



Fire assessment report

Assessment of Sika® Backer Rod Fire linear seals in
walls & floors




Client: Sika Services AG

Product: Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3

Job number: FAS190278 Revision: R1.0

Issue date: 23 October 2019 Expiry date: 31 October 2024

Amendment schedule

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R1.0	Issue: 23/10/2019	Reason for issue	Report issued to Sika Services AG for review and comment.		
			Prepared by	Reviewed by	Approved by
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Exova Warringtonfire rebranded to Warringtonfire on 1 December 2018. Apart from the change to our brand name, no other changes have occurred. The introduction of our new brand name does not affect the validity of existing documents previously issued by us.

Executive summary

This report documents the findings of the assessment undertaken to determine the likely fire resistance level (FRL) of various linear seals protected with Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 if tested in accordance with AS 1530.4:2014 and assessed in accordance with AS 4072.1-2005. The analysis conducted in Section 5 of this report found that the proposed variations are likely to achieve the FRLs shown in Table 1 and Table 2, if tested in accordance with AS 1530.4:2014 and assessed in accordance with AS 4072.1-2005.

Table 1 Assessment outcome for Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 in Rigid walls*

Sealant	Configuration	Linear seal width (mm)	Linear seal depth (mm)	FRL
SikaHyflex®-250 Façade	Double seal	7-51	0.5 x width	-/240/240
	Single seal on unexposed side	7-51	0.5 x width	-/240/180
	Single seal on exposed side	7-51	0.5 x width	-/240/120
Sikaflex® PRO-3	Single seal on unexposed side	7-51	0.5 x width	-/240/180
	Single seal on exposed side	7-51	0.5 x width	-/120/90

*Brickwork, concrete or aerated concrete with a density greater than 760 kg/m³

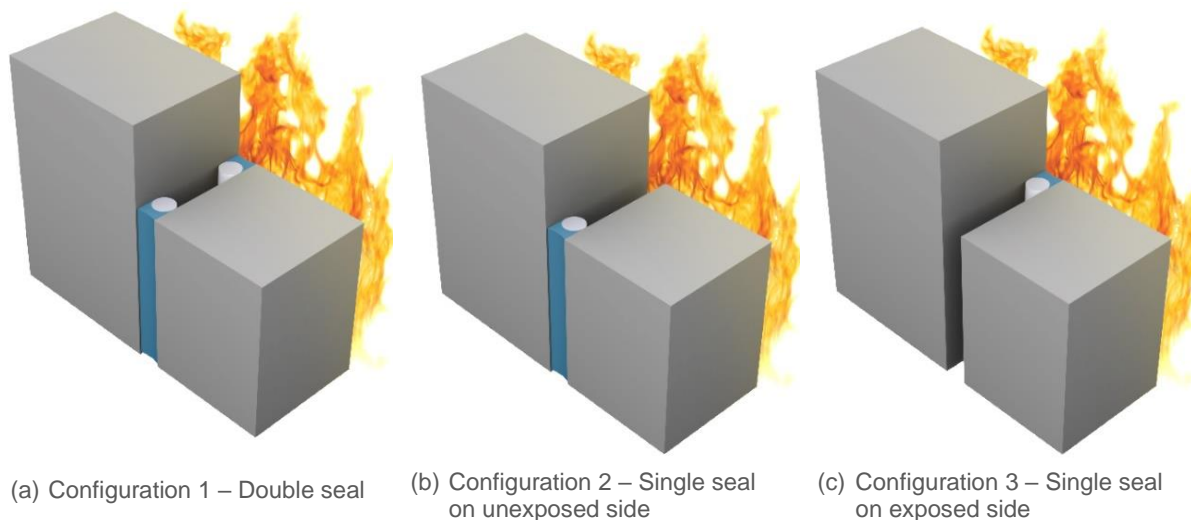


Figure 1 Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 for rigid walls

Table 2 Assessment outcome for Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 in rigid floors (thickness ≥ 150mm)

Sealant	Configuration	Linear seal width (mm)	Linear seal depth (mm)	FRL
Sikaflex® PRO-3	Double seal	7-51	0.8 x width	-/240/240
	Single seal on unexposed side	7-51	0.8 x width	-/240/240
	Single seal on exposed side	7-51	0.8 x width	-/240/60
SikaHyflex®-250 Façade	Double seal	7-51	0.8 x width	-/240/240
	Single seal on unexposed side	7-51	0.8 x width	-/240/240
	Single seal on exposed side	7-51	0.8 x width	-/180/120

* Brickwork, concrete or aerated concrete with a density greater than 760 kg/m³

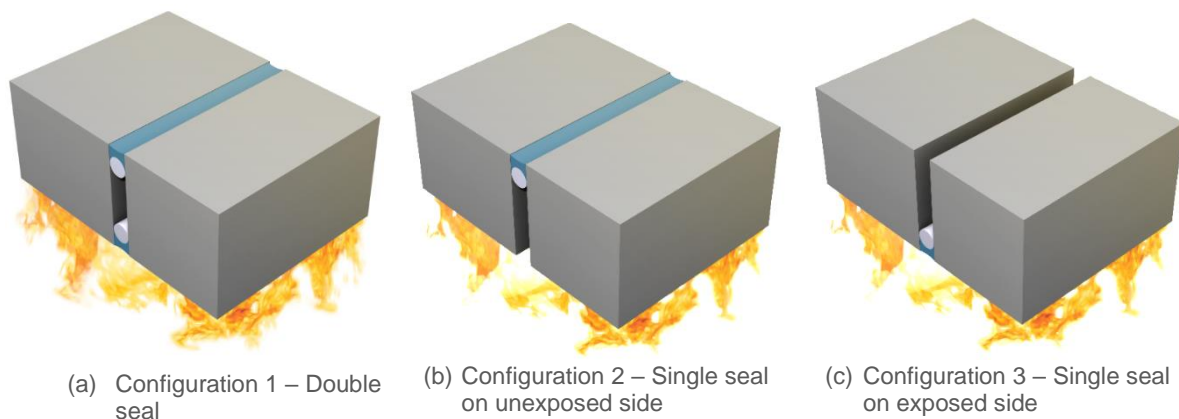


Figure 2 Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 for rigid floors

The variations and outcome of this assessment are subject to the limitations and requirements described in Section 2 of this report. The results of this report are valid until 31 October 2024.

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1. Introduction

This report documents the findings of the assessment undertaken to determine the likely fire resistance level (FRL) of various linear seals protected with Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 if tested in accordance with AS 1530.4:2014¹ and assessed in accordance with AS 4072.1-2005². This assessment was carried out at the request of Sika Services AG. The sponsor details are included in Table 3

Table 3 Sponsor details

Client	Address
Assessment sponsor	Sika Services AG Tueffenwies 16 Zurich 8048 Switzerland

2. Framework for the assessment

An assessment is an opinion about the likely performance of a component or element of structure if it were subject to a standard fire test.

No specific framework, methodology, standard or guidance documents exists in Australia for doing these assessments. Therefore, we have followed the Guide to Undertaking Assessments In Lieu of Fire Tests prepared by the Passive Fire Protection Federation (PFPF) in the UK³.

This guide provides a framework to undertake assessments in the absence of specific fire test results. *'Some areas where assessments may be offered are:*

- Where a modification is made to a construction which has already been tested
- *Interpolation or extrapolation of results of a series of fire resistance tests, or utilisation of a series of fire test results to evaluate a range of variables in a construction design or a product*
- *Where, for various reasons – eg size or configuration – it is not possible to subject a construction or a product to a fire test.'*

Assessments will vary from relatively simple judgements on small changes to a product or construction through to detailed and often complex engineering assessments of large or sophisticated constructions.

3. Description of the specimen and variations

3.1 System description

The assessment report references fire test reports 367702, 384380,402313,400264,391235 & 384380 which comprise of various linear seals within 150mm thick autoclaved aerated concrete (AAC) walls and floors protected with Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade sealant or Sikaflex®PRO-3.

¹ Standards Australia (2014) Methods for fire tests on building materials, components and structures Part 4: Fire resistance tests for elements of construction, AS 1530.4:2014.

² Standards Australia (2005) Components for the protection of openings in fire-resistant separating elements Part 1: Service penetrations and control joints, AS 4072.1-2005.

³ Guide to Undertaking Assessments In Lieu of Fire Test - The Passive Fire Protection Federation (PFPF), June 2000, UK.

3.2 Referenced test data

The assessment of the variation to the tested system and the determination of the likely fire resistance performance is based on the results of the fire tests documented in the reports summarised in Table 4. Further details of the tested system are described in Appendix A.

Table 4 Referenced test data

Report number	Test sponsor	Test date	Testing authority
367702-Issue 2	Sika Services AG	26/07/2016	Exova Warringtonfire , UK
384380-Issue 3	Sika Services AG	04/08/2017	Exova Warringtonfire , UK
402313	Sika Services AG	28/08/2018	Exova Warringtonfire , UK
400264-Issue 2	Sika Services AG	23/07/2018	Exova Warringtonfire , UK
391235	Sika Services AG	05/12/2017	Exova Warringtonfire , UK
393336	Sika Services AG	04/01/2018	Exova Warringtonfire , UK

3.3 Purpose of the test method

Sections 2 of AS 1530.4:2014 specify the general requirements for conducting fire resistance tests. Section 10 of AS 1530.4:2014 give guidelines for determining the fire resistance of elements of construction penetrated by services such as control joints. As per Section 10.3 of AS 1530.4:2014, the purpose of the test covering service penetrations and control joints is to assess-

- (a) The effect of the penetration or control joint on the integrity and insulation of the element
- (b) Insulation or integrity failure of the penetrating service or control joint

AS 4072.1-2005 sets out the minimum requirements for the construction, installation and application of fire resistance tests to sealing systems. These include control joints between building elements that are required to have a fire resistance level (FRL).

3.4 Variations to tested systems

Identical linear sealing systems have not been subject to a standard fire test in accordance with AS 1530.4:2014. We have therefore assessed the different systems using baseline test information for the systems tested in accordance with BS EN 1366-4:2006 and EN1363-1:1999 Standards. The variations to the tested systems, together with the referenced baseline standard fire tests, are described in Table 5.

Table 5 Variation to tested systems

Assessment no	Reference test	Description	Variations
1	367702-Issue 2, 384380-Issue 3, 402313, 400264-Issue 2, 391235 & 393336	The referenced tests were conducted in accordance with BS EN 1366-4:2006 ⁴ and EN 1363-1:1999 ⁵ .	The proposed variation is to assess the likely fire resistance performance of linear seals if tested in accordance with AS 1530.4:2014 & assessed in accordance with AS 4072.1-2005.

