



Fire assessment report




Head joints protected with HB Fuller
Firesound sealant in accordance with
AS 1530.4:2014 and AS 4072.1:2005

Sponsor: HB Fuller Aust CO P/L

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Executive summary

This report documents the findings of the assessment undertaken to determine the expected fire resistance level (FRL) of head joints protected with HB Fuller Firesound sealant in accordance with AS 1530.4:2014 and assessed in accordance with AS 4072.1:2005.

HB Fuller Firesound sealant is described as a water-based construction sealant which is generally used to seal construction joints and service penetrations in walls and floors.

The analysis in section 5 of this report found that the proposed systems, together with the described variations, are expected to achieve FRLs as shown in Table 1 – Table 4, in accordance with AS 1530.4:2014 and assessed in accordance with AS 4072.1:2005. The variations and outcome of this assessment are subject to the limitations and requirements described in sections 2, 3 and 6 of this report. The results of this report are valid until 30 April 2027.

Table 1 Head joints with sealant on both sides in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness*		
				120 mm	150 mm	175 mm
50 mm	HB Fuller Firesound applied with open cell backing rod	25 mm	Applied on both sides as illustrated in Figure 1	-/120/120	-/180/180	-/240/240
40 mm		20 mm				
30 mm		15 mm				
20 mm		10 mm				
10 mm		10 mm				

*The stipulated separating element thickness is applicable to solid/core-filled block concrete or masonry construction. The separating element may be varied to hollow core masonry. In such a case, the separating element must be tested or assessed to achieve the required FRL. For hollow core masonry, the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

Table 2 Head joints with sealant on fire side in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness*		
				120 mm	150 mm	175 mm
35 mm	HB Fuller Firesound applied with open cell backing rod	25 mm	Applied on the exposed side as illustrated in Figure 2	-/120/60	-/180/60	-/240/60
20 mm		15 mm		-/120/30	-/180/30	-/240/30
10 mm		10 mm		-/120/120	-/180/180	-/240/240

*The stipulated separating element thickness is applicable to solid/core-filled block concrete or masonry construction. The separating element may be varied to hollow core masonry. In such a case, the separating element must be tested or assessed to achieve the required FRL. For hollow core masonry, the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

Table 3 Head joints with sealant on non-fire side in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness*		
				120 mm	150 mm	175 mm
35 mm	HB Fuller Firesound applied with open cell backing rod	25 mm	Applied on the unexposed side as illustrated in Figure 2	-/120/90	-/180/90	-/240/90
20 mm		15 mm		-/120/90	-/180/120	-/240/120
10 mm		10 mm		-/120/120	-/180/180	-/240/240

*The stipulated separating element thickness is applicable to solid/core-filled block concrete or masonry construction. The separating element may be varied to hollow core masonry. In such a case, the separating element must be tested or assessed to achieve the required FRL. For hollow core masonry, the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

Table 4 Double caulked head joints in concrete walls

Head joint width	Local fire-stopping protection	First layer sealant depth	Second layer sealant depth	Distance between sealant	FRL		
					Minimum separating element thickness***		
					120 mm	150 mm	175 mm
26 mm – 35 mm	HB Fuller Firesound with open cell backing rod	30 mm	20 mm	Minimum 45 mm with an airgap as shown in Figure 3	-/120/120	-/180/180	-/240/240**
11 mm – 25 mm wide		30 mm	20 mm*				
10 mm wide		10 mm	10 mm	Applied back-to-back or with an air gap as shown in Figure 3	-/120/120	-/180/180	-/240/240

*Can be reduced to 15 mm if installed in 120 mm concrete wall for -/120/120.
 **Distance between the face of the exposed separating element and first layer of sealant must not be more than 40 mm.
 ***The stipulated separating element thickness is applicable to solid/core-filