



**SEALING
SYSTEMS
PRODUCT
OVERVIEW**

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protecting against
sound, smoke and fire



Fire and smoke protection measures are essential, life-saving precautions in a building. What's more, they protect the property from the devastating consequences of the fire itself, and the damaging effects of hot and cold smoke. So it's essential to get the product selection right, every time.

Lorient is a pioneering company with a respected reputation for designing and manufacturing a wide range of products for fire and smoke containment. Products are also designed with acoustic, thermal and weather containment in mind, as well as accessibility – so you can be assured that a Lorient system provides an integrated, cost-effective solution.

With over 37 years' experience and accumulated knowledge, we pride ourselves on offering ground-breaking innovations, underpinned by technical excellence and exceptional quality. Our dedicated R&D centre not only generates successful product developments for Lorient; it also allows us to work in partnership with customers to develop and test their own products too.

Our state-of-the-art acoustic transmission suite, commissioned in 2013, features the latest Brüel & Kjær sound measurement technology. It was designed and purpose-built to meet the requirements of BS EN ISO 10140 – Laboratory measurement of sound insulation of building elements.

Always keen to keep raising the bar, we are committed to gaining third party

certification for our products wherever a suitable scheme exists. Many products hold CERTIFIRE certification, and we also hold approvals from the BBA, IFC and UL.

We embrace the highest management standards too, and hold both BS EN ISO 9001: 2008 and BS EN ISO 14001: 2004 certificates for our quality and environmental management systems. Achieving ISO 14001 is just one part of our ongoing commitment to operate in a sustainable way: many initiatives are planned and already underway to reduce materials and energy usage, as well as waste.

In addition to our UK and Europe head office, we have a number of operations around the world; in North America, Hong Kong, Singapore, Australia and Dubai. Furthermore, we have strong links in India, which means that we're able to deliver the right solutions locally to our customers throughout the world. By keeping abreast of technical developments and changes to codes, regulations and standards across the continents, we can ensure we're always providing the highest level of expertise. From advice to testing, new product development to manufacture – we work best in partnership with you.

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This Product Overview provides a summary of our entire range, whereas more detailed information is contained in the following titles:

Acoustic, Smoke and Fire Seals for Door Assemblies

Describes our mainstream range of acoustic, smoke and fire seals together with interpretation of the regulatory requirements.

AURA® Architectural Seals

Describes our discerning selection of drop seals, perimeter seals, door bottom seals, threshold plates and ramps - all with strong design accents.

Lorient Architectural Seals

Describes our range of Lorient Architectural Seals for acoustic, smoke, fire and weather containment. Includes compression seals, door bottom seals, threshold plates and ramps, sweep action brushes, perimeter seals and drop seals.

Acoustic Sealing Systems for Door Assemblies

Describes our range of acoustic sealing systems for various types of door construction including acoustic performance doors, typical non-fire rated doors, and fire rated doors for both 30 and 60 minute applications.

Fire Resistant Glazing Systems

Describes our range of fire resistant glazing systems, in doors, screens and partitions, in conjunction with various types of glass, from 30 to 120 minutes performance.

Fire and Smoke Resistant Damper / Air Transfer Grilles

Describes our range of intumescent grilles for doors, walls, ducts, floors and ceilings together with co-ordinating, fully automatic smoke control damper assemblies.

Specialised Fire Resistant Door Hardware

Describes our range of special purpose accessories for fitting to door assemblies without compromising the fire/smoke performance. Includes letterplate assemblies, wide angle security viewer, high impact edge protector, concealed door closer protection kits and lock, latch and hinge protection kits.

Georgia Pacific

Describes our unique engineered component system for high performance fire door assemblies for the 90 and 120 minute market.

Copies of these brochures are available by calling **01626 834252** or downloading them from our website **www.lorientuk.com**





worldwide reputation



Fire and Smoke – Life Threatening Forces

On average **322 people are killed and 9,748 are injured*** in fires each year in the UK alone. Many of the casualties are attributable to breathing the toxic products of combustion from a remote fire.

Fire and smoke also cause extensive damage to building fabric and contents. **£2.52 billion*** per annum is the estimated total of fire-related losses. The majority of these deaths, injuries and losses occur in buildings where fire and smoke protection measures have been inadequate.



Design Needs and Regulatory Requirements

When fire breaks out in a building the threat is twofold. Firstly, there is the fire itself and the hot smoke generated in the immediate vicinity. Secondly, there is cold smoke which will spread rapidly through the building, threatening people and property some distance from the fire. The Building Regulations take both these threats into account, and supporting documents give criteria for how they can be managed. Details can be found in Approved Document B (England & Wales), Technical Booklet E (N Ireland) and Technical Handbook Section 2 (Scotland).

The Regulations require large buildings to be divided into smaller fire and smoke resistant 'compartments', to reduce the risk of damage to the building as a whole and also to save lives in the case of a fire. Building a fire resistant wall or floor to make a compartment is relatively simple. However, building design becomes much more complex when the compartments need to be linked in some way – essential to make the building usable. Every time an aperture is cut into one of the compartment boundaries (for example, to install a door in a fire resistant wall, or to pass ductwork through a wall or ceiling) the aperture must be filled with something that will preserve the fire and smoke integrity of the compartment. That's the role of Lorient's products – to work with the surrounding elements of the building to preserve the integrity of the fire and smoke resistant compartments. Our fire and smoke seals can be fitted into fire rated doors; our glazing products can be fitted into doors, screens or fire rated partitions; and our air transfer grilles can be installed into doors, walls and ducts.

The Regulatory Reform (Fire Safety) Order 2005 also gives requirements for fire and smoke performance in certain buildings. Please refer to our specific guide 'Common Sense Solutions for Acoustic, Smoke and Fire Containment' for more information.

