BS EN 15882-4:2012

BSI Standards Publication

Extended application of results from fire resistance tests for service installations

Part 4: Linear joint seals

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National foreword

This British Standard is the UK implementation of EN 15882-4:2012.

The UK participation in its preparation was entrusted to Technical Committee FSH/22/-/3, Fire resistance tests for fire penetration and seals.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Extended application of results from fire resistance tests for service installations - Part 4: Linear joint seals

Application étendue des résultats des essais de résistance au feu pour les installations de service - Partie 4 : Calfeutrements de joints linéaires

Erweiterter Anwendungsbereich der Ergebnisse aus Feuerwiderstandsprüfungen für Installationen - Teil 4: Abdichtungssysteme für Bauteilfugen

This European Standard was approved by CEN on 30 March 2012.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 15882-4:2012) has been prepared by Technical Committee CEN/TC 127 “Fie safety in buildings”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2012, and conflicting national standards shall be withdrawn at the latest by November 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

EN 15882 consists of the following parts:

— EN 15882-1, *Extended application of results from fire resistance tests for service installations — Part 1: Ducts*;

— prEN 15882-2, *Extended application of results from fire resistance tests for service installations — Part 2: Dampers*;

— EN 15882-3, *Extended applications of results from fire resistance tests for service installations — Part 3: Penetration seals*;

— EN 15882-4, *Extended application of results from fire resistance tests for service installations — Part 4: Linear joint seals*.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European standard specifies rules and prescribes the methodology for the preparation of extended application reports for linear joint sealing systems tested in accordance with EN 1366-4. The field of the extended application reports is additional to the direct field of application given in EN 1366-4. It may be applied to or based on a single test, or a number of tests, which provide the relevant information for the formulation of an extended application.

Mechanical metal seals are not part of the scope of this European Standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1363-1:1999, *Fire resistance tests — Part 1: General requirements*

EN 1363-2:1999, *Fire resistance tests — Part 2: Alternative and additional procedures*

EN 1366-4:2006+A1:2010, *Fire resistance tests for service installations — Part 4: Linear joint seals*

EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13501-2:2007+A1:2009, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN ISO 13943:2010, *Fire safety — Vocabulary (ISO 13943:2008)*

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 1363-1:1999, EN 1363-2:1999, EN 1366-4:2006+A1:2010, EN 13501-1:2007+A1:2009, EN 13501-2:2007+A1:2009 and EN ISO 13943:2010, and the following apply:

3.1
fabric seal
seal comprised of a woven fabric, usually glass cloth or similar, which may be used in a combination with other material, such as metal facings, etc. to provide a composite seal

3.2
foam seal
seal made from a one, two or three component expanding foam (expands during application), applied in-situ

3.3
joint depth
overall distance between the exposed and unexposed faces across the thickness of the separating element

Note 1 to entry: See Figure 1.

3.4
joint face framing
additional substrate incorporated between the supporting construction and the joint seal

3.5
joint width
distance between the two adjacent faces of the building element(s)

Note 1 to entry: See Figure 1.

3.6
mineral wool seal
seal comprised mostly or entirely of glass, stone, slag or ceramic wool, which is either faced/coated or non-faced/coated

3.7
mortar seal
seal comprising a cementitious or gypsum based compound together with other filler materials, usually mixed on site with water to achieve the required workability

3.8
movement joint
joint between adjacent building elements or within a building element designed to accommodate a degree of movement greater than ± 7,5% (such as deflection, thermal movement or seismic)

3.9
non-movement joint
joint between adjacent building elements or within a building element not designed to accommodate movement greater than ± 7,5% (such as those designed to accommodate construction tolerances or irregularities of fit)

3.10
seal depth
shortest distance between the exposed and unexposed surfaces of the seal

Note 1 to entry: See Figure 1.

3.11
seal width
width of the seal in the non-installed condition (for uncompressed solid seals, see Figure 1, detail A) or the width of the installed seal where it is equal to or different from the joint width (e.g. overlap) (see Figure 1, details B and C)

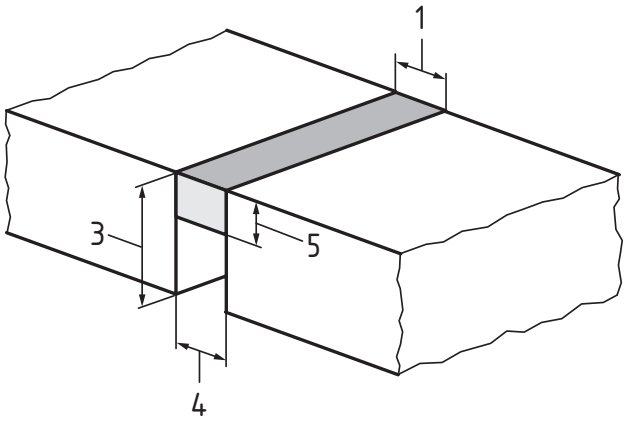
3.12
sealant seal
seal formed from materials such as acrylics, silicone, oil-based products (mastic, putty), foamed in-situ, normally in conjunction with a backing material and inserted into the joint

3.13
strip seal
pre-formed seal normally inserted into the joint and held in place by friction or by means of an adhesive

Note 1 to entry: Strip seals may also include impregnated or multi component (composite, laminated) seals such as a combination of foam tape with strips of intumescent material.

