certifire

TECHNICAL SCHEDULE

TS40

FIRE RESISTING LINEAR GAP SEALING SYSTEMS

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CONTENTS

ISSUE STATUS AND AMENDMENT

i. The current, controlled copy of this Technical Schedule is held and viewable by means of the company QMS or company website. Electronic or paper copies may be considered valid if the issue number matches that shown on the current controlled copy of the master document.

ii. The Warringtonfire Quality Manager is responsible for managing the development, control and distribution of all system documentation. The QMS document index on the company server controls all documents and maintains the master copies.

iii. Technical Schedules shall be reviewed at an interval not exceeding four years (or as mandated by any regulatory requirement if more frequent). The review shall involve and be undertaken and approved by personnel who are recorded as competent in the given area.

iv. Any amendments to this Technical Schedule will be identified on the amendment page.

v. Following amendments, the Technical Schedule will be given a new issue number and date and a Warringtonfire document confirmation email will be sent to all relevant clients advising them of the update.

vi. The updated Technical Schedule will be held in the QMS folder on the company server and also on the company website.

vii. To ensure that a permanent record is available of all amendments, Warringtonfire maintains a file of all superseded documents which is held indefinitely in order to allow Warringtonfire to determine the past requirements of the scheme at any time.

AMENDMENT PAGE

To ensure that each controlled copy of this Technical Schedule contains a complete record of amendments, the Amendment Page is updated and issued with each set of revised/new pages of the document. Details of the procedures for amending this document are given in section 1 of this document.

Amendment			**Discard**		**Insert**	
No	**Date**	***Sections Changed**	**Page(s)**	**Issue no**	**Page(s)**	**Issue no**
1	06.07.15	All- Updated to new format, also to include references to BS EN ISO/IEC 17065 and ISO 9001. Management Council renamed to Impartiality Committee	All	Sept. 2005	All	2
2	22.4.16	Name change from WCL to Exova (UK) Limited trading as Warrington Certification	All	2	All	3
3	29.08.19	Name change to Warringtonfire Testing and Certification Limited	All	3	All	4
4	03.03.21	Sections 1, 2, 4 and 11, to reflect additional relevant standard(s) as appropriate routes to evidencing performance. Foreward and issue status updated. Header amended on all pages to include original issue date	All	4	All	5
5	24.11.21	Change of registered office	All	5	All	6

TECHNICAL SCHEDULE (TS 40)

FIRE RESISTING LINEAR GAP SEALING SYSTEMS

FOREWARD

This Technical Schedule (TS) forms part of a series of controlled documents which comprise the Certifire product certification scheme. It has been prepared in accordance with the requirements of BS EN 17065 for product certification bodies. In addition to this Schedule the other controlled documents relevant to CERTFIRE certification are:

- TS00 - General Requirements for Certifire Certification of Passive Fire Protection Products/Systems
- Certifire Quality Manual
- Certificates in the CF000 series, together with any appendices
- Documentation from the manufacturer

This Certifire scheme aims to provide confidence that installed products used in construction will be capable of achieving the designated reaction to fire performance and also to demonstrate compliance with performance specifications.

The requirements herein may from time to time be varied by the issue of one or more 'Certifire Notices' issued as controlled documents to certificate holders.

1 SCOPE

1.1 This Schedule defines the technical requirements, via testing and appraisal, for linear gap sealing systems such that they will maintain their performance in terms of Integrity and Insulation (as relevant) and as defined by BS 476: Part 22, EN 1366-4 or 1364-4.

1.2 Certification will apply to a linear gap sealing system type or 'family' based upon a given material and construction type. When a company manufactures, or fabricates linear gap sealing systems from more than one material then a separate certificate will be required for each type.

1.2 This schedule shows the acceptable limits of interchange ability and provides a test protocol and appraisal method for products which require a wider field of applicability than that tested.

2 REFERENCES

EN Standards are published by National Standards body and may include National Annexes. For Certifire purposes the definitive version of any EN standard is that published by BSI and prefixed 'BS EN'.

References contained in TS 00 may also be relevant.