Fire and smoke protection products must be tested to prove their performance, and indeed, separate tests are required for fire and smoke. Our products are all extensively tested, and our test reports are freely available on request. Just call our Technical Services team on **01626 834252**.

Relevant Requirements

Fire and Smoke:

The requirements for fire and smoke containment with regard to 'means of escape' are contained in the following documents:

- Approved Document B (England and Wales), Technical Booklet E (N. Ireland), Technical Handbook Section 2 (Scotland);
- BS 476: Section 31.1: 1983: Methods for measuring smoke penetration through doorset and shutter assemblies;
- BS 476: Pt.22: 1987: Methods for determination of the fire resistance of non-loadbearing elements of construction;
- BS EN 1634-3: 2004: Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. Smoke control test for door and shutter assemblies;
- BS 8214: 2008: Code of practice for fire door assemblies;
- BS EN 1634-1: 2014: Fire resistance and smoke control tests for door, shutter and, openable window assemblies and elements of building hardware. Fire resistance tests for doors, shutters and openable window;
- BS 9999: 2008: Code of practice for fire safety in the design, management and use of buildings.

Smoke Protection

- **BS 476: Pt. 31.1: 1983 (British Standard)**
"Methods for measuring smoke penetration through door sets and shutter assemblies". This standard is a method of test only and does not specify any performance requirements to be achieved under the test. These are detailed in other publications such as BS 9999 and Approved Document B.

*Source: Communities and Local Government Website 2015.

Sound Containment and Other Considerations

Wherever noise influences human activity, effective acoustic sealing is essential. Whether preserving the confidentiality of discussions in a private office or doctor's surgery, or reducing noise from adjacent rooms in hotels; preservation of privacy is paramount. Legislation is now in place giving guidelines for acoustic performance of door assemblies in a number of situations.



Design Needs and Regulatory Requirements

Approved Document E to the Building Regulations (England and Wales) now gives specific acoustic performance requirements for door assemblies in a number of situations. Please refer to page 12 for more information.

Acoustic Containment is also covered in Section 5 of the Scottish Technical Handbooks and Technical Booklets G and G1 to the Building Regulations (Northern Ireland).

Relevant Standards

The Standards below refer to seals for doors:

- **BS EN ISO 10140-2: 2010: (British, European and International Standard)**
Measurement of sound insulation in buildings and of building elements. Part 3 – laboratory measurement of airborne sound insulation of building elements.
- **BS EN ISO 717-7: 1997: Acoustics (British, European and International Standard)**
Rating of sound insulation in buildings and of building elements. Part 1 – airborne sound insulation.
- **Building Bulletin 93: Acoustic Design of Schools (BB 93)**
Building Bulletin 93 provides a framework for the acoustic design of schools in support of the Building Regulations. It is the normal way of meeting Requirement E4 of Approved Document E.

Other Standards and Requirements

Accessibility

- **BS 8300: Design of Buildings and Their Approaches to Meet the Needs of Disabled People (British Standard)**
BS 8300 gives guidance on good practice in the design of domestic and non-domestic buildings and their approaches, allowing them to be conveniently used by disabled persons.

Approved Document M to the Building Regulations (England and Wales), section 4 of the Scottish Technical Handbooks, and Technical Booklet R to the Building Regulations (Northern Ireland) relate to accessibility for all persons entering and using buildings. These Documents specify the size and location for glazed panels in doors in various situations, in order to promote safety and accessibility. Visual contrast on the leading edge of doors is also included, as are opening and closing forces for ease of door operation, threshold height and door width requirements.

- **Safety and Impact Resistance**

Approved Document N to the Building Regulations (England and Wales) and Technical Booklet V to the Building Regulations (Northern Ireland) give guidance and requirements affecting safety in use for glass, particularly impact resistance. A distinction is drawn between glass which is fixed and that which moves (as in doors).

Independent Quality and Performance Accreditation

Three independent accreditation schemes exist that are particularly relevant to fire seals and smoke seals. Their purpose is to set benchmark quality and performance requirements, which go beyond simply passing a single fire or smoke test. In addition, these schemes monitor ongoing production. Audits are carried out to ensure that the quality and performance specifications of the originally tested items are properly maintained.

Our commitment to these independent approvals demonstrates ongoing responsibility and accountability for the performance of the company's products, undertaken at the highest possible level. It provides assurance to customers and specifiers that the products have not only been successful in the appropriate laboratory tests, but they will also be fully serviceable and operational to the same level, for many years to come.

CERTIFIRE

CERTIFIRE is an accredited independent product conformity scheme operated by Exova Warringtonfire Certification Limited.



CF184/CF185
CF201/CF202
CF219/CF325
CF327/CF330
CF341/CF136
CF5179
CF564

As part of the CERTIFIRE schedule, products are required:

- to add minimal resistance to opening and closing;
- to meet the requirements of BS 9999 when tested for smoke leakage according to BS 476 Section 31.1: 1983, even after an endurance test of 100,000 opening and closing cycles;
- to maintain consistent seal quality according to the disciplines of a recognised quality assurance scheme, for example BS EN ISO 9001: 2008;
- to prove long term performance under a variety of service conditions;
- to be permanently marked so they can be easily identified.

In addition, under CERTIFIRE schedule TS35 the manufacturing process is subject to more thorough auditing, and more stringent production controls are required on the part of the manufacturer. Products submitted for CERTIFIRE approval must also now initially undergo more extensive pressure, expansion and humidity testing than in the past, along with a defined fire test to either BS or EN standards. These measures serve to ensure that only products demonstrating a consistently high quality and proven performance carry the CERTIFIRE marque.

