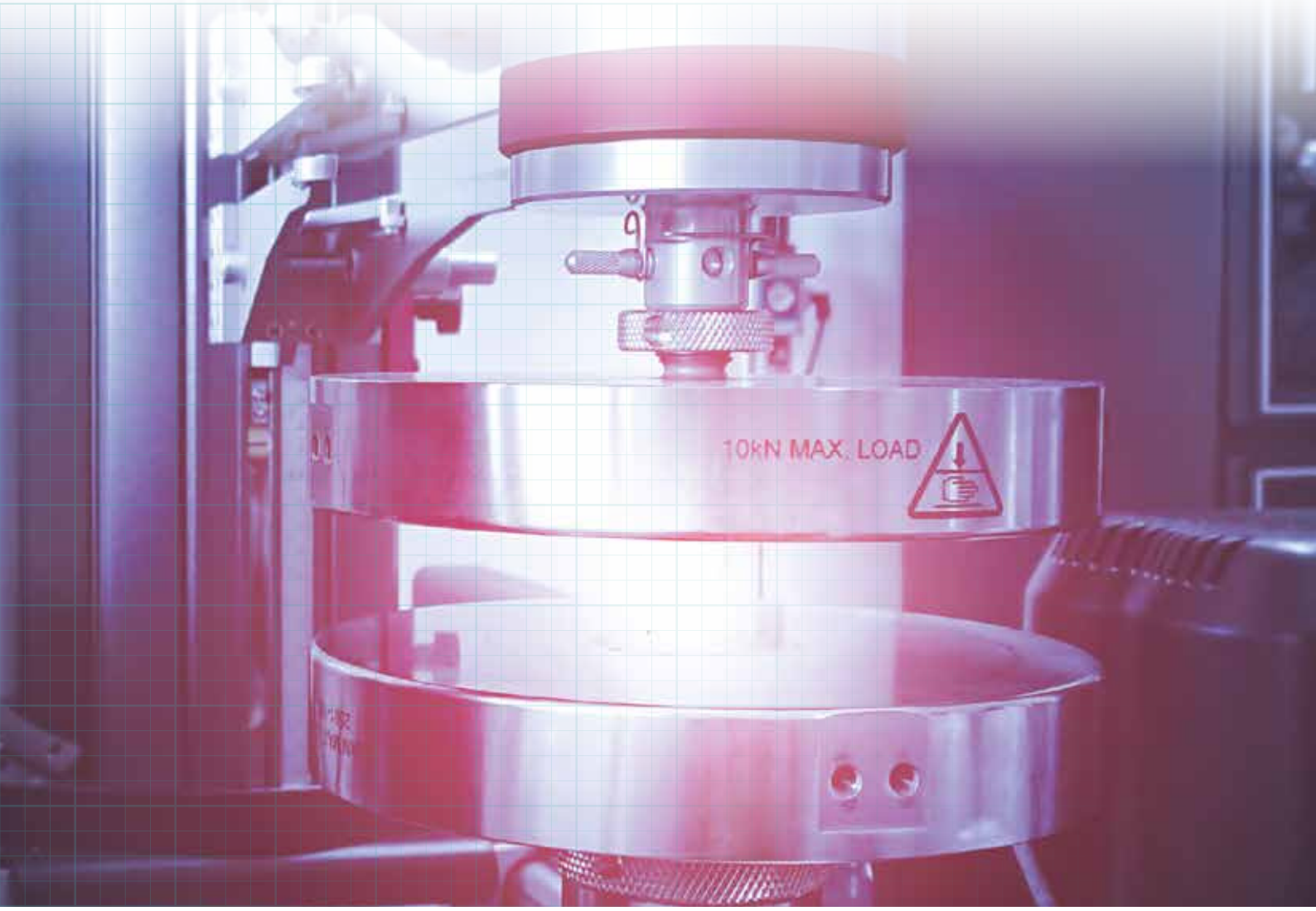
Tested by the best

We offer comprehensive test capabilities that businesses don't have available in house



PRODUCT CERTIFICATION | AUDIT & INSPECTION | TEST SERVICES

Our collaborative approach and position as regulatory experts makes us the best choice for bringing products to market successfully. Our ability to act as a trusted partner means we consult on the full product development cycle and act as more than just a testing house.