⁴ British Standards Institute (1999) Fire resistance tests, General requirements, BS EN 1363.1:1999 Standards.

⁵ British Standards Institute (2006) *Fire resistance tests for service installations*, Linear joint seals, BS EN 1366.4:2006.

3.5 Schedule of components

Table 6 outlines the schedule of components for the assessed system/s subject to a fire test, as referenced in Appendix A.

Table 6 Schedule of components of assessed walls and floor systems

Item	Description
Substrate	Substrates shall be concrete / concrete for wall and floor systems. Brickwork or aerated concrete with a density greater than 760 kg/m ³ may be used instead of concrete. Refer to Table 8 and Table 9.
Sealant	SikaHyflex®-250 Façade or Sikaflex® PRO-3 cartridge gunned into linear seals to various widths and depths as given in Table 8 and Table 9. Sealant can be positioned at various configurations as illustrated in Figure 4 and Figure 5, and their corresponding fire resistance performance is given in Table 8 and Table 9.
Backing rod	Sika® Backer Rod Fire. Sika® Backer Rod Fire is available in seven different diameters. It shall be compressed ≥15% of its nominal width. Please refer to Figure 3 to choose the suitable diameter of Sika®Backer Rod Fire.

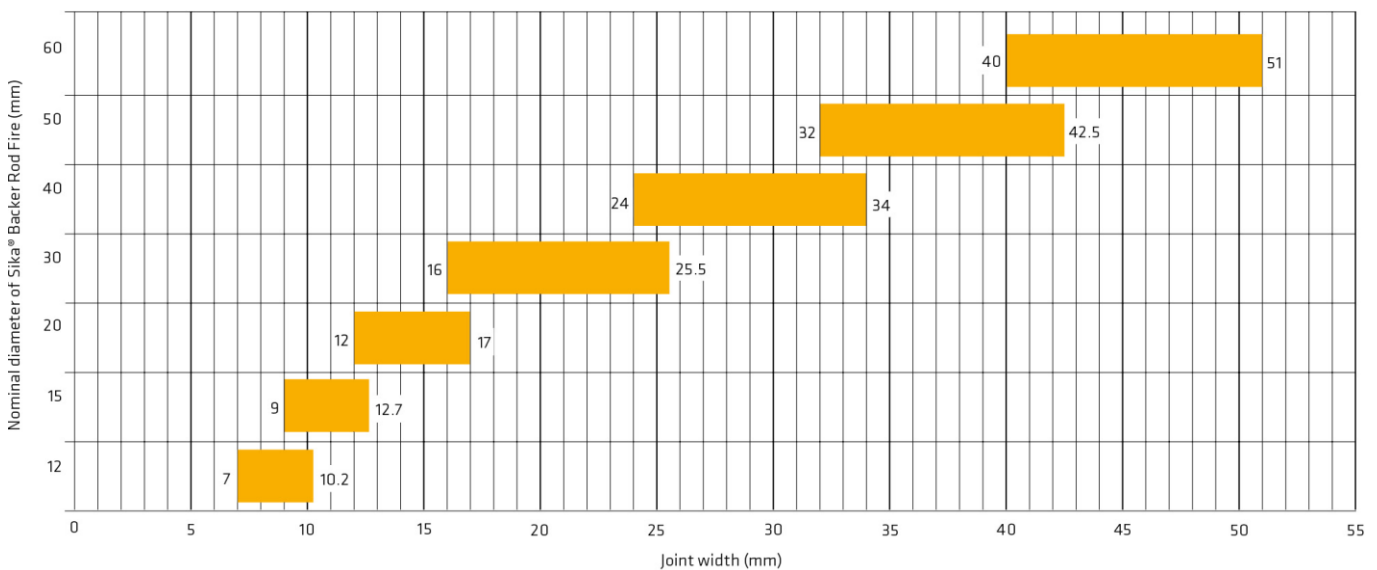


Figure 3 Use of Sika® Backer Rod Fire depending on the joint width

Sika® Backer Rod Fire is available in seven different nominal diameters (See y-axis of the above diagram). Refer to the number at the right edge of the yellow bar in the diagram, as each diameter of Sika®Backer Rod Fire may only be used for nominal joint widths below this value. The number at the left edge of the bar refers to the lower nominal joint width limit, since Sika®Backer Rod Fire can only be compressed to a certain degree. For example, for a nominal 50mm diameter Sika® Backer Rod Fire, the lower limit threshold joint width is 32mm, and the maximum joint width is 42.5mm.

3.6 Declaration

The guide to undertaking assessments in lieu of fire tests prepared by the PFPF in the UK requires a declaration from the client. By accepting our fee proposal dated 27 September 2019, Sika Services AG confirmed that:

- To their knowledge the component or element of structure, which is the subject of this assessment, has not been subjected to a fire test to the standard against which this assessment is being made.
- They agree to withdraw this assessment from circulation if the component or element of structure is the subject of a fire test by a test authority in accordance with the standard against which this assessment is being made and the results are not in agreement with this assessment.
- They are not aware of any information that could adversely affect the conclusions of this assessment and – if they subsequently become aware of any such information, they agree to ask the assessing authority to withdraw the assessment.