UL

UL is a global independent safety science company that tests a diverse range of products; representative samples of a product must be tested and meet UL's stringent requirements to carry the marque. These requirements are based primarily on UL's published and nationally recognised Standards for Safety. Backed by more than a century of proven safety science expertise, businesses, consumers and regulatory authorities around the world recognise the trusted rigour and technical excellence of UL. Lorient is proud to have achieved the UL mark on many of its products.



British Board of Agrément

BBA approvals provide independent assurance for the designer, specifier and end-user as to the 'fitness-for-purpose' of building products.



To achieve this accreditation, our seals underwent a comprehensive appraisal, conducted over a two year period. This verified that:

- contribution to fire protection and smoke control meets regulatory requirements;
- the seals meet the requirements of the relevant British Standards when they are fitted to single leaf, double leaf, single swing, double swing, latched and unlatched doors;
- the seals are durable (an extensive survey of actual installations is undertaken periodically);
- the seals are easy to install and maintain;
- materials of appropriate quality are used in manufacture;
- manufacture is carried out under the disciplines of a recognised quality assurance scheme, for example, BS EN ISO 9001: 2008.

Rigorous audits of the manufacturer's procedures are conducted regularly. It is also a condition of BBA approval that a complete re-appraisal of the relevant products is carried out at maximum, 3 year intervals. Our seals have successfully completed this review process on each occasion since the original approval was awarded.

Note: CERTIFIRE and BBA accreditations achieved by Lorient apply to the mainstream range of sodium silicate-based acoustic, smoke and fire seal products and some non-intumescent acoustic and smoke seals. However, all our products are designed and manufactured to the same high levels of fitness-for-purpose, under the disciplines of BS EN ISO 9001: 2008.

IFC

In 2008 we were awarded IFC certification on a range of our seals, making us the first seal manufacturer to receive this endorsement.



IFC Certification Ltd is a UKAS approved and internationally recognised provider of third party certification services. We were awarded this certification having met the requirements of the SD13 schedule for Penetration and Linear Gap seals on a number of fireseal and combined smoke and fire seal products.

Acoustic, Smoke and Fire Seals for Door Assemblies

Doors must have gaps between the leaves and the frame and between the bottom of the door and the floor. These gaps allow the door to operate; however, they also allow the passage of sound, smoke and fire. The Lorient solution is to fit a seal system which properly located and secured, prevents the passage of sound, smoke and fire; and helps the efficient energy management of a building.

Such a system would typically comprise:

- **Intumescent Seals** fitted into the head and jambs of the door frame or alternatively into the top and sides of the door leaf itself. In the event of fire intumescent seals expand to 5 – 10 times their original size, sealing the gaps around the door and providing an effective barrier to fire and hot smoke.
- **Cold Smoke Seals** which seal the gaps around the door – including the threshold – when the door is closed. They provide a permanent barrier to the passage of cold smoke and also provide useful thermal or acoustic insulation.

We manufacture products for all four sides of single doors and also for the meeting stiles of double doors. Our range centres on a unique collection of seals, which can provide the highest standard of protection against sound (Approved Document E); smoke at all temperatures and fire (Approved Document B); while offering low frictional resistance for ease of door operation (Approved Document M). Furthermore, our seals are tested for air tightness under BS 476: Pt. 31.1: 1983 – so will make a positive contribution to thermal containment. Our acoustic, smoke and fire seals are tested for durability with many achieving over 1,000,000 cycles on a full-size door assembly without failure.

Intumescent Material

The intumescent material used in the mainstream range of our seals is sodium silicate based. This material has been chosen for several reasons:

- it has been proven in many hundreds of fire tests, world-wide;
- it's renowned for its comprehensive spread of performance characteristics;
- it has demonstrated outstanding consistency, reliability and durability.

Finishes

All our intumescent seals are available in a standard range of colours, some of which have been selected to harmonise with commonly specified timbers. Many seals are available with a woodgrain or metallic finish; a perfect complement to any project.

Selection from Product Range

We offer a choice of fire seal only and combined fire and smoke seal profiles. For optimum acoustic, smoke and fire protection, our DS or Finesse™ seal is always recommended (see page 8). Other profiles are also available.

Acoustic and Smoke Seals

Where fire doors have an intumescent sealing system providing protection against fire and hot gases, smoke seals can be retro-fitted to provide protection against cold smoke and noise pollution. Our Batwing® seal for example is an ideal retro-fit product.

Threshold (Door Bottom) Seals

We can also supply a range of seals to provide protection against cold smoke transferring to an adjacent compartment at the threshold.

Threshold seals are also essential for effective acoustic containment.

Please refer to pages 10 and 11 for more details.

Test Evidence

Our acoustic, smoke and fire seals have been tested in accordance with BS 476 Pts 20/22: 1987 and BS 476 Pt 31.1: 1983 on a complete range of fire door configurations; single leaf, double leaf, single acting, double acting, latched and unlatched. Smoke seals have also been tested for acoustic performance in accordance with BS EN ISO 140-3: 1995.

Third Party Accreditation

Lorient acoustic, smoke and fire seals are British Board of Agrément and CERTIFIRE approved (CF330/CF341/CF5179) for use on timber-based fire door assemblies. We also have IFC and UL certification on a range of our seals.

Acoustic, Smoke and Fire Seals

Our DS and Finesse™ seals offer the ultimate in acoustic, smoke and fire protection with the added benefit of thermal containment too. Their unique design means that whichever way around the product is installed, the seal can always be fitted in the correct place, maintaining the integrity of the acoustic and smoke seal at the ironmongery points.