EN ISO 9001	Quality management systems -- Requirements
BS EN ISO/IEC 17065	General requirements for bodies operating product certification systems
EN 13501-2	Fire classification of construction products and building elements. Classification using data from fire resistance tests, excluding ventilation services
BS 476: Part 22	Methods for determination of the fire resistance of non-loadbearing elements of construction
EN 1366-4	Fire resistance tests for service installations - Part 4: Linear joint seals
EN 1364-4	Fire resistance tests for nonloadbearing Elements Part 4: Curtain walling — Part configuration

3 DEFINITIONS

As this document is to be used in conjunction with the General Requirements for Certifire certification, additional references may be contained within the General documentation.

Linear Joint/Gap Seal

These are designed to maintain the fire resistance at structural discontinuities which may occur between and within fire separating elements. There are several types of Linear Gap Seal, which may be classified by their construction: with/without backing material, with/without cover material, with/without support material.

3 CLASSIFICATION

Certification of linear gap sealing systems in accordance with the requirements of this Schedule is designed to provide approvals intended to satisfy performance classifications based upon BS 476: Part 22, EN 1366-4 or 1364-4.

5 CERTIFICATION REQUIREMENTS

5.1 Certification in accordance with this Schedule is considered on the basis of the requirements given in 'General Requirements for Certifire Certification of Passive Fire Protection Products/Systems'

6 FIRE TEST REQUIREMENTS

6.1 There is no prescribed fire resistance test programme to be conducted to gain the minimum level of approval required by Certifire. For certification covering a wider field of application, beyond that allowed by this Schedule, it is necessary to test with the specific application required. These requirements are given in Annex B.

6.2 The submitted test evidence shall be sufficient to cover each required configuration in accordance with Annex B to obtain full approval for the linear gap sealing systems. A claim of No Performance Determined (NPD) for Fire Resistance characteristics is not possible.

7 NON FIRE TEST REQUIREMENTS

Smoke

7.1 If a claim of smoke resistance is made for the system, accurate records shall be provided of any smoke release during the fire resistance test(s). In the absence of such records, no claim will be allowed. Excessive smoke release will be considered a smoke resistance failure.

8 APPRAISAL PROCEDURES

8.1 Appraisal of the linear gap sealing systems shall be in accordance with Annex B and be based upon information derived from appropriate tests as specified in Sections 5 and 6. The Certifire appraisal process and report will determine the scope of acceptability of the linear gap sealing systems in line with the appraisal rules and using the available test evidence as discussed above.

9 LABELLING AND CONFORMITY

9.1 The detailed scope of the certification will be given in the Certifire Certificate and in Certifire's Register of Approved Products. These will define the limitations applying to the use of the products/system, including the suitable levels of fire resistance.

9.2 Where individual products are Certifire approved, the products shall be despatched with a data sheet that includes the details specified below and that explains the principle of the approval and how it only applies to any additional materials. This data sheet shall give clear fixing instructions for the product and make general recommendations as to how much of the material/product should be used.

9.3 Where possible, the products shall be clearly marked so that the scope of certification can be easily established. The marking shall include:

- The Certifire name
- The certificate number
- The manufacturers name
- The month and year of manufacture and/or batch code

Marking should be on each item. Where this is not possible the immediate packaging of the unit for sale shall be marked.

9.4 The scope of the certification of all seals will be identified in the issued certificate(s) and will be recorded in Certifire's "Register of Approved Products" and will indicate:

- The certificate number
- Manufacturer's name
- The fire resistance classification
- The field of application

9.5 The product shall be dispatched with a data sheet that explains clearly any special provisions needed for the product to provide its rating and which shall give clear fixing instructions for the products.

10 INSTALLATION

10.1 The certification will be invalid if the installation is not carried out in accordance with the fixing instructions issued by the manufacturer in the form of a datasheet, the contents of which will be agreed between the manufacturer and Certifire.

10.2 In addition to fixing instructions, the datasheet shall contain:

- The Certificate number
- Storage and handling provisions
- Contact details for Technical support

11 AUDIT PROCEDURES

11.1 The general audit procedures are given in 'General Requirements for Certifire Certification of Passive Fire Protection Products/Systems'. The following are the specific requirements for products covered by this Technical Schedule.

11.2 To ensure continuing compliance for the certificated end use, audit testing for fire performance shall be conducted at not more than three-year intervals.

11.3 The audit test shall be to BS 476: Part 22, EN 1366-4 or 1364-4, as appropriate, on a full-scale specimen. The precise design, size and configuration shall be as agreed by Certifire but related to the original test programme. Fire resistance tests conducted for other purposes may be accepted in lieu of audit tests at the certification body's discretion.