Test Services

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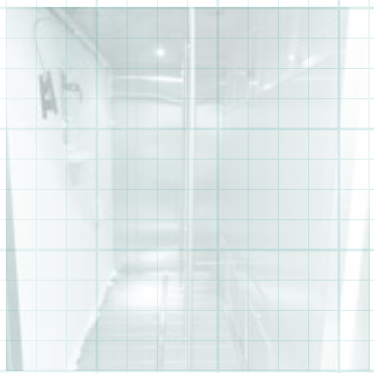


Test Services

Putting products and systems through their paces

"BBA Test Services is a highly regarded, independent UKAS Accredited UK testing facility. Opened over thirty years ago to accommodate the needs of clients applying for Agrément Certification, the division now shares its many years of experience and current expertise with manufacturers, consultants, contractors, Building Control and insurers across the UK and beyond. We offer customised laboratory and on-site testing services to meet a wide variety of requirements".

– Alvaro Enguita-Gonzalez
Head of Test Services

The quality of our UKAS backed services enables us to deliver the rigorous approach needed to test products and systems in many different and challenging construction environments. This approach ensures that tests are carried out correctly: whether in the laboratory, on a construction site or in modular systems for off-site applications.

The BBA's impressive range of testing rigs helps to push the boundaries of research, quality control and service-life testing.

We are able to test all products, systems and processes within a building; from physical or mechanical properties to durability and weather resistance. Our facilities allow us to provide a comprehensive range of services covering a wide variety of products, from insulation materials and systems to windows and doors, sealants and adhesives, flooring materials and structural components.

UKAS TESTING 0357

Breaking new ground underground

Underfloor insulator machine (Q-bot LTD)
Testing experts at the British Board of Agrément certified the first ever construction service insulation installation delivered by a robot.

This award-winning system uses compact remote-controlled robotic vehicles to crawl around floor voids, applying polyurethane foam insulation to the underside of timber or suspended concrete ground floors of new and existing domestic and non-domestic buildings.

In 1985, the BBA set up a dedicated department specifically to undertake testing in support of BBA Certification. We continue to do this and so much more...

Accelerated UV exposure

Durability and Aesthetics Testing

The appeal of a design is subject to individual taste and is therefore appreciated in different ways by the end user. The important part is to ensure the quality of the design is of a high enough standard for the user to have a good overall impression of the product. Most importantly, it should be evident that it is robust and able to achieve the highest safety standards irrespective of looks and personal taste.

We use **thermal stress, frost weathering, air pressure, salt crystallisation** or **accelerated UV exposure** as ageing techniques to test the usability of products.

Masonry bricks and blocks, concrete, stone, metals, timber, plastics, bitumen-based or composite materials are exposed to the same agents that affect natural materials in-situ.

We undertake tests before and after the ageing processes to assess whether a discrete component or a system remains functional without requiring repairs or replacement.

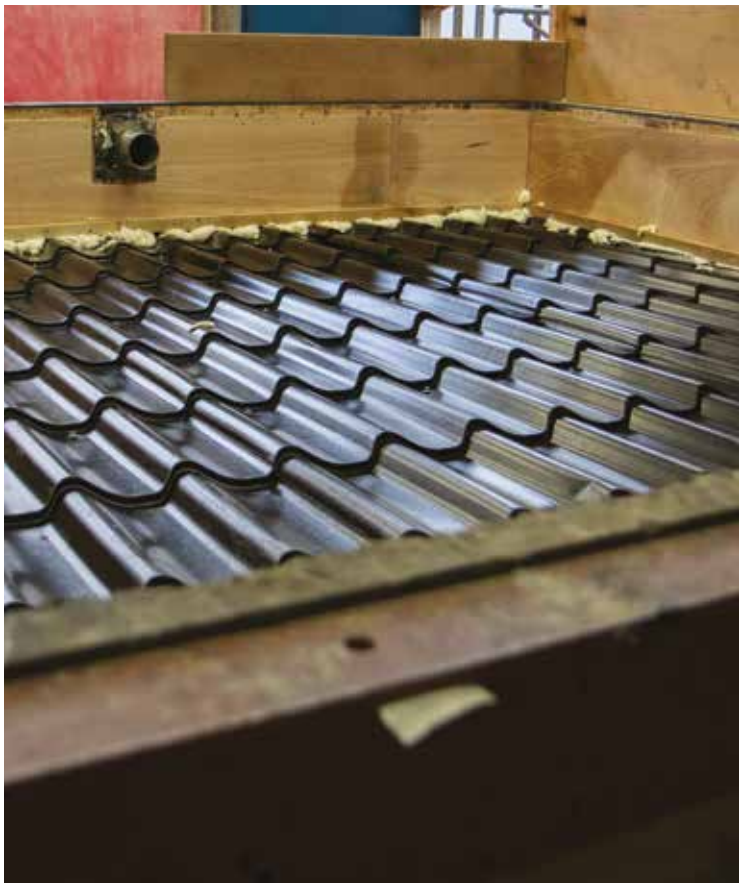
We can also compare performance and aesthetic losses when faced with the challenges of normal operation over a specified design lifetime. We measure the durability in accordance to its field of application (years of life, hours of use or operational cycles) to ensure consistent quality over time.