DS and Finesse™ Seals

- Superior acoustic performance meeting the requirements of Approved Document E.
- Successfully tested for fire and smoke performance in accordance with BS 476: Pt.22: 1987, BS 476: Pt.31.1: 1983 and BS EN 1634-1: 2008 (Approved Document B).
- Exceptionally low frictional resistance for ease of door operation (Approved Document M).
- Successfully tested for air tightness under BS 476: Pt.31.1: 1983 – this makes a positive contribution to thermal containment between spaces within a building, as well as for external doors.
- Highly durable – has achieved over 1,000,000 opening and closing cycles on a full size door assembly.
- A choice of sizes to cover both 30 and 60 minute applications.
- Available in standard lengths of 1m and 2.1m. Other lengths to special order.



DS Seal

- Available in a range of standard colours, with black fins – to blend or contrast with the doorset as required. White fins are also available (please ask for details).
- Its unique shape allows the product to be stacked, ensuring minimal storage space and protection of the fins.



Finesse™ Seal

- Available in a range of standard colours, plus woodgrain and metallic finishes for superior aesthetics.
- Its transparent fin construction provides a virtually invisible fitted product – ideal for upgrading doorsets in heritage projects.



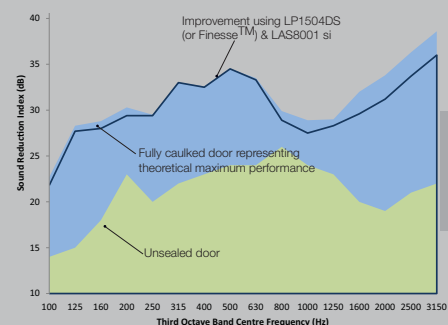
These seals feature integral antimicrobial protection

Acoustic Performance

Acoustically tested in accordance with BS EN ISO 10140-2: 2010. Tests were undertaken on a typical FD30S door assembly, in conjunction with the LAS8001 si drop seal. The sealing system performed to 31dB Rw (see improvement in graph on right).

Weighted Sound Reduction (Rw): 31dB

Typical Architectural Solid Core Door

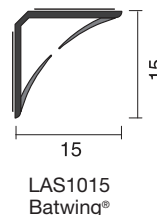
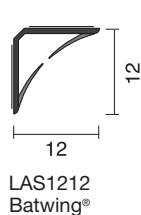
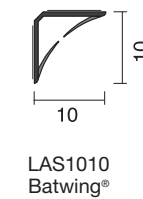
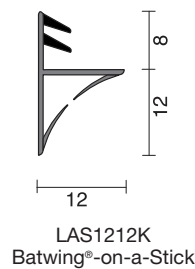


Acoustic and Smoke Seals

Our Batwing® acoustic and smoke seal minimises the opening and closing resistance of the door leaf due to its patented and unique, curved elastomeric fins. These also help to ensure ongoing performance and durability in service.

Curved Fin Batwing® Seal

- Excellent acoustic performance – its symmetrical design ensures fins are always in contact with two surfaces of the door leaf (Approved Document E).
- Curved fins allow easier door operation (Approved Document M).
- Proven smoke performance from ambient up to 200°C.
- Highly durable – has achieved over 1,000,000 opening and closing cycles on a full size door assembly.
- Strong self-adhesive backing tape for fixing – tested on many surfaces including MDF and powder coated steel.
- Available in a range of colours including white, cream, silver, grey, light brown, dark brown and black.
- Available in standard lengths of 1m and 2.1m. Other lengths to special order.
- Min / max gap size required: 3mm / 4mm.



Single Batwing®



LAS1206
Single Batwing®

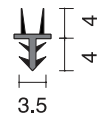


LAS1007
Single Batwing®

Firtree™ Seal

A highly effective acoustic seal, which also provides additional cold smoke protection around the perimeter of fire rated doors.

- Smoke seal material: Elastomeric fins.
- Available in standard lengths of 1m and 2.1m.
- Available in black and white.
- Min / max gap size 3mm / 4mm and 6mm.



LAS1011
Firtree™



These seals feature integral antimicrobial protection

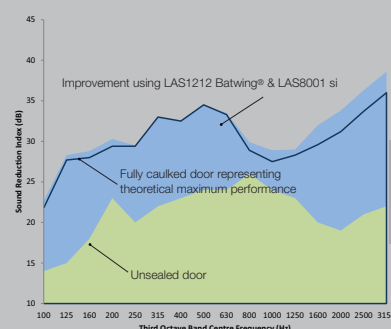


Acoustic Performance

Acoustically tested in accordance with BS EN ISO 10140-2: 2010. Tests were undertaken on a typical FD30S door assembly, in conjunction with the LAS8001 si drop seal. The sealing system performed to 31dB Rw (see improvement in graph on right).

Weighted Sound Reduction (Rw): 31dB

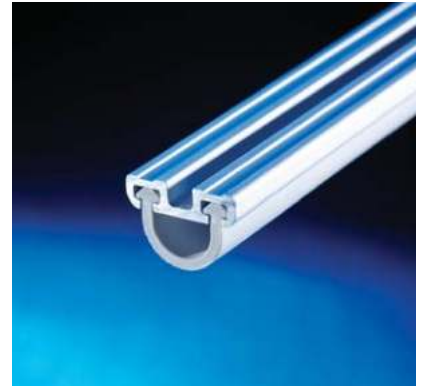
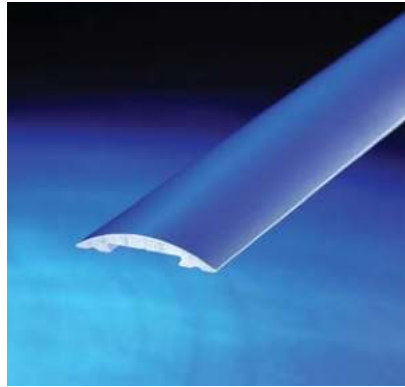
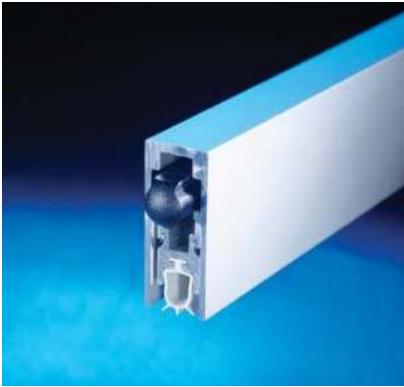
Typical Architectural Solid Core Door



Drop Seals, Door Bottoms and Threshold Plates

Threshold sealing is essential for effective sound and smoke containment. We offer a choice of automatic, concealed and face-fixed drop seals suitable for use with fire rated doors.