12 LONGEVITY CONSIDERATIONS

12.1 Evidence of ageing resistance is a requirement of this Technical Schedule for reactive products, that is those that depend on their expansion to provide the designed performance in the event of a fire. These tests may be performed at an appropriately accredited laboratory or by the manufacturer. Where the latter is the case, it is a requirement that Certifire be afforded the opportunity to attach tamper evident seals to the test equipment.

12.2 The test method described below is designed for seals that are to be used indoors in a normal atmosphere and requires that two sets of samples, A and B (three pieces per set), are independently selected from the same batch:

i) Set A is subjected to expansion tests as given in Annex A (or alternative agreed methods)

ii) Set B is subjected to the following ageing programme:

- Specimens stored at 5ºC for 4 hours at 80% Relative Humidity (R/H) then, within 20 minutes
- At 20ºC for 4 hours also at 80% R/H then, within a further 20 minutes
- At 40ºC for 16 hours at 50% R/H.
- Within 60 minutes, the cycle will start again at 5ºC and 80% R/H.

The whole process will continue for 21 days without interruption.

iii) the aged samples, Set B will be subjected to expansion tests as i) above

The comparative results of the 2 sets of samples will be noted.

A successful result will be such that the performance of Set A and Set B seals is within 20%.

ANNEX A

APPRAISAL PRINCIPLES

A1 General

A1.1 Testing shall be in accordance with the requirements given in the 'Regulations and Procedures pertaining to Certification' published by Certifire.

A1.2 It is the intention of this Annex, to provide a consistent approach to the Appraisal of linear gap seals.

A1.3 The expected outcome of the testing and appraisal process will be an approval giving the acceptable doorset types and/or constructions per fire resistance period. An example of a completed matrix is shown in Annex B of this Technical Schedule.

A2 Separating elements — Concrete or masonry

Variation	Comment
Decrease in thickness and/or density	Not acceptable

A3 Separating elements – Lightweight constructions

Variation	Comment
Decrease in thickness	Not acceptable.
Non standard elements	Constructions not defined in EN 1366-4 must be tested.
Change of linings	Acceptable for the standard constructions given in EN 1366-4 if they have an equivalent thickness and the lightweight construction (horizontal or vertical) has an equivalent or greater fire resistance.
Change in aperture framing	Not acceptable.
Change (density, thickness or type) of insulation material.	Not acceptable.

A4 Appraisal principles for generic seal types

A4.1 Bag/pillow seals

Seal depth

Variation	Comment
Increase in seal depth	Acceptable.
Decrease in seal depth	Not acceptable.

Aperture

Variation	Comment
Increase in size	Increase in area up to 50 % acceptable. In the case of floors suitable support must be demonstrated.
Decrease in size	Acceptable where there is sufficient room for installation of the seal.
Change of shape	Acceptable

Size of bag/pillow

Variation	Comment
Change in size	Acceptable.

Seal material

Variation	Comment
Change of infill material	Not acceptable.
Change of bag/pillow outer material	Not acceptable.

Configuration

Variation	Comment
Change of packing density (volume fill)	Not acceptable.
Change of position within thickness of separating element	Distance of seal from exposed face in wall/floor cannot be reduced from that tested.
	Distance of seal from exposed face in concrete/masonry wall/floor can be increased from that tested.

Orientation

Variation	Comment
Change of orientation	Test evidence from wall applications cannot be used to support floor applications and vice-versa.

A4.2 Board seals

Seal depth

Variation	Comment
Increase in seal depth	Acceptable.
Decrease in seal depth	Not acceptable.

Aperture

Variation	Comment
Increase in size	Increase in area up to 50 % acceptable within a standard lightweight supporting construction (when tested at 3 m by 3 m).
	When tested within a standard concrete or masonry supporting construction the increase in area up to 50 % is applicable only to concrete or masonry constructions.
Decrease in size	Smaller acceptable where there is sufficient room for installation of the seal.