TESTS AVAILABLE NOW

- Solar panel systems
- Wind uplift: MCS 012:2016; BS EN 14437:2004
- Weathertightness: MCS 012:2016
- Bitumen, plastic and rubber flexible sheets
- Watertightness: BS EN 1928:2000
- Water pressure: Network Rail NR/L3/CIV/041: Issue 3
- Water penetration: HAPAS Guidelines 2012
- Water vapour transmission: BS EN 1931:2000
- Waterproofing systems for Bridge Decks
- Chloride ion penetration, Freeze/Thaw, Crack cycling, Ageing, Exposure to fuel oil/bitumen: Network Rail NR/L3/CIV/041
- Ultra violet light: BS EN ISO 16474:2013
- Water resistance on cavity walls: Internal BBA water resistance testing scheme
- Hygrothermal behaviour in External Wall Insulation systems: ETAG 004:2013
- Utilising its environmental chamber, BBA test experts apply heat/rain and heat/cold cycling procedures to test insulation materials
- Wind resistance: BS EN 12211:2016
- Thermal cycling: BS 8529:2010
- Mechanical wear (endurance tests): PAS 24:2016
- Corrosion tests: BS EN ISO 9227:2012 (salt spraying)
- Colour assessments: BS EN 3900
- Deconstruction and visual inspections

The durability of a product requires expert ageing techniques to rule out the need for future repair or replacement work.

Weathering test



Load test

Mechanical, Physical and Structural Testing

It is important to ensure that a construction will perform its designed function under reasonable use for as long as its intended life span. As such, manufacturers need to predict and prevent catastrophic failures in both structural components and structures consisting of many components, which are stressed under normal or exceptional operational conditions.

To achieve this, destructive tests are carried out beyond the specimen's collapsing point to understand its performance or material behaviour, and its ability to support a designed load (weight, force, etc.) without breaking, fracturing or deforming excessively.

Some of the systems that we test are:

- Walling and partitioning
- Cladding and facades
- Flooring and decking
- Roofing and ceilings
- Fenestration components and systems
- Ancillary components

TESTS AVAILABLE NOW

- Load testing: BS EN ISO 844:2014 (Plastics); BS EN 826:2013 (Insulation); BS EN ISO 9969:2016 and WIS No. 4-31-05 (Pipes); BS EN 14609:2014 and BS EN 14351-1:2006+A1:2010 (Windows and Doors)
- Flexural: BS EN ISO 178:2010+A1:2013 (Plastics); BS EN ISO 13968:2008 and WIS No. 4-31-05 (Pipes)
- Tensile: BS EN ISO 527-3:1996; BS 2782:1995 (Plastics); HAPAS Guidelines 2012 (Bridge Decks); BS EN 1607:2013 (Insulation)
- Bending strength: BS EN 492:2004 (MOAT 48 App C Mtd 3) (Roofing Slates); BS EN 12089 (Insulation); BS EN 12467 7.3.2 (FRC boards); MOAT 17 (Windows)
- Shear: BS EN 12317-2 (Roofing-PVC); BS ISO 1922 or BS EN 12090 (Insulation); BS EN 14024 (Windows)
- Creep: BS EN 1606;2013 (Insulation)
- "Breaking in" testing for windows and doors: PAS 24: 2012 and 2016 for security hardware and cylinder tests, manipulation, infill – manual and mechanical – manual cutting, mechanical loads and impact testing.
- Tear strength: BS ISO 34-1:2015 (Rubber and Plastics)
- Bond strength: BS EN ISO 11339:2010 (Adhesives)
- Static puncture: BS EN ISO 12236:2006 (Geotextiles)
- Hardness: BS ISO 48:2010 (Rubber and Plastics)
- Impact: HAPAS Guidelines 2012
- Dimensional tests to BS ISO 23529:2016

All components used within a building are subjected to a series of approved tests that are all regulated by approved standards.