These seals lift clear of the floor as soon as the door is opened by a few millimetres. The most effective acoustic system teams a drop seal or door bottom, with a threshold plate.



LAS8001 si

- Medium duty drop seal.
- Has a high efficiency mechanism which lifts the seal clear of the floor as soon as the door is opened by a few millimetres.
- Tested under the conditions of BS EN 1634-1: 2008. Tested for acoustic performance in accordance with BS EN ISO 10140-2: 2010.
- Also available face-fixed and heavy duty drop seals.

LAS4001

- Medium duty threshold plate.
- Used in conjunction with door bottom seals prevents rain, draught, and smoke penetration.
- Available in silver or bronze anodised aluminium. Special colours can be supplied using a powder coated finish for additional aesthetics.
- Also available in larger sizes.

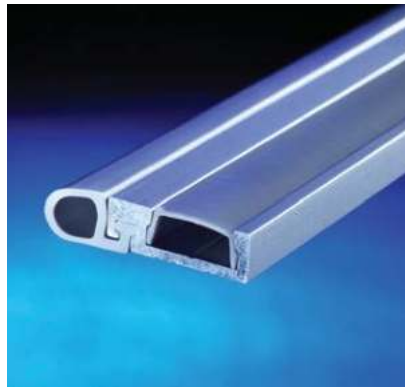
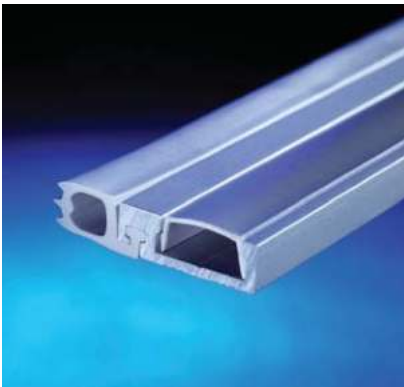
LAS3001

- A door bottom seal ideal for acoustic and smoke containment.
- Tested in accordance with BS EN ISO 10140-2: 2010.
- Use with practically any threshold plate.



Perimeter Seals

We provide numerous options for sealing the gap between the door and frame, and for meeting stiles of double doors. Lorient architectural perimeter seals are designed to offer exceptional acoustic and smoke containment.



LAS7001 si

- A slim-line acoustic and smoke perimeter seal featuring a silicone gasket.
- Superior acoustic performance - tested in accordance with BS EN ISO 10140-2: 2010.
- Meets the smoke leakage performance requirements of BS 9999 when tested in accordance with BS 476: Pt.31.1: 1983.
- Easily installed without removing the door.



LAS7002 si

- A slim-line acoustic and smoke perimeter seal featuring a silicone gasket.
- Superior acoustic performance - tested in accordance with BS EN ISO 10140-2: 2010.
- Meets the smoke leakage performance requirements of BS 9999 when tested in accordance with BS 476: Pt.31.1: 1983.



LAS7003 si

- A slim-line perimeter seal that is designed to be compressed between the door and the stop when the door is closed, thus compensating for warped or unevenly hung doors.
- Tested in accordance with BS EN ISO 10140-2: 2010.
- Meets the smoke leakage performance requirements of BS 9999 when tested in accordance with BS 476: Pt.31.1: 1983.w



Acoustic Sealing Systems for Door Assemblies

Approved Document E to the Building Regulations (England and Wales) gives specific acoustic performance requirements for door assemblies in a number of situations.

In “dwelling-houses, flats and rooms for residential purposes” (Requirement E1), a minimum acoustic performance of 29dB Rw is required.

Clauses 2.26, 4.20 and 6.6 of the Document read:

“Ensure that any door has good perimeter sealing (including the threshold where practical), and a minimum mass per unit area of 25kg/m² or a minimum sound reduction index of 29dB Rw (measured according to BS EN ISO 10140-2: 2010 and rated according to BS EN ISO 717-1: 1997). The door should also satisfy the Requirements of Building Regulations Part B – Fire safety.”

Approved Document E also covers acoustic conditions in schools. Requirement E4 states:

“Each room or other space in a school building shall be designed and constructed in such a way that it has the acoustic conditions and the insulation against disturbance by noise appropriate to its intended use.”

Section 8 of Document E recognises Building Bulletin 93, “The Acoustic Design of Schools” as an Approved Document, and the normal way of satisfying Requirement E4.

This document gives “performance standards for airborne sound insulation between circulation spaces and other spaces used by students – minimum sound reduction index Rw”:

“All spaces except music rooms 30dB, music rooms 35dB”

It’s therefore now essential to take into account the requirements of Approved Document E when specifying and installing sealing systems for door assemblies.

Our seals are rigorously tested and proven to achieve acoustic ratings up to 36dB Rw. Tests were conducted in accordance with BS EN ISO 10140-2: 2010 and ASTM-E413-94.

Our acoustic sealing systems provide excellent resistance to airborne sound, significantly improving the acoustic attenuation of the door assembly (door leaf, frame and seals). Further information can be found in our ‘Acoustic Sealing Systems for Door Assemblies’ brochure.

