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 has 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 more than 30 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 indicative fire test furnace is particularly popular, giving customers real insight into their own products’ performance and helping to save substantial testing costs.

Always keen to keep raising the bar, we are committed to gaining third party certification for our products whenever a suitable scheme exists. Many products hold CERTIFIRE certification, and we also hold approvals from both the BBA and IFC.

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 to minimise waste.

In addition to our UK operation, we have sister companies in Australia, Hong Kong, North America and the Middle East – which means we’re always up to date with the latest product developments and industry thinking from around the world. We can also provide support for clients with their projects, from start to finish, wherever they are in the world.

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03/11
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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.

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.

integrity® Architectural Seals
Describes our range of integrity® Architectural Seals for acoustic, smoke and weather containment. Includes elastomeric seals, threshold (door bottom) seals, threshold plates and ramps, sweep action brushes, perimeter seals and automatic threshold 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.

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
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**integrity® Architectural Seals**
Describes our range of integrity® Architectural Seals for acoustic, smoke and weather containment. Includes elastomeric seals, threshold (door bottom) seals, threshold plates and ramps, sweep action brushes, perimeter seals and automatic threshold seals.

**Acoustic Sealing Systems for Door Assemblies**
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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 (in 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 door to make a compartment is relatively simple. However, building design becomes much more complex with non-metallic leaves. Legislation is now in place giving guidelines for doctor’s surgery, or reducing noise from adjacent rooms in hotels; preservation of privacy is paramount. Legislation is now in place giving guidelines for fire and smoke protection measures have been inadequate.

Fire Safety
- BS 476: Pt. 20/22: 1987 (British Standard) “Methods for determination of the fire resistance of non-loadbearing elements of construction”. BS 476: Pt 20 sets out the general principles of the fire resistance tests, while BS 476: Pt 22 details the specific requirements for testing non-loadbearing elements of a building’s construction, such as doors, glazed screens and partitions. These standards are methods of test only and the performance requirements to be achieved when tested in accordance with the Standards are stated in other publications, such as BS 9999 and Approved Document B.
- BS 8214: 1990 (British Standard) “Code of practice for fire door assemblies with non-metallic leaves”. Sets out recommendations for the specification, design, construction, installation and maintenance of fire door assemblies with non-metallic leaves.
- BS 9999 (British Standard) “Code of practice for fire safety in the design, management and use of buildings”.

Smoke Protection
- BS 476: Pt. 31: 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.

Sound Containment and Other Considerations

Other Standards and Requirements
- Accessibility
  - BS 8300: Design of Buildings and Their Approaches to Meet the Needs of Disabled People (British Standard) BB 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).
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.

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).

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 Q and G1 to the Building Regulations (Northern Ireland).

Relevant Standards

The Standards below refer to seals for doors:

- BS EN ISO 140-3: 1995 (British, European and International Standard)
  “Rating of sound insulation in buildings and of building elements. Part 3 – Laboratory measurement of airborne sound insulation of building elements”. This is the combined British, European and International Standard method of test for determining the acoustic performance of a door assembly and can be used to quantify the effectiveness of a sealing system on any given door construction.

- BS EN ISO 717-1: 1997 (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 64 of Approved Document E.

Accessibility

- BS 8300: Design of Buildings and Their Approaches to Meet the Needs of Disabled People (British Standard)

Relevant Standards

- BS 8300: Design of Buildings and Their Approaches to Meet the Needs of Disabled People (British Standard)
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. 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.

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 in the head and jaws 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 fire 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 fireseal 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 also available.

Acoustic and Smoke Seals

Where fire doors have an intumescent sealing system providing protection against fires and hot gases, smoke seals can be retro-fitted to provide protection against cold smoke and noise pollution. Our Balflown® seal for example is an ideal retrofit 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) for use on timber-based fire
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.

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Third Party Accreditation

Lorient acoustic, smoke and fire seals are British Board of Agrément and CERTIFIRE approved (CT330/0763/41) for use on timber-based fire
Our DS and Finesse™ seals offer the ultimate in acoustic, smoke and fire protection with the added benefit of thermal containment too. Their unique and patented 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 hinge points.