4. Scope, objective and assumptions

4.1 Scope and objective

- The scope of this report is limited to an assessment of the variations to the tested systems described in section 3.4.
- This report details the methods of construction, test conditions and assessed results that would have been expected if the specific elements of construction described here had been tested in accordance with AS 1530.4:2014 and AS 4072.1-2005.
- The results of this assessment are applicable to fire from both sides for walls, but not simultaneously, and to fire from below for floors.
- This report is only valid for the assessed systems. Any changes with respect to size, construction details, loads, stresses, edge or end conditions, other than those identified in this report, may invalidate the findings of this assessment. If there are changes to the system, a reassessment will be needed to verify consistency with the assessment in this report.
- The data, methodologies, calculations and conclusions documented in this report specifically relate to the assessed systems and must not be used for any other purpose.
- This report has been prepared based on information provided by others. Warringtonfire has not verified the accuracy and/or completeness of that information and will not be responsible for any errors or omissions that may be incorporated into this report as a result.

5. Assessment 1 – Assessment of likely fire performance with respect to AS 1530.4:2014 and AS 4072.1-2005

5.1 Description of variation

Assessment 1 refers to fire test reports 367702,384380,402313, 400264, 393336, 391235, which consisted of various linear seals in AAC walls and floors protected with Sika®-Backer Rod combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 sealants. These tests were conducted in accordance with BS EN 1366-4:2006 and EN 1363-1:1999 and it has been proposed to assess the likely fire resistance performance of linear seals if tested in accordance with AS 1530.4:2014 and assessed in accordance with AS 4072.1-2005

5.2 Methodology

The approach and method of assessment used for this assessment is summarised in Table 7.

Table 7 Method of assessment

Assessment method	
Level of complexity	Intermediate assessment
Type of assessment	Comparative

5.3 Assessment

Referenced fire test reports 367702,384380,402313, 400264, 393336, 391235 were conducted in accordance with BS EN 1366-4:2006 & EN 1363-1:1999 and these standards slightly differ from AS 1530.4:2014. The effect of these differences has on the fire resistance performance of tested linear seals are discussed below.

Furnace Temperature Measurement

- The furnace thermocouples specified in AS 1530.4:2014 are type K, mineral insulated metal sheathed (MIMS) with a stainless-steel sheath having a wire of diameter of less than 1.0mm and an overall diameter of 3mm. The measuring junction protrudes at least 25mm from the supporting heat resistant tube.
- The furnace thermocouple specified in EN 1363.1:1999 is made from folded steel plate that faces the furnace chamber. A thermocouple is fixed to the side of the plate facing the specimen with the thermocouple hot junction protected by a pad of insulating material. The plate part is to be constructed from 150 ±1 mm long by 100 ±1 mm wide by 0.7 ±0.1 mm thick nickel alloy sheet strips.
- The measuring junction is to consist of nickel chromium/nickel aluminium (Type K) wire as defined in IEC 60584-1⁶, contained within mineral insulation in a heat-resisting steel alloy sheath of nominal diameter 1 mm, the hot junctions being electrically insulated from the sheath.
- The thermocouple hot junction is to be fixed to the geometric centre of the plate, by a small steel strip made from the same material as the plate. The steel strip can be welded to the plate or may be screwed to it to facilitate replacement of the thermocouple. The strip should be approximately 18 mm by 6 mm if it is spot-welded to the plate, and nominally 25 mm by 6 mm if it is to be screwed to the plate. The screw is to be 2 mm in diameter.
- The assembly of plate and thermocouple should be fitted with a pad of inorganic insulation material 97 ±1 mm by 97 ±1 mm by 10 ±1 mm thick with a density of 280 ±30 kg/m³.
- The relative location of the furnace thermocouples for the exposed face of the specimen, for AS 1530.4:2014 and EN 1363.1:1999, is 100mm +10mm and 100mm +50mm respectively.

⁶ Thermocouples-Part 1:EMF specifications and tolerances

- The furnace control thermocouples required by EN 1363.1:1999 are less responsive than those specified by AS 1530.4:2014. This variation in sensitivity can produce a potentially more onerous heating condition for specimens tested to EN 1363.1:1999, particularly when the furnace temperature is changing quickly in the early stages of the test.

Furnace Pressure Regime

- It is a requirement of AS 1530.4:2014 that for vertical elements with more than 1m height, a furnace pressure of 20 ± 3 Pa shall be established at the top of the separating element and all the penetration services shall have a pressure greater than 10 Pa.
- Similarly, as per BS EN 1366-4:2006, a vertical furnace shall be operated so that a minimum pressure of 15 Pa exists in the centre of the test specimen mounted in the lowest position
- It is a requirement of AS 1530.4:2014 and for EN 1363-1:1999 that for horizontal elements, a furnace gauge pressure of 20 Pa is established at a height 100mm below the floor soffit level.
- The parameters outlining the accuracy of control of the furnace pressure in AS 1530.4:2014 and EN 1363-1:1999 are also not appreciably different.

Specimen Size

- BS EN 1366-4:2006 states that a linear joint seal shall be of uniform design cross sectional area and for non-movement joints, a shorter length of not less than 900mm can be used.
- AS 1530.4:2014 states that the length of the control joint exposed to the furnace chamber shall not be less than 1m.
- The linear seals tested in the reference test reports all have a length of 1m. Therefore, they are compliant with the Australian Standards' requirements.