Cladding test

Bond strength test

Hygrothermal test

Weather Resistance and Wind Serviceability

There are two types of **weathering**:

Physical - involving the breaking down of materials through direct contact with atmospheric conditions, such as heat, cold, water, ice or wind.

Chemical – involving the adverse effect of atmospheric or biologically produced chemicals.

Both types of weathering occur together and, using our weathering chambers and wind tunnels, we can reproduce such conditions and the subsequent impacts of both discrete components and large system levels weathering.

After the exposure to adverse climate conditions, a diverse range of complementary tests can also be performed to evaluate the residual performance of the specimens as related to:

- **Cladding**
- **Roofing**
- **Walling**

TESTS AVAILABLE NOW

- Wind uplift: MCS 012:2016; BS EN 14437:2004
- Weathertightness: MCS 012:2016
- Bitumen, plastic and rubber flexible sheets
- Water tightness: BS EN 1928:2000
- Water pressure: Network Rail NR/L3/CIV/041: Issue 3
- Water penetration: HAPAS Guidelines 2012
- Water vapour transmission: BS EN 1931:2000
- Waterproofing systems for Bridge Decks
- Chloride ion penetration, Freeze/Thaw, Crack cycling, Ageing, Exposure to fuel oil/bitumen: Network rail NR/L3/CIV/041
- Ultra violet light: BS EN ISO 16474:2013
- Water resistance on cavity walls: Internal BBA water resistance testing scheme
- Hygrothermal behaviour in External Wall Insulation systems: ETAG 004:2013, ETAG 006, ETAG 034, MOAT 22, etc…
- Insulation products
- Water absorption: BS EN 1609:2013 (short term) and BS EN 12087:2013, BS EN 12088:2103 (long term)
- Wind resistance: BS EN 12211:2016
- Thermal cycling: BS 8529:2010
- Mechanical wear (endurance tests): PAS 24:2016
- Corrosion tests: BS EN ISO 9227:2012 (salt spraying)

Harsh climate conditions are replicated to test structural materials for weather resistance capabilities.

Wind test

Modular structure

On-Site and Off-Site Testing and Trials

BBA's Test Services are equipped with a modern array of material testing equipment. Our field technicians, engineers and support staff are qualified to test construction materials and systems on site to ensure the quality of workmanship, materials, and that proper installation practices are employed for each project.

Our service can also help to prevent costly failures during construction activities, ensuring that the system or component satisfies its design criteria under its expected operating conditions. This is of particular importance when determining in-situ performance in unknown construction types, particularly in relation to change of use.

These capabilities are also employed to perform forensic evaluation on the failure of previously installed materials and to evaluate the performance across the transportation, storage, handling, installation, fabrication and disposal stages, comparing it to traditional or alternative methods.

TESTS AVAILABLE NOW

- Pull out of fixings
- Shear testing on fixings
- Load testing
- Point load
- Linear load
- Uniformly distributed load (UDL)
- Flexural (and dead load) testing
- Pull through testing
- Sampling
- Coring
- Cover-meter (with load test and inspection)
- Security testing (only manual “breaking in”)
- Slip resistance/pendulum tests
- Trials
- Process characterisation/mapping for mock up tests at laboratory
- Studies and assessments
- Time/motion
- Transportation, storage and handling
- Waste production
- Environmental noise and thermal performance
- Dimensional and tooling requirements

The quality of our Test Services guarantees the kind of rigorous approach that’s needed to approve products to the correct standards.

On-site testing

Window security test

Security and Manipulation

Door-sets and windows are tested for enhanced resistance to intrusion by using both mechanical and manual techniques to replicate the forces and methods of attack used by burglars.

At our UKAS-accredited laboratory, we offer an **independent and comprehensive service** to carry out testing to PAS 24: 2016 giving you, the manufacturer, confidence that your windows and doors sets comply with the current requirements.

Secured by Design
SBD
Official Police Security Initiative

The sequence of tests we undertake include:

- Hardware manipulation
- Evaluation of glazing security
- Mechanical loading
- Manual check test

This test data can be used towards Agrément Certification and the UK Police flagship safety first initiative, **Secured by Design (SBD)**.