Board and coating

Variation	Comment
Change of board material	Not acceptable.
Increase in board thickness	Acceptable (Supporting evidence for framing systems/fixings must be provided).
Decrease in board thickness	Not acceptable.
Increase in board density	Acceptable.
Decrease in board density	Not acceptable.
Change of coating material	Not acceptable.
Change in coating thickness	Not acceptable.
Change of perimeter/joint adhesive(s)	Not acceptable

Configuration

Variation	Comment
Change of position within thickness of separating element.	Distance of seal from exposed face in wall/floor cannot be reduced from that tested.
	Distance of seal from exposed face in concrete/masonry wall/floor can be increased from that tested.
Increase of air gap (if used)	Acceptable.
Decrease of air gap (if used)	Not acceptable.
Change of internal support frames	Not acceptable*
Variation in seal shape	Acceptable only without additional board to board joints.

*** May be acceptable based on proven calculation method.**

Orientation

Variation	Comment
Change of orientation	Floor seal generally more onerous than wall and may be used as supporting evidence for a wall mounted application. Test evidence from wall applications cannot be used to support floor applications.

A4.3 Foam seals

Seal depth

Variation	Comment
Increase in seal depth	Acceptable.
Decrease in seal depth	Not acceptable.

Aperture

Variation	Comment
Increase in size	Increase in area up to 50 % acceptable within a standard lightweight supporting construction (when tested at 3 m by 3 m).
	When tested within a standard concrete or masonry supporting construction the increase in area up to 50 % is applicable only to concrete or masonry constructions.
Decrease in size	Smaller normally acceptable but consider overall size when services are fitted - sufficient room for installation. Seal/service area ratio should be maintained.

Seal material

Variation	Comment
Change of seal material	Not acceptable.

Configuration

Variation	Comment
Change of position within thickness of separating element	Distance of seal from exposed face in wall/floor cannot be reduced from that tested.
	Distance of seal from exposed face in concrete/masonry wall/floor can be increased from that tested.
Change of formwork	Not acceptable.

Orientation

Variation	Comment
Change of orientation	Floor seal generally more onerous than wall and may be used as supporting evidence for a wall mounted application. Test evidence from wall applications cannot be used to support floor applications.

A4.4 Mastic seals

Seal depth

Variation	Comment
Increase in seal depth	Acceptable.
Decrease in seal depth	Not acceptable.
Increase in backing material depth	Acceptable for Euroclass A1 and A2 materials.
Decrease in backing material depth	Not acceptable.

Aperture

Variation	Comment
Increase in size	Increase in area up to 50 % acceptable within a standard lightweight supporting construction (when tested at 3 m by 3 m).
	When tested within a standard concrete or masonry supporting construction the increase in area up to 50 % is applicable only to concrete or masonry constructions.
Decrease in size	Smaller normally acceptable but consider overall size when services are fitted - sufficient room for installation. Seal/service area ratio should be maintained.

Seal material

Variation	Comment
Change of mastic composition	Not acceptable.
Change of backing material	Not acceptable unless equivalent or greater reaction to fire and insulation performance.

Configuration

Variation	Comment
Change of position within thickness of separating element	Distance of seal from exposed face in wall/floor cannot be reduced from that tested.
	Distance of seal from exposed face in concrete/masonry wall/floor can be increased from that tested.

Orientation

Variation	Comment
Change of orientation	Floor seal generally more onerous than wall and may be used as supporting evidence for a wall mounted application. Test evidence from wall applications cannot be used to support floor applications.

A4.5 Mortar seals

Seal depth

Variation	Comment
Increase in seal depth	Acceptable.
Decrease in seal depth	Not acceptable

Aperture

Variation	Comment
Increase in size	Increase in area up to 50 % acceptable within a standard lightweight supporting construction (when tested at 3 m by 3 m).
	When tested within a standard concrete or masonry supporting construction the increase in area up to 50 % is applicable only to concrete or masonry constructions.
Decrease in size	Smaller acceptable where there is sufficient room for installation of the seal.

Seal material

Variation	Comment
Change of material	Not acceptable.

Configuration

Variation	Comment
Change of position within thickness of separating element	Distance of seal from exposed face in wall/floor cannot be reduced from that tested.
	Distance of seal from exposed face in concrete/masonry wall/floor can be increased from that tested.

Orientation

Variation	Comment
Change of orientation	Floor seal generally more onerous than wall and may be used as supporting evidence for a wall mounted application. Test evidence from wall applications cannot be used to support floor applications.