**Acoustic and Smoke Seals**

**DS and Finesse™ Seals**

- Superior acoustic performance meeting the requirements of Approved Document E.
- Exceptionally low frictional resistance for ease of door operation (Approved Document M).
- Successfully tested for air tightness under BS 476: Pt.31.1: 1985 – this makes a positive contribution to thermal containment.
- Highly durable – has achieved over 1,000,000 cycles on a full size door assembly.
- A choice of sizes to cover both 3.0 and 6.0 minute applications.
- Available in standard lengths of 1m and 2.1m. Other lengths to special order.

**Finesse™ Seal**

- Available in a range of standard colours, plus woodgrain and metallic finishes for superior aesthetics.
- Its unique shape allows the product to be stacked, ensuring minimal storage space and protection of the fins. Registered and patented designs apply.

**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.

**Acoustic Performance**

Acoustically tested in accordance with BS EN ISO 140-3:1995. Tests were undertaken on a typical FD30S door assembly, in conjunction with the IS8010 si automatic threshold seal. The sealing system performed to 31dB Rw (see improvement in graph on right).

**Weighted Sound Reduction (Rw): 31dB**

**Sound Transmission Class (STC): 31dB**

**Typical Architectural Solid Core Door**

![Graph showing Sound Reduction and Sound Transmission Class](image)

**Acoustic and Smoke Seals**

**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 M).
- 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 clear, white, cream, silver, grey, light brown, dark brown and black.

**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.**

**Typical Architectural Solid Core Door**

![Graph showing Sound Reduction and Sound Transmission Class](image)

**Acoustic Performance**

Acoustically tested in accordance with BS EN ISO 140-3:1995. Tests were undertaken on a typical FD30S door assembly, in conjunction with the IS8010 si automatic threshold seal. The sealing system performed to 31dB Rw (see improvement in graph on right).

**Weighted Sound Reduction (Rw): 31dB**

**Sound Transmission Class (STC): 31dB**

**Typical Architectural Solid Core Door**

![Graph showing Sound Reduction and Sound Transmission Class](image)
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 clear, 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.

Registered and patented designs apply.

**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.

**Acoustic Performance**
Acoustically tested in accordance with EN ISO 140-3:1995. Tests were undertaken on a typical FD30S door assembly, in conjunction with the IS8010 si automatic threshold seal. The sealing system performed to 31dB Rw (see improvement in graph on right).
- Weighted Sound Reduction (Rw): 31dB
- Sound Transmission Class (STC): 31dB


**integrity® Architectural Seals**

The integrity® Architectural Seals range has been designed to ensure outstanding protection against sound, smoke, rain, fire, light, draughts, dust, and even insects. Manufactured to professional quality specifications; integrity® seals have been developed particularly for use in commercial, industrial and public buildings.

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

### IS8010 si
**Automatic Threshold Seal**
- A medium duty, concealed automatic threshold seal.
- This seal lifts clear of the floor as soon as the door is opened by a few millimetres.
- Acoustically tested in accordance with BS EN ISO 140-3: 1995.
- Meets the smoke leakage performance requirements of BS 9999 when tested in accordance with BS 476: Pt.31.1: 1983.
- Tested for up to 60 minutes under the conditions of BS 476: Pt.20/22: 1987 without compromising fire performance.
- Highly durable – has achieved over 1,000,000 cycles on a full size door assembly.

### IS3015 si
**Threshold Seal**
- A medium duty, threshold seal.
- Acoustically tested in accordance with BS EN ISO 140-3: 1995.
- Available in silver anodised aluminium with black flexible insert.
- Highly durable – featured seals have achieved over 1,000,000 cycles on a full size door assembly, without degradation.

### IS4010
**Threshold Plate**
- A low profile threshold plate – only 6mm high.
- Prevents rain, draught and smoke penetration when used in conjunction with a threshold seal.
- Vinyl feet to provide cushioning and levelling on uneven surfaces.