Integrity Performance Criteria

- The specimen shall be deemed to have failed the integrity criterion in accordance with AS 1530.4:2014 if it collapses or sustains flaming or other conditions on the unexposed face, which ignite the cotton pad when applied for up to 30 seconds. Gap gauges are not used to evaluate integrity.
- Except for minor technical variations, the integrity criteria in EN 1363-1:1999 are generally applied in a comparable manner.

Specimen Temperature Measurement and insulation performance criteria

- For linear seals, AS 1530.4:2014 specifies the following requirements when placing thermocouples on the unexposed face in Clause 10.5.1 (f).
 - a. At least three on the surface of the seal, with one thermocouple for each 0.3m² of surface area, up to a maximum of five, uniformly distributed over the area (one thermocouple being located at the centre of the seal)
 - b. On the surface of the seal, 25mm from the edge of the opening, with one thermocouple for each 500mm of the perimeter.
 - c. On the surface of the separating element, 25mm from the edge of the opening, with one thermocouple for each 500mm of the perimeter.
- Furthermore, Clause 10.5.3 of AS 1530.4:2014 specifies that thermocouples used for the evaluation of the insulation performance of linear seals shall be positioned on the unexposed face of the sealing system and the separating element, except where the unexposed face of the seal is recessed within the separating element. Where this occurs, thermocouples shall only be fitted to the seal when the joint width is greater than or equal to 12mm. Under such circumstances, the size of the pad may be reduced to facilitate the fitting of the thermocouple.
- A review of BS EN 1366-4:2006 thermocouple requirements show that while the unexposed surface thermocouple locations specified are in agreement with those specified in AS 1530.4:2014, the former is more onerous in certain aspects.

- Apart from slight variation in the thermocouple location, the general insulation criteria of AS 1530.4:2014 and BS EN 1366-4:2006 are not appreciably different.

Application of Test Data to AS 1530.4:2014

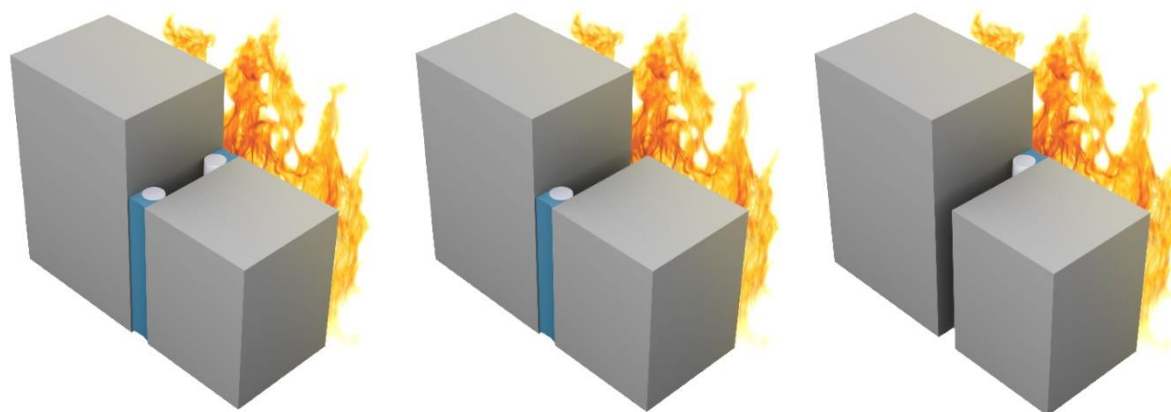
- The variations in furnace pressure, furnace thermocouples and the responses of the different thermocouple types to the furnace conditions are not expected to have significant effect on the outcome of the referenced fire resistance test.
- It is noted that in some of the referenced test reports, thermocouples on the unexposed surface sealant was not placed at the bottom end of the control joint specimens. Hence, it is not in strict accordance with AS 1530.4: 2014 which stipulates that at least 3 thermocouples should be placed on the surface of the seal. However, the bottom end of the vertical seal is subjected to a lower pressure from the exposed side. Therefore, the outcome of the test is unlikely to have significantly been altered due to the presence of these thermocouples. In addition, the insulation criteria exceeded in most of the linear seals with respect to the thermocouple placed 15mm away from the separating element. In contrast, AS 1530.4: 2014 requires thermocouples to be placed 25mm from the edge of the opening. Therefore, as BS EN 1366-4:2006 locations can be considered to be more onerous, if these thermocouples were to be placed as per the AS 1530.4: 2014, the insulation performance is expected to be similar or better than the test results.
- Based on the above discussion it is considered that the results relating to the integrity and insulation performance of the referenced tests can be used as a basis to assess the FRL of the specimens if tested in accordance with AS 1530.4:2014.

5.4 Conclusion

This assessment demonstrates that the linear seals assessed are likely to achieve the FRLs shown in Table 8 and Table 9, if tested in accordance with AS 1530.4:2014.