Acoustic Test Evidence

Documented test evidence is required to verify the acoustic performance of a door assembly.

Comprehensive tests to BS EN ISO 10140-2: 2010 have been carried out to establish airborne sound insulation performance of Lorient architectural seals. The majority of which have been tested using our own brand new state-of-the-art acoustic transmission suite, which features the latest Brüel & Kjær sound measurement technology.

Our test programmes have always been conducted on commercially available, full size door assemblies installed in everyday operating conditions. The published results have not been enhanced in any way by the use of small scale fixed panels, excessively thick ‘engineered’ specimens, or by using unrealistic closing forces to over-compress the seals under test. While site conditions will always vary in relation to laboratory conditions, our results are truly indicative of practical expectations.

Door assemblies were tested in three conditions:

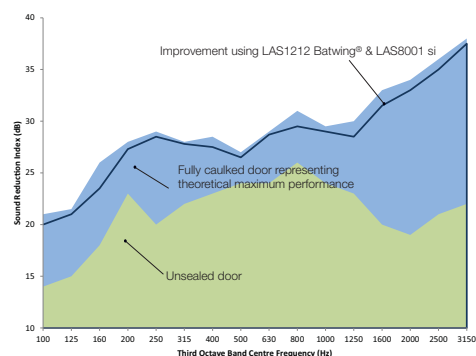
- without seals;
- with seals fitted;
- fully caulked – sealed with metallic lead-filled putty.

The results provide a measure of the improvement in sound insulation achieved by fitting door seals, in comparison with a door without seals, and what could theoretically be achieved with a fully caulked door.

It should be noted that traditional brush style smoke seals will not contribute significantly to the acoustic performance of the door assembly. Compression or blade-type seals, such as our Batwing® or DS seal, have been proven to offer the optimum acoustic solution.

The graph below shows indicative sound curves over a range of frequencies. Actual sound curves for individual seals are available on request.

High Performance Acoustic Door Construction



Sample Recommended Acoustic Solutions

Many more solutions are available, please contact our Technical Services team for further information.

Acoustic Solutions for Fire Rated Doors 30 Minutes

LP1504DS, LAS8001 si & LAS4002
Single Leaf / Single Swing

31dB ^{Rw} _{STC}



Acoustic Solutions for Fire Rated Doors 60 Minutes

LP1504DS & LAS8001 si
Single Leaf / Single Swing

35dB ^{Rw} _{STC}



Acoustic Solutions for Non-Fire Rated Doors

LAS1212, LAS8001 si & LAS4002
Single Leaf / Single Swing

31dB ^{Rw} _{STC}



High Performance Sealing Solutions for Specialist Doors

LAS1010, LP1504DS, LAS1016 & LAS4010
Single Leaf / Single Swing

43dB ^{Rw} _{STC}



Fire Resistant Glazing Systems

Our range of fire resistant glazing systems can be used to specify and manufacture glazed doors, screens and partitions, providing from 30 to 120 minutes protection. A wide range of components has been developed and tested under the conditions of BS 476 Pt 20/22: 1987. Please contact our Technical Services team on **01626 834252** for full information.



System-36 PLUS

System-36 PLUS is a flexible U-shaped glazing gasket designed for 30 minute fire resistant doors and screens. When using approved glass types (please refer to CF5060 for the full range of glass types) it provides up to 60 minute fire resistance for doors and screens.

- Each size variant features a unique colour on the spine for easier identification.
- Available to suit different thicknesses of glass from 5mm to 23mm.
- Supplied coiled in a box so it's easily dispensed and cut to length, avoiding wastage in off-cuts.
- Suitable for use with a range of standard fixing beads.
- Flexible enough to be fitted to curved corners and circular vision panels.



Flexible Figure 1

FF1 (Flexible Figure 1) is designed for use with glazed apertures in 30 minute fire resistant doors.

- Comprises a pair of bead applied intumescent strips.
- Flexible, quick and easy to install.
- Available in a choice of colours.
- Suitable for use with a variety of fire resistant glass types.
- Unique design which enables tolerances between door, bead and glass thicknesses to be accommodated.

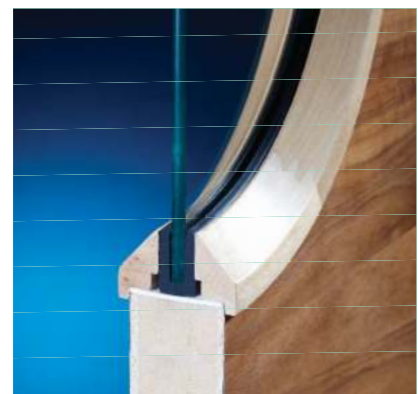


RF1™

RF1™ is a versatile new bead-applied glazing system for 60 minute fire resistant doors and screens.

- Comprises a pair of bead applied intumescent glazing seals and an intumescent liner.
- Premium aesthetics – the caps are the only visible elements when fitted – and are available in a variety of colours to harmonise with the door.
- For use with pins which are discreet and quick to fix or alternatively secure with screws.
- Unique design which enables tolerances between door, bead and glass thicknesses to be accommodated.





System-321®

System-321 is the complete glazing solution for 30 minute fire resistant doors.

- A unique clip-together glazing system.
- Supplied as a complete pack of product, it contains everything required to glaze one aperture in a FD30 door leaf simply, safely and efficiently.
- A choice of sizes, bead finishes and glass types is offered.

System-321

Three steps, two minutes, one system

System-90 PLUS

System-90 PLUS is designed for 60 minute fire resistant doors and screens. When using a suitable door and screen construction (such as Georgia-Pacific system for high performance fire door assemblies) it provides 90 minute fire resistance. 120 minute fire resistance can be attained only when a suitable door construction is used.