BBA PAS 24 2016 Enhanced security Performance Approved

TESTS AVAILABLE NOW

- External door-sets: PAS 24: 2012; PAS 24: 2016
- Security hardware and cylinder tests
- Manipulation tests
- Infill manual tests
- Infill mechanical tests
- Manual cutting tests
- Mechanical loading tests
- Manual check tests
- Soft body impact tests
- Hard body impact tests
- Letter plates: PAS 24: 2012; BS EN 13724: 2002 and 2013
- Security of fixings
- Windows – singular and multilight: PAS 24: 2012; PAS 24: 2016

Over time, BBA Test Services has gone on to become a highly regarded, independent test facility focused on quality, excellence and performance.

Endurance test

Creep test

Conformance Testing and Fit-for-Purpose

To give assurance of compliance we use **Type Testing** to determine whether a discrete component, system or even a process complies with the requirements of technical standards, design or product specifications. The tests can include other requirements for efficiency, interoperability or compliance beyond simple conformance.

Industry sectors:

- Building standards and Eurocodes: BS, BS EN, ISO
- EOTA technical approval requirements
- Other construction standards
  - ASTM
  - Ministry of Defence
  - BBA in-house methods
- Certification marks such as Keymark (CEN/CENELEC)
- Building Control specifications and Building Regulations
- NHBC technical notes
- Construction industry norms and standards:
  - Trading Bodies requirements
  - Recommendations in Design Guides
- Other industries:
  - Water industry specifications
  - General Motors and BS AU (Automotive) standards

Mechanical, weathering, fatigue and security tests
These (among others) are performed on a variety of different specimens and materials to determine if the product is of the required standard for its intended use.

We can also perform comparative testing to determine the suitability of raw materials, assembly, installation or any other processes that might impact on the product or system when operating under normal conditions.

TESTS AVAILABLE NOW

The determination of product-type on the basis of Type Testing is undertaken by the BBA (Notified Body No 0836) and designated test laboratory for EN 13163: 2012 + A1: 2015 Thermal insulation products for buildings.