3.14
surface mounted strip
surface mounted seal applied over the joint to completely cover and overlap the joint and usually mechanically fixed to the surface of the building element

A



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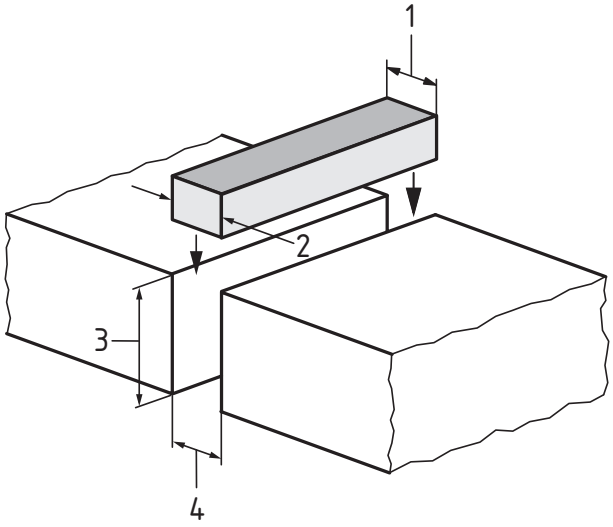

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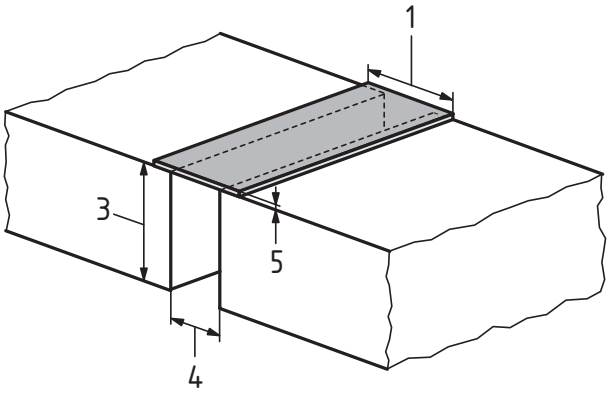

Key

1	Seal width
2	Direction of compression
3	Joint depth
4	Joint width
5	Seal depth
	Linear joint seal

Figure 1 — Description of seal depth, joint depth and joint width for different types of seals

Key

Joint face framing

Figure 2 — Examples for a joint face framing

4 Extended application principles

4.1 General

Due to the diverse nature of materials and constructions used to seal linear joints or construction joints in fire resistant separating elements, it has been necessary to separate the extended application principles into generic seal types. Permitted variations may be used alone or in combination, unless stated otherwise. Principles common to all generic seal types are given in 4.2. Principles and guidance relating to each specific generic joint type are given in Annex A of this European Standard.

Variables for each seal type which require consideration, are included in this report. These are as follows:

— separating element;

— joint width/seal width;

— joint depth/seal depth;

— seal position in relation to the exposed face;

— orientation (see EN 1366-4);

— whether the joint is a movement or non-movement joint.

Each sub-clause gives the possible variation and the rule relating to the variation.

The following rules are considered applicable to joint assemblies tested either with or without induced movement.

4.2 Principles common to all generic seal types

4.2.1 General

The rules given in the following sub-clauses are applicable to all generic linear joint seal types incorporated within Annex A, unless stated otherwise in the specific section.

4.2.2 Seal material (primary generic linear joint seal material as per Annex A)

Table 1 — Rules for variation in seal material

Variation	Rules
Change of material(s) comprising parts of the sealing system	Not permitted unless otherwise specifically stated in Annex A

4.2.3 Separating elements — Concrete or masonry

Table 2 — Rule for variations for concrete or masonry separating elements

Variation	Rules
Decrease in thickness and/or density	Not permitted
Increase in thickness and/or density	Permitted

4.2.4 Separating elements – Flexible constructions

Test results obtained in standard flexible constructions as detailed below can be applied to similar flexible constructions provided the construction is classified in accordance with EN 13501-2 and the rules in Table 4 are obeyed.

The standard supporting construction shall be in accordance with the provisions given in EN 1363-1, and subject to the following:

1) The wall shall be restrained only on the top and bottom edge.

2) The number and thickness of the gypsum board(s) shall be as given in Table 3.

3) A construction including insulation shall be used. The insulation material shall be mineral wool with a classification of A1 or A2 according to EN 13501-1. The density of the insulation shall be (45 ± 15) kg/m^3 for a desired fire resistance up to and including 60 minutes, and (100 ± 15) kg/m^3 for a fire resistance of more than 60 minutes. The thickness shall be such that the remaining gap between the board and the insulation is a maximum of 15 mm.

4) Steel studs of varying widths may be used to fit the flexible wall constructions defined in Table 3.