- Comprises a U-shaped PVC profile containing an intumescent core, an intumescent liner and beads of wood or metal.
- Tested with a range of glass types.

System-63Ø

System-63Ø is a variant of System-36 PLUS which has been designed for use in circular apertures in 60 minute fire resistant doors.

- A cost-effective solution to the problem of incorporating circular glazed apertures.
- Use with an intumescent liner.
- Easy to fit.

Specialised Fire Resistant Door Hardware

Fire rated doors often need additional items of hardware installed to make them work – locks, letterplates, door closers, security viewers – as well as products to protect them from damage. Our range of door hardware items offer security and protection against smoke and fire.



Edge Protector

Some doors suffer severe damage to the leading edge due to heavy volumes of pedestrian and wheeled traffic. Our DS Door Edge Protector offers superior combined protection against damage, fire, smoke, sound and germs. Fire resistance is provided for 30 to 60 minute applications in accordance with BS 476 Pt.22: 1987.

- Manufactured from heavy duty, impact resistant vinyl material to suit nominal door thicknesses of 44mm and 54mm (also incorporates a margin for inevitable variations up to 62mm).
- Radius or square edges are available, in a wide range of finishes and colours.
- Matching items can be supplied, including push plates, kick plates and door panels.

Patented design applies

Intumescent Protection Kits

A range of protection kits are available for hinges, locks and latches, and concealed door closers. These kits provide fire resistance of 30 or 60 minutes when fitted to full size door assemblies and tested in accordance with BS EN 1363: Pt. 1: 1999 and BS 476: Pt. 20/22: 1987.

- **Hinge Protection Kits**
Highly recommended for use on all 60 minute and some 30 minute door assemblies.
- **Lock and Latch Protection Kits**
We provide a universal lock kit which enables family groups of mortise locks to be incorporated in fire resistant door leaves, as well as a lock kit which is available to suit larger lock sizes.
- **Concealed Door Closer Protection Kits**
When installing a concealed door closer in a fire resistant door leaf it is advisable to fit this with an Intumescent Protection Kit.



Fire and Smoke Resistant Letterplates

We supply two fire and smoke resistant letterplate models:

- The **Firemaster letterplate** has been tested in accordance with the principles of BS 476: Pt. 20/22: 1987 and provides in excess of 30 minutes fire resistance. It has also been acoustically tested, and will not cause any significant reduction to the overall acoustic performance of a solid core fire door.
- The **High Performance letterplate** has been tested in accordance with BS 476: Pt. 22: 1987 and provides more than 60 minutes fire protection.

Both letterplates have been tested in accordance with BS 476: Pt. 31: 1: 1983. They are also offered in a range of sizes to suit different door thicknesses, optional security features are available, including **security cowl**, **security latch** and **postbox**.



CF219/CF255

*Manufactured by Paddock Fabrications Ltd. (CF219) and Royde and Tucker Ltd. (CF255).



Wide Angle Viewer

This one-way viewer allows occupants to see callers without opening the door. The intumescent liner allows the viewer to be fitted to a 30 minute fire resistant door without compromising fire safety.

- Has a wide viewing angle of 160°.
- Available in silver, white, gold, black and bronze.

Intumescent Sealant

We produce a wide range of intumescent sealant for use where other intumescent material is impractical.



Fire and Smoke Resistant Dampers / Air Transfer Grilles

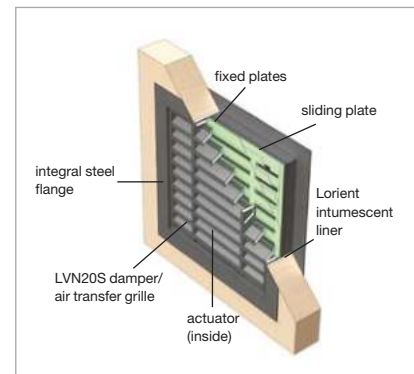
Designers recognise the need for a building to be well ventilated for the health and comfort of its occupants. Our range of intumescent dampers / air transfer grilles and automatic smoke control systems provide protection against fire, hot gases and cold smoke.

Smoke Control Systems

Intumescent air transfer grilles are extremely effective at resisting the movement of hot gases and fire, but will still allow the passage of smoke at room temperatures. With this in mind, we developed a range of automatic damper / shutter assemblies for use with our intumescent air transfer grilles.

A fail-safe motorised actuator, linked to a smoke control system (pictured right) will close the shutter plates as soon as smoke is detected.

The Talkback system can control up to sixteen assemblies and provides sophisticated remote monitoring, fail-safe, auto-testing and fully automatic reset.



LVN20 and LVN25 Non-vision Style Grilles

These non-vision style grilles provide up to 60 minutes resistance to fire and hot smoke in doors. The LVN20S variant can incorporate the automatic cold smoke shutter assembly and offer protection against cold smoke. The angled slats ensure complete visual privacy, therefore no cover grilles are required. The two piece construction is designed to accommodate different door thicknesses.



CF564

LVV40 and LVC40 Vision Style Grilles

These dampers / grilles provide up to 60 minutes resistance to fire and hot smoke in doors, walls and ducts. They have no moving parts and are resistant to clogging. The LVV40S variant can incorporate the automatic cold smoke shutter. A choice of cover grilles is also available.



CF564

LVH44 and LVHC44 High Performance Vision Style Grilles

These dampers / grilles are suitable for use in a variety of applications and can be used in horizontal, vertical, internal or external applications to provide up to 180 minutes resistance to fire and hot smoke. The LVH44S variant can incorporate the automatic cold smoke shutter. Also available is the **LVH54 intumescent fire damper for ducts** which meets the requirements of BS ISO 10294 Part 5.



CF564

additional information

Fitting Instructions

Comprehensive fitting instructions are included with each consignment and are also available to download from our website www.lorientuk.com.

Guarantee of Origin

Each production batch of Lorient seals is laser engraved unobtrusively on the edge of the profile with the Lorient name and a code reference. This ensures that the product and details of its production can be traced should the need arise.

Unidentifiable substitute products should never be accepted.

Technical References

Lorient is quality assured under the disciplines of BS EN ISO 9001: 2008.

Accreditation to this standard is a guarantee that we conduct our business to the complete satisfaction of our customers with regard to design solutions, manufacturing consistency and management procedures.

In addition, this internationally recognised standard for quality management generates customer confidence and eliminates the risk of poor performance.

Regular audits of our company procedures are undertaken by qualified BSI staff to ensure ongoing compliance with all aspects of the standard.

Lorient has attained BS EN ISO 14001: 2004 accreditation for environmental management, making us the first seal manufacturer to have achieved this important award.

This internationally recognised standard represents that we have demonstrated our commitment to responsible environmental behaviour, including prevention of pollution, control and reduction of waste, and ongoing monitoring and improvement of its environmental performance. Achieving ISO 14001 is just one part of our ongoing commitment to operate in a sustainable way.

Lorient's products can also make an important contribution to sustainability within a building's construction: our acoustic, smoke and fire seals can additionally provide thermal containment benefits, aiding efficient energy management in a building.



BS EN ISO 9001: 2008
Certificate No. Q6104



BS EN ISO 14001: 2004
Certificate No. EMS 541906

Trade Associations

Lorient is proud to be a member of the following associations:



Made in Britain

The Made in Britain marque was created to help consumers, both at home and abroad, identify and choose British made goods.



Intellectual Property

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We are committed to continually enhancing and improving our product range. We reserve the right to change product specifications from time to time without prior notice. E&OE.

Continuing Professional Development Seminars

We offer three fully-accredited CPD seminars. Impartially presented by knowledgeable speakers, the seminars are structured to be technically informative, and give practical advice.



Performance Door Design: The Basics of Sound Reduction

Effective acoustic containment helps to improve the quality of the built environment, preserving privacy as well as excluding unwanted noise. With changing regulations, it's essential to be informed of the relevant requirements and the implications for door assemblies.

Our acoustic CPD seminar covers:

- the nature of sound, examining airborne transmission of sound;
- regulatory requirements and British Standards that relate to acoustic performance;
- test procedures and interpretation of test reports;
- effective design of door assemblies for acoustic performance, including door construction and the influence of sealing systems;
- design conflicts between acoustic performance, durability and ease of operation of the door;
- independent accreditation.

The Role and Performance of Fire and Smoke-Resisting Door Assemblies

The importance of fire and smoke resisting door assemblies is illustrated by the **322 annual deaths** in fire tragedies in the UK alone. Apart from the human toll, **property losses each year approach £2.52 billion***.

Our fire and smoke containment CPD seminar covers:

- hard facts concerning deaths, injuries and property damage caused by fire and smoke;
- regulatory requirements for fire and smoke resisting door assemblies;
- the nature and behaviour of smoke;
- effective design of door assemblies for smoke containment, including the threshold gap;
- design conflicts between fire containment, smoke containment, durability and ease of operation of the door;
- independent accreditation.

The Regulatory Reform (Fire Safety) Order 2005 and its implications for fire doors

The RRO consolidated 70 pieces of legislation; shifted responsibility for fire safety management; abolished the Fire Safety Certificate; established the Fire Risk Assessment and created major change in legal liability.

Our RRO CPD seminar covers:

- an overview of the RRO;
- product solutions;
- the dangers of fire and smoke;
- the importance of fire doors – including installation and maintenance.

Our CPD materials have been independently verified and certified by the RIBA as CPD approved. A certificate for 1 hour's CPD will be provided, which contributes to Continuing Professional Development requirements.

If you're interested in booking a seminar, please contact our Marketing department or e-mail cpd@lorientuk.com.

*Source: Communities and Local Government Website 2015.

We continue to lead the way in research and development: as a company we have over 37 years' experience, so our experts are well equipped to listen, help and advise you on your acoustic, smoke and fire containment needs.

comprehensive support

Technical Services

We're happy to provide specialist advice on acoustic, smoke and fire protection for refurbishment and new build projects. If you need assistance, you can call our Technical Services team.

Alternatively, we can arrange a site visit to get a clearer idea of your needs and how we can help you. We also provide copies of test reports and samples where needed and can give guidance on how best to meet Building Regulations and Standards.

Customisation

If you have a particular requirement which isn't covered by the applications in this brochure, we may be able to supply an existing non-standard item, or even develop a customised solution for you.

Fire Door Inspection Services

We offer a professional and expert fire door inspection service. Our Certificated Fire Door Inspectors are fully qualified under the Fire Door Inspection Scheme (FDIS); and have been assessed by Exova Warringtonfire, an independent third party. Certificated to carry out the inspection of your building's fire doors and prepare a detailed survey and report on the condition and function of the fire doors on your premises.

Acoustic Search Tool

The acoustic search tool on our website gives you quick and easy access to a wide range of tested acoustic sealing systems on a variety of popular door construction & configurations.

www.lorientuk.com/acousticsearch

Testing Services

Lorient's Testing & Technical Services centre offers a variety of specialist testing services including a state-of-the-art Acoustic Transmission Suite for manufacturers and designers of assemblies including doorsets, windows, glazing systems and door hardware to name but a few. Whether you're investigating new materials, or developing new or existing products, right through to durability testing and benchmarking performance – our team of experts will support you throughout the process.

Call our Technical Services team on

01626 834252

www.lorientuk.com



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