A4.6 Block seals

Seal depth

Variation	Comment
Increase in seal depth	Acceptable.
Decrease in seal depth	Not acceptable

Aperture

Variation	Comment
Increase in size	Increase in area up to 50 % acceptable within a standard lightweight supporting construction (when tested at 3 m by 3 m).
	When tested within a standard concrete or masonry supporting construction the increase in area up to 50 % is applicable only to concrete or masonry constructions.
Decrease in size	Smaller acceptable where there is sufficient room for installation of the seal.

Size of plug/block

Variation	Comment
Change in size	Acceptable.

Seal material

Variation	Comment
Change of material	Not acceptable.

Configuration

Variation	Comment
Change of position within thickness of separating element	Distance of seal from exposed face in wall/floor cannot be reduced from that tested.
	Distance of seal from exposed face in concrete/masonry wall/floor can be increased from that tested.

Orientation

Variation	Comment
Change of orientation	Floor seal generally more onerous than wall and may be used as supporting evidence for a wall mounted application. Test evidence from wall applications cannot be used to support floor applications.

A4.7 Putty seals

Seal depth

Variation	Comment
Increase in seal depth	Acceptable.
Decrease in seal depth	Not acceptable

Aperture

Variation	Comment
Increase in size	Increase in area up to 50 % acceptable within a standard lightweight supporting construction (when tested at 3 m by 3 m).
	When tested within a standard concrete or masonry supporting construction the increase in area up to 50 % is applicable only to concrete or masonry constructions.
Decrease in size	Smaller normally acceptable but consider overall size when services are fitted - sufficient room for installation. Seal/service area ratio should be maintained.

Seal material

Variation	Comment
Change of material	Not acceptable.

Configuration

Variation	Comment
Change of position within thickness of separating element	Distance of seal from exposed face in wall/floor cannot be reduced from that tested.
	Distance of seal from exposed face in concrete/masonry wall/floor can be increased from that tested.
Decrease of air gap (if used)	Not acceptable.
Increase of air gap (if used)	Acceptable.

Orientation

Variation	Comment
Change of orientation	Floor seal generally more onerous than wall and may be used as supporting evidence for a wall mounted application. Test evidence from wall applications cannot be used to support floor applications.

ANNEX B

MATRIX

Typical Matrix of Approval for Linear gap seals

Wall Installations			
Product Name		**Ref :**	
Installed Thickness		**Type**	
Size / Density		**Fire Rating (min)**	
Joint Size	**Seal Dimension W x D**	**Integrity**	**Insulation**
Tested Substrate		**Substrate Thickness**	
Application Technique			
Additional Fixing Material		**Test Type**	
Maximum Gap Size		**Appearance**	
Resistance to Smoke			
Acoustic Rating			
Weather Capability			
Movement Capability			

Floor Installations			
Product Name		**Ref :**	
Installed Thickness		**Type**	
Size / Density		**Fire Rating (min)**	
Joint Size	**Seal Dimension W x D**	**Integrity**	**Insulation**
Tested Substrate		**Substrate Thickness**	
Application Technique			
Additional Fixing Material		**Test Type**	
Maximum Gap Size		**Appearance**	
Resistance to Smoke			
Acoustic Rating			
Weather Capability			
Movement Capability			

ANNEX C

PARTICIPATING ORGANISATIONS

BODIES AUTHORISED TO OPERATE CERTIFICATION TO THE PROVISIONS OF THIS SCHEDULE

Warringtonfire Testing and Certification Limited

THIS SCHEDULE IS RATIFIED BY MEMBERS OF THE WARRINGTONFIRE IMPARTIALITY COMMITTEE

Architectural and Specialist Door Manufacturers Association (ASDMA)
Association for Specialist Fire Protection (ASFP)
British Automatic Fire Sprinkler Association (BAFSA)
Chief Fire Officers Association (CFOA)
Construction Products Association (CPA)
Council for Aluminium in Buildings (CAB)
Door and Hardware Federation (DHF)
Department for Levelling Up, Housing and Communities (DLUHC)
Finishes and Interior Sector (FIS)
Fire Protection Association (FPA)
Glass and Glazing Federation (GGF)
Guild of Architectural Ironmongers (GAI)
Institute of Fire Prevention Officers (IFPO)
Institute of Fire Safety Manager (IFSM)
London Underground Limited (LUL)
National Police Chiefs Council/Police Crime Prevention Initiatives (Secured by Design)
Local Authority Building Control (LABC)
Warringtonfire (WF)

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