Table 3 — Standard flexible wall constructions

Nominal minimum overall thickness [a] (mm)	Thickness of gypsum board EN 520, Type F (mm)	Number of layers each side	Indicative fire resistance (min)
69 - 75	12,5	1	30
94 - 100	12,5	2	60
94 - 100	12,5	2	90
122 - 130	15	2	120

[a] The values given take into account the different stud widths available within the European construction market.

Test results obtained with flexible supporting constructions can be applied to concrete or masonry elements of a thickness equal to or greater than that of the element used in the tests.

The standard flexible wall construction does not cover sandwich panel constructions. Linear joints in such constructions shall be tested on a case-by-case basis.

Table 4 — Rules for variations for separating elements — Flexible constructions

Variation	Rules
Decrease in thickness	Not permitted
Increase in thickness	Permitted subject to rules governing the positioning of the seal within the thickness of the wall with respect to the exposed face
Change of wall lining material	Permitted if the lining has an equal or greater thickness, reaction to fire class and the alternative flexible wall construction has an equivalent or greater fire resistance.
Increase in wall lining thickness	Permitted
Decrease in wall lining thickness	Not permitted
Change in joint face framing (design, etc.)	Not permitted. A joint face framing is considered as being part of the linear joint seal. Tests without a joint face framing cover applications with joint face framing but not vice versa.
Change in joint face framing material	Permitted provided reaction to fire class, thickness and mechanical strength are equal or greater than tested.
Change of insulation material (density, thickness or type)	In the case where either no insulation material or an insulation material which is not in accordance with the specification in Table 3 is fitted within the wall construction, a joint face framing shall be used. The joint face framing shall be made from the same components and number of layers as those used in the construction of the tested wall i.e. studs and boards.

4.2.5 Seal depth

Table 5 — Rules for variations in seal depth

Variation	Rules
Increase in seal depth	Permitted
Decrease in seal depth	Not permitted

5 Extended application report — Contents of the extended application report

The extended application report prepared using this standard shall contain the following information:

a) the name and address of the issuing body;

b) the name and address of the sponsor;

c) the date of issue of the extended application report;

d) the unique reference number for the report;

e) summary of the report(s) that the extended application is based upon;

f) the proposed extended field of application of the test results and the justification for that extension;

b) reference to this European Standard;

g) classification of the modified construction in accordance with EN 13501-2;

h) the following statement:

“This extended application is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to the issuing body, the extended application will be unconditionally withdrawn and the sponsor will be notified in writing.

Similarly, the extended application is invalidated if the assessed construction is subsequently tested, since actual test data is deemed to take precedence over an expressed opinion."

Annex A
(normative)

Extended application principles for generic joint seal types

A.1 General rules

A general overview on the rules for various seal types are given in Table A.1. Rules specific to a particular type of seal are given in A.2.

Table A.1 — Overview on rules for various seal types

Seal type	Joint width		Material density		Configuration	
	Increase	Decrease	Increase	Decrease	Cross section shape of the joint	Position of the seal within the joint
Fabric seals	N	Y	Y[a]	N	Y	P
Foam seals	N	Y	Y	N	CS	P
Membrane forming coatings	N	Y	N	N	N	P
Mineral wool seals	MW	Y	Y	N	N	P
Mortar seals	N	Y	Y	N	CS	Y
Sealant/mastic/putty seals	SM	Y	N	N	CS	P
Strip seals	ST	Y	Y	N	N	P
Surface mounted strips	N	Y	N	N	Y	P

Y Permitted

N Not permitted

[a] Increased density due to change of fibre material is not permitted.

CS Permitted only if the area of adhesion remains the same or is increased

MW Interpolation within the tested range between the maximum and minimum nominal joint width is permitted provided the width to depth ratio and the degree of compression (%) is equal or higher.

P Distance of the seal from the exposed face in the wall/floor may not be reduced from that tested but may be increased for masonry/concrete walls/floors.

SM Interpolation within the tested range between the maximum and minimum nominal joint width is permitted provided the overall seal depth including the backing material is equal or higher.

ST Interpolation within the tested range between the maximum and minimum nominal joint width is permitted provided the width to depth ratio and the degree of compression (%) is equal or higher. Additionally, where intumescent materials are incorporated (e.g. composite strips) the width of the intumescent layers and the width of the foam infill layer(s) shall remain equal to that used in the test.

A.2 Specific rules

A.2.1 Backing material for sealant seals (reactive and non-reactive)

Table A.2 — Rules for backing material for sealant seals

Backing material	Rules
Polyethylene/polyurethane	May be replaced by glass wool, slag wool, stone wool or ceramic wool [a]
Glass wool	May be replaced by ceramic wool [a]
Stone wool	No change permitted
Increase in backing material depth	Permitted for Class A1 and A2 materials
Decrease in backing material depth	Not permitted
[a] The above rules relate to materials of the same or greater depth.	

A.2.2 Mineral wool seals

Table A.3 — Rule for mineral wool seals

Variation	Rules
Addition or change of encapsulation or facing material	Not permitted

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