### IS7025 si
**Perimeter Seal**
- A slim-line, face-fixed acoustic and smoke perimeter seal featuring a silicone bulb.
- Meets the smoke leakage performance requirements of BS 9999 when tested in accordance with BS 476: Pt.31.1: 1983.
- Highly durable – has achieved over 1,000,000 cycles on a full size door assembly.
- Easily installed without removing the door.

### IS5010
**Sweep Action Brush**
- A hard-wearing sweep action brush seal.
- Suitable for use with low profile threshold plate.
- Available in silver or bronze anodised aluminium, black nylon brushes.

### IS9050 and IS9070
**Finger Guard Seals**
- Provides protection on both sides of the door by using the IS9050 on the hinge knuckle side and the IS9070 on the hinge cavity side.
- Highly durable – has achieved over 200,000 cycles on a full size door assembly.
- Available in silver or bronze anodised aluminium. A range of gasket colours are available on request. Registered and patented designs apply.
integrity® Architectural Seals

The integrity® collection also includes a range of perimeter seals which seal the gap between the door and frame or at meeting stiles of double doors; as well as a number of speciality seals.

IS7025 si
Perimeter Seal
- A slim-line, face-fixed acoustic and smoke perimeter seal featuring a silicone bulb.
- Meets the smoke leakage performance requirements of BS 9999 when tested in accordance with BS 476: Pt.31.1: 1983.
- Highly durable – has achieved over 200,000 cycles on a full size door assembly.
- Available in silver or bronze anodised aluminium. A range of gasket colours are available on request.

IS5010
Sweep Action Brush
- A hard-wearing sweep action brush seal.
- Suitable for use with low profile threshold plate.
- Available in silver or bronze anodised aluminium, black nylon brushes.

IS9050 and IS9070
Finger Guard Seals
- Provides protection on both sides of the door by using the IS9050 on the hinge knuckle side and the IS9070 on the hinge cavity side.
- Highly durable – has achieved over 200,000 cycles on a full size door assembly.
- Available in silver or bronze anodised aluminium. A range of gasket colours are available on request.

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

**Approved Document E** 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."

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 140-3:1995 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 establish the airborne sound insulation performance of Lorient and Integrity® acoustic seals have been carried out at Sound Research Laboratories Ltd, a UKAS approved testing laboratory.

Our test programmes have always been conducted on commercially available, full sized 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.

### Acoustic Solutions for Fire Rated Doors

<table>
<thead>
<tr>
<th>Sample Recommended Acoustic Solutions</th>
<th>30 Minutes</th>
<th>60 Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP1504DS &amp; IS8010 si</td>
<td>30 dB Rw</td>
<td>33 dB Rw</td>
</tr>
<tr>
<td>Single Leaf / Single Swing</td>
<td>STC</td>
<td>STC</td>
</tr>
<tr>
<td>LP1004DS x 2, IS7025 si &amp; IS8010 si</td>
<td>33 dB Rw</td>
<td>36 dB Rw</td>
</tr>
<tr>
<td>Single Leaf / Single Swing</td>
<td>STC</td>
<td>STC</td>
</tr>
</tbody>
</table>

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

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**Note:** This sealing system has been tested with specialist acoustic unglaazed doors from Hazlin of Ludlow Ltd.
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 140-3: 1995 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.

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Sample Recommended Acoustic Solutions

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

Note: This sealing system has been tested with specialist acoustic unglazed doors from Hazlin of Ludlow Ltd.
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
System-36 consists of a flexible U-shaped intumescent gasket used with a range of standard fixing beads, for use in 30 minute fire resistant doors and screens.
- Available in sizes to suit different thicknesses of glass from 4mm to 23mm.
- Supplied on a reel so it’s easily dispensed and cut to length without wastage in off-cuts.
- Flexible enough to be fitted to curved corners and circular vision panels.

System-630
System-630 is a variant of System-36 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.

Flexible Figure 1
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.

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.
- Patented design applies three clips, two minutes, one aperture.