Table 8 Assessment outcome for Sika®Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 in rigid walls* (thickness ≥ 150mm)

Sealant	Configuration	Linear seal width (mm)	Linear seal depth (mm)	FRL
SikaHyflex®-250 Façade	Double seal	7-51	0.5 x width	-/240/240
	Single seal on unexposed side	7-51	0.5 x width	-/240/180
	Single seal on exposed side	7-51	0.5 x width	-/240/120
Sikaflex® PRO-3	Single seal on unexposed side	7-51	0.5 x width	-/240/180
	Single seal on exposed side	7-51	0.5 x width	-/120/90
*Brickwork, concrete or aerated concrete with a density greater than 760 kg/m ³				



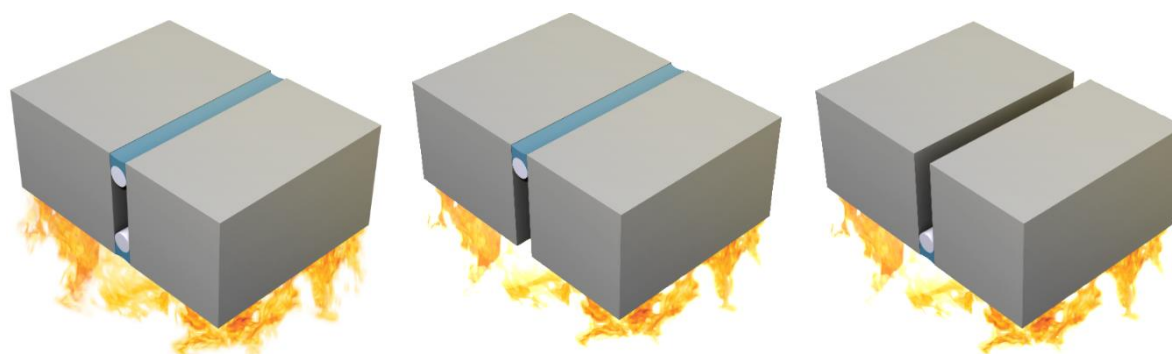
(a) Configuration 1 – Double seal (b) Configuration 2 – Single seal on unexposed side (c) Configuration 3 – Single seal on exposed side

Figure 4 Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 for rigid walls

Table 9 Assessment outcome for Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 in rigid floors (thickness ≥ 150mm)

Sealant	Configuration	Linear seal width (mm)	Linear seal depth (mm)	FRL
Sikaflex® PRO-3	Double seal	7-51	0.8 x width	-/240/240
	Single seal on unexposed side	7-51	0.8 x width	-/240/240
	Single seal on exposed side	7-51	0.8 x width	-/240/60
SikaHyflex®-250 Façade	Double seal	7-51	0.8 x width	-/240/240
	Single seal on unexposed side	7-51	0.8 x width	-/240/240
	Single seal on exposed side	7-51	0.8 x width	-/240/180

* Brickwork, concrete or aerated concrete with a density greater than 760 kg/m³



(a) Configuration 1 – Double seal (b) Configuration 2 – Single seal on unexposed side (c) Configuration 3 – Single seal on exposed side

Figure 5 Sika® Backer Rod Fire combined with SikaHyflex®-250 Façade or Sikaflex® PRO-3 for rigid floors

6. Validity

Warringtonfire Australia does not endorse the tested or assessed product in any way. The conclusions of this assessment may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

Due to the nature of fire testing and the consequent difficulty in quantifying the uncertainty of measurement, it is not possible to provide a stated degree of accuracy. The inherent variability in test procedures, materials and methods of construction, and installation may lead to variations in performance between elements of similar construction.

This assessment is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are subject to constant review and improvement. It is therefore recommended that this report be reviewed on or, before, the stated expiry date.

This assessment represents our opinion about the performance likely to be demonstrated on a test in accordance with AS 1530.4:2014 and AS 4072.1-2005, based on the evidence referred to in this report.

This assessment is provided to the Sika Services AG for its own purposes and we cannot express an opinion on whether it will be accepted by building certifiers or any other third parties for any purpose.

Appendix A Summary of supporting test data

A.1 Test report – 367702

Table 10 Information about test report

Item	Information about test report
Report sponsor	Sika Services AG
Test laboratory	Bodycote Warringtonfire Testing, Holmesfield Road, Warrington, Cheshire WA1 2DS United Kingdom
Test date	The fire resistance test was completed on 26/07/2016.
Test standards	The test was done in accordance with BS EN 1366-4:2006+A1:2010.
Variation to test standards	None
General description of tested specimen	<p>The fire resistance test consisted of five vertically orientated specimens (A to E) and six horizontally orientated specimens (F to K) of linear gap sealing systems to reinstate the fire resistance of an autoclaved aerated concrete blockwork wall and a pre-cast, aerated concrete floor. The section of the wall had overall dimensions of 1500mm high by 1500mm wide by 120mm thick and was made up of aerated blockwork arranged to provide five 1000mm long linear gaps, between 10.2mm and 51mm in width.</p> <p>The section of floor had overall dimensions of 2435mm long by 1950mm wide by 150mm thick and was made up of autoclaved aerated concrete lintels arranged to provide six 1010mm long linear gaps, between 10.2mm to 51mm in width. Details of each seal is given in Table 11</p>
Instrumentation	The test report states that the instrumentation was in accordance with BS EN 1366-4:2006+A1:2010.

Table 11 Description of tested specimen

Specimen	Linear seal width (mm)	Linear seal details
A	10.2	Sealed with a 5 mm depth of SikaHyflex®-250 Facade, cartridge gunned to finish flush on the unexposed face of the wall and backed with a 12 mm diameter Sika® Backer Rod Fire
B	51	Sealed with a 26 mm depth of SikaHyflex®-250 Facade, cartridge gunned to finish flush on the unexposed face of the wall and backed with a 60 mm diameter Sika® Backer Rod Fire
D	51	Sealed with a 26 mm depth of Sikaflex® AT-Connection, cartridge gunned to finish flush on the unexposed face of the wall and backed with a 60 mm diameter Sika® Backer Rod Fire
E	10.2	Sealed with a 5 mm depth of SikaHyflex®-250 Facade, cartridge gunned to finish flush on both the exposed and unexposed faces of the wall and backed with a 12 mm diameter Sika® Backer Rod Fire
F	51	Sealed with a 42 mm depth of SikaHyflex®-250 Facade, cartridge gunned to finish flush on both the exposed and unexposed faces of the wall and backed with a 60 mm diameter mineral fibre based backing rod, referenced Sika® Backer Rod Fire
G	10.2	Sealed with a 8 mm depth of SikaHyflex®-250 Facade, cartridge gunned to finish flush on both the exposed and unexposed faces of the floor and backed with a 12 mm diameter Sika® Backer Rod Fire
J	51	Sealed with a 42 mm depth of SikaHyflex®-250 Facade, cartridge gunned to finish flush on the unexposed face of the floor and backed with a 60 mm diameter Sika® Backer Rod Fire

Specimen	Linear seal width (mm)	Linear seal details
K	10.2	Sealed with a 8 mm depth of SikaHyflex®-250 Facade, cartridge gunned to finish flush on the unexposed face of the floor and backed with a 12 mm diameter Sika® Backer Rod Fire

The test specimen achieved the results shown in Table 12:

Table 12 Results summary

Reference	Integrity (min)		Insulation (min)
	Cotton pad	Sustained flaming	
A	265	265	205
B	265	265	265
D	265	265	265
E	265	265	265
F	265	265	265
G	265	265	265
J	265	265	265
K	265	265	265

A.2 Test report – 384380-Issue 3

Table 13 Information about test report

Item	Information about test report
Report sponsor	Sika Services AG
Test laboratory	Bodycote Warringtonfire Testing, Holmesfield Road, Warrington, Cheshire WA1 2DS United Kingdom
Test date	The fire resistance test was completed on 04/08/2017.
Test standards	The test was done in accordance with BS EN 1366-4:2006+A1:2010.
Variation to test standards	None
General description of tested specimen	The fire resistance test consisted of five vertically orientated specimens (A to E) and six horizontally orientated specimens (F to K) of linear gap sealing systems installed in an autoclaved aerated concrete blockwork wall and a pre-cast, aerated concrete floor. The section of the wall had overall dimensions of 1500mm high by 1500mm wide by 120mm thick and consisted of five 1000mm long linear gaps with varying widths. The section of floor had overall dimensions of 2240mm long by 1730mm wide by 150mm thick and consisted of six 1000mm long linear gaps with varying widths. Details of each seal is given in Table 14.
Instrumentation	The test report states that the instrumentation was in accordance with BS EN 1366-4:2006+A1:2010.

Table 14 Description of tested specimen

Specimen	Linear seal width (mm)	Linear seal details
D	51	Sealed with a 25 mm depth of SikaHyflex®-250 Facade, cartridge gunned to the exposed face of the wall and backed with a 60 mm diameter Sika® Backer Rod Fire.
E	10.2	Sealed with a 5 mm depth of SikaHyflex®-250 Facade, cartridge gunned to the exposed face of the wall and backed with a 12 mm diameter Sika® Backer Rod Fire.
J	10.2	Sealed with a 8 mm depth of SikaHyflex®-250 Facade, cartridge gunned to the exposed face of the floor and backed with a 12 mm diameter Sika® Backer Rod Fire.
K	51	Sealed with a 40 mm depth of SikaHyflex®-250 Facade, cartridge gunned to the exposed face of the floor and backed with a 60 mm diameter Sika® Backer Rod Fire.

The test specimen achieved the results shown in Table 15:

Table 15 Results summary

Reference	Integrity (min)		Insulation (min)
	Cotton pad	Sustained flaming	
D	264	264	153
E	264	264	188
J	208	209	188
K	264	264	159

Test duration. The test was discontinued after a period of 264 minutes.

A.3 Test report – 400264-Issue 2

Table 16 Information about test report

Item	Information about test report
Report sponsor	Sika Services AG
Test laboratory	Exova Warringtonfire, Holmesfield Road, Warrington, Cheshire WA1 2DS United Kingdom
Test date	The fire resistance test was completed on 25/09/2018.
Test standards	The test was done in accordance with BS EN 1366-4:2006 +A1:2010.
Variation to test standards	None
General description of tested specimen	The test comprised of four horizontally orientated specimens (E to H specimens) in autoclaved aerated concrete floor. The section of floor had overall dimensions of 2240mm long by 1730mm wide by 150mm thick. Details of each seal is given in Table 17.
Instrumentation	The test report states that the instrumentation was in accordance with BS EN 1366-4:2006 +A1:2010.

Table 17 Description of tested specimen

Specimen	Linear seal width (mm)	Linear seal details
G	10.2	8mm deep of Sikaflex®-PRO 3 sealant, cartridge gunned to the unexposed faces of the floor and backed with 12mm diameter Sika® Backer rod, push fitted.
H	51	41mm deep of Sikaflex®-PRO 3 sealant, cartridge gunned to the unexposed face of the floor and backed with 60mm diameter Sika® Backer rod, push fitted.

The test specimen achieved the results shown in Table 18:

Table 18 Results summary

Reference	Integrity (min)		Insulation (min)
	Cotton pad	Sustained flaming	
G	264*	264*	264*
H	264*	264*	264*

*Test duration. The test was discontinued after a period of 264 minutes.

A.4 Test report – 391235

Table 19 Information about test report

Item	Information about test report
Report sponsor	Sika Services AG
Test laboratory	Exova Warringtonfire, Holmesfield Road, Warrington, Cheshire WA1 2DS United Kingdom
Test date	The fire resistance test was completed on 05/12/2017.
Test standards	The test was done in accordance with BS EN 1366-4:2006 +A1:2010.
Variation to test standards	None
General description of tested specimen	The test comprised of six (E to J specimens) horizontally oriented 1000mm long linear seals. The floor was 2240mm long 1730mm wide and 150mm thick made of using AAC. In interest of this assessment report, specimens H and I will be used only. Details of each seal is given in Table 20.
Instrumentation	The test report states that the instrumentation was in accordance with BS EN 1366-4:2006 +A1:2010.

Table 20 Description of tested specimen

Specimen	Gap width (mm)	Gap details
H	10.2	8.1mm deep of Sikaflex®-PRO, cartridge gunned to the exposed face of the floor and backed with a 12mm PE Sika Backer rod, push fitted.
I	51	41mm deep of Sikaflex®-PRO, cartridge gunned to the exposed face of the floor and backed with 60mm Sika Backer rod, push fitted.

The test specimen achieved the results shown in Table 21:

Table 21 Results summary

Reference	Integrity (min)		Insulation (min)
	Cotton pad	Sustained flaming	
H	241	264*	241
I	115	116	115

*Test duration. The test was discontinued after a period of 264 minutes.

A.5 Test report – 393336

Table 22 Information about test report

Item	Information about test report
Report sponsor	Sika Services AG
Test laboratory	Exova Warringtonfire, Holmesfield Road, Warrington, Cheshire WA1 2DS United Kingdom
Test date	The fire resistance test was completed on 04/01/2018.
Test standards	The test was done in accordance with BS EN 1366-4:2006 +A1:2010.
Variation to test standards	None
General description of tested specimen	The test comprised of six (F to K specimens) horizontally oriented 1000mm long linear seals. The floor was 2240mm long 1730mm wide and 150mm thick made of using AAC. In interest of this assessment report, specimens F and G will be used only. Details of the seal is given in Table 23.
Instrumentation	The test report states that the instrumentation was in accordance with BS EN 1366-4:2006 +A1:2010.

Table 23 Description of tested specimen

Specimen	Linear seal width (mm)	Linear seal details
F	51	41mm deep of Sikaflex Pro-3 Sealant, cartridge gunned to both faces of the floor and backed with a 60mm Sika® Backer rod, push fitted.
G	10.2	8.1mm deep of Sikaflex Pro-3 Sealant, cartridge gunned to both faces of the floor and backed with a 12mm Sika® Backer rod, push fitted.

The test specimen achieved the results shown in Table 24:

Table 24 Results summary

Reference	Integrity (min)		Insulation (min)
	Cotton pad	Sustained flaming	
F	264*	264*	264*
G	264*	264*	264*

*Test duration. The test was discontinued after a period of 264 minutes

A.6 Test report – 402313

Table 25 Information about test report

Item	Information about test report
Report sponsor	Sika Services AG
Test laboratory	Exova Warringtonfire, Holmesfield Road, Warrington, Cheshire WA1 2DS United Kingdom
Test date	The fire resistance test was completed on 28/08/2018.
Test standards	The test was done in accordance with BS EN 1366-4:2006 +A1:2010.
Variation to test standards	None
General description of tested specimen	The test comprised of five (A to E specimens) vertically oriented 1000mm long linear seals. The AAC wall was 1500mm high 1500mm wide with a thickness of 150mm. Of interest in this assessment report, specimens B,C,D & E will be used only. Details of the seal is given in Table 26.
Instrumentation	The test report states that the instrumentation was in accordance with BS EN 1366-4:2006 +A1:2010.

Table 26 Description of tested specimen

Specimen	Linear seal width (mm)	Linear seal details
B	10.2	5mm deep of Sikaflex Pro-3 Sealant, cartridge gunned to the unexposed face of the wall and backed with a 40mm Sika® Backer rod, push fitted into the gap.
C	51	25mm deep of Sikaflex Pro-3 Sealant, cartridge gunned to the unexposed face of the wall and backed with a 60mm dia. Sika® Backer rod, push fitted.
D	10.2	5mm deep of Sikaflex Pro-3 Sealant, cartridge gunned to the exposed face of the wall and backed with a 40mm Sika® Backer rod, push fitted into the gap.
E	51	25mm deep of Sikaflex Pro-3 Sealant, cartridge gunned to the exposed face of the wall and backed with a 60mm dia. Sika® Backer rod, push fitted.

The test specimen achieved the results shown in Table 27:

Table 27 Results summary

Reference	Integrity (min)		Insulation (min)
	Cotton pad	Sustained flaming	
B	264*	264*	264*
C	264*	264*	264*
D	138	154#	138
E	152	158#	90

*Test duration. The test was discontinued after a period of 264 minutes

Specimen blanked off