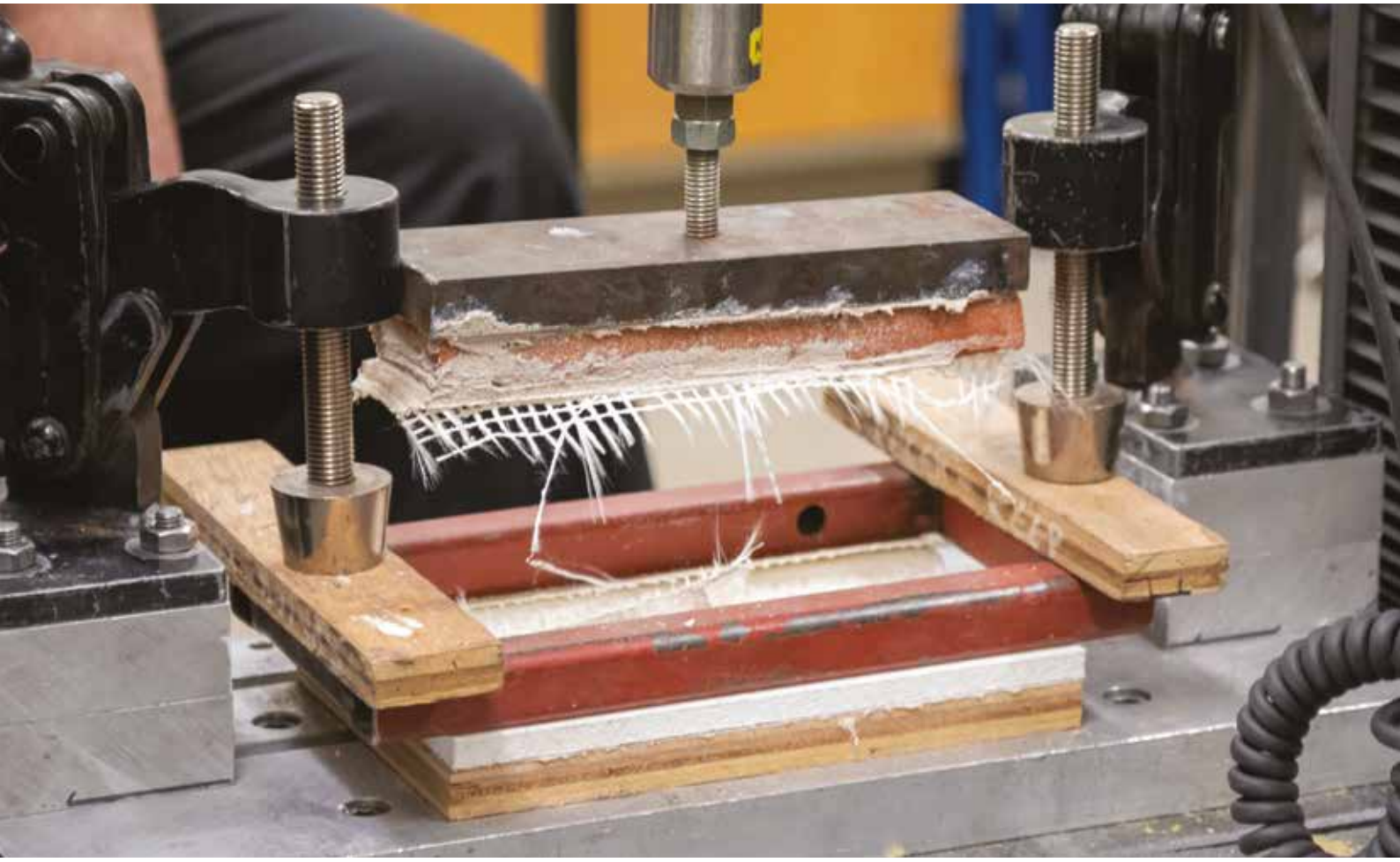
Test methods examples

- Ageing and weathering to ETAG 002, 004, 005, 006, 010, 014, 016, 017, 018, 019, 020, 022, 026, 031, 033 or 034
- Ageing and weathering to MOAT (from MOAT 1 to MOAT 69)
- Freeze thaw resistance to EN 12091
- Corrosion tests in artificial atmospheres
- UV resistance
- Structural/mechanical tests:
  - Bending strength and shear behaviour
  - Compressive and tensile strength
  - Static and dynamic load testing
  - Fatigue testing
  - Impact resistance
  - Wind load testing
- Characterisation of materials
- Physical properties testing:
  - Thermal properties
  - Water absorption, moisture content, drying shrinkage and vapour permeability
  - Colour measurements

Determining mechanical capacities and their structural integrity, durability, weather resistance, capacity to resist impacts and intrusions through rigorous testing.

ETICS Bond Strength test

Some of our business partners who use BBA Test Services:



Pull out / bond test

Failure Analysis

To test for failure, data is collected and analysed to determine the cause - we then set corrective actions or help to find liability. A failure analysis is often used to discern **why products fail in application** and it can be applied retrospectively to test the limitations of products in development.

It is therefore vital for you to understand any limitations in your product's use or in its materials in order to improve quality and safety when in use.

Usually, failures occur when products are either being used in applications they are not fit for, or in environmental conditions that affect their chemical or physical makeup, causing them to be unfit for purpose.

Independent failure investigation and reporting services can be provided by us to assist manufacturers in the development of products.

TESTS AVAILABLE NOW

- Premature fatigue failure
- Corrosion processes
- Insulation and thermal performances
- Durability of materials
- Mechanical performance and strength characteristic for a wide variety of materials and products
- Suitability of raw materials, installations or any other processes that might impact the product during normal conditions

Effective failure analysis is all about attention to detail - our technical experts dig deep to determine causes and set corrective action.

Compression resistance test

Impact test

Dynamic loading rig

Thermal resistance facility

Energy Performance

The **thermal performance** of construction products plays a significant part in the decision-making process of house builders, specifiers and architects. Our heat flow meters are used to make thermal measurements on a wide range of construction products, from insulation materials to door panels to plasters and renders.

The durability of thermal performance is crucial to lifetime energy assessments in the product development phase and can affect energy performance and consumption. At our laboratory, we can subject specimens to a number of different regimes to allow predictions of changing effectiveness, while also examining the thermal properties, such as moisture absorption, all of which can also be investigated and measured on specimens at a variety of moisture contents.

Some of our energy-based business partners who use BBA Test Services:

British Gas

EDF ENERGY

sse

TESTS AVAILABLE NOW

- Thermal conductivity: ASTM C518 (Insulation); BS EN 12393 (Insulation); BS EN 12664 with mats (Block); BS EN 12667 standard specimen (Insulation); BS EN 12664 with mats (Mortar); BS EN 675 (Insulation)
- Emissivity: In-house method on HFM

Sufficient levels of thermal performance are a major consideration for architects and decision makers during the design and house building process.

Making buildings more energy efficient

Heat and rain test

Thermal cycling

Works of passion. Built on integrity. Certified by the best.

British Board of Agrément
www.bbacerts.co.uk