System-90 PLUS
System-90 PLUS is designed for 60 minute fire resistant doors and screens. Contact our Technical Services team for more information. 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 when a suitable door only construction is used.
- Comprises a U-shaped PVC profile containing an intumescent core and an intumescent liner, and beads of wood or metal.
- Tested with a range of glass types.
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**

Consists of a flexible U-shaped intumescent gasket used with a range of standard fixing beads, for use in 30 minute fire resistant doors and screens. Available in sizes to suit different thicknesses of glass from 4mm to 23mm. Supplied on a reel so it's easily dispensed and cut to length without wastage in off-cuts. Flexible enough to be fitted to curved corners and circular vision panels.

**System-63Ø**

A variant of System-36 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.

**Flexible Figure 1**

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.

**System-321®**

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. Patented design applies.

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**Third Party Accreditation**

All Lorient glazing channels have been approved under the Certifire independent appraisal scheme operated by Exova Warringtonfire. Our products have been extensively tested with many different fire resisting glass types, in door leaves and timber or composite framed screens including shared transoms and mullions.
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.

Patent design applies

Intumescent Protection Kits

A range of protection kits is 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 476 Pt. 1: 1990 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’s 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: 1990. 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.

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 160º.
- 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 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. 20:1982, 22:1987 and provides in excess of 30 minutes fire resistance. It is also 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 of 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.

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- Has a wide viewing angle of 160º.
- 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.

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.

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 LVH44 intumescent fire damper for ducts which meets the requirements of BS ISO 10294 Part 5.

Fire and Smoke Resistant Dampers / Air Transfer Grilles

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
It’s important to always use a product that can be clearly identified. Where possible our sealing systems carry identification, please refer to individual product range brochures for further details.

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.

Trade Associations
Lorient is a member of the Glass and Glazing Federation Fire Resistant Glazing Group (GFF) and is a founder member of the Intumescent Fire Seals Association (IFSA). Lorient is also a member of the British Woodworking Federation (BWF) (Associate); the Architectural and Specialist Door Manufacturers Association (ASDMA); the Guild of Architectural Ironmongers (GAI); and is also an Approved Supplier to the BWF CERTIFIRE Fire Door and Doorset Scheme.

Lorient is also an Approved Supplier to the GGF Fire Resistant Glazing Group and Glazing Federation.

Intellectual Property
© 2011 Lorient Polyproducts Ltd – this brochure is protected by copyright and neither the drawings nor the text may be reproduced or transmitted in any form without prior consent from Lorient. Lorient products identified in this brochure are protected by patents and design registrations in Great Britain and other countries.

We are committed to continually researching and improving our product range. We reserve the right to change product specifications from time to time without prior notice. BS608.
Fire and Smoke Resistant Dampers / Air Transfer Grilles

Smoke control systems provide protection against fire, hot gases and cold smoke. Designers recognise the need for a building to be well ventilated for the health and comfort of its occupants.

ACOUSTIC, SMOKE AND FIRE CONTAINMENT SYSTEMS

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

Non-vision Style Grilles

LVN20 and LVN25

A fail-safe motorised actuator, linked to a smoke control system (pictured right) will auto-test and fully automatic reset. The Talkback system can control up to sixteen assemblies and provides integral steel sliding plate lining. The LVH44S variant can incorporate the automatic cold smoke shutter. Also, the internal cold smoke shutter can utilise the LS-3204 smoke detector. In addition, this internationally recognised standard is a guarantee of poor performance. Customer confidence and eliminates the risk of poor performance.

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We continue to lead the way in research and development. As a company we have over 30 years’ experience, so our experts are well equipped to listen, help and advise you on your acoustic, smoke and fire containment needs.

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.

Both Lorient seminars are certified by the Construction CPD Certification Service and each is valued at one hour. Comprehensive notes are provided and attendance certificates awarded.

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

The Role and Performance of Fire and Smoke-Resisting Door Assemblies
The importance of fire and smoke resisting door assemblies is illustrated by the 465 annual deaths in fire brigades 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.

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.

Web Support
We have a comprehensive, user-friendly website which features our extensive range of products, CAD drawings and details on the services we offer. Our entire collection of brochures can be downloaded, as can copies of certification and specification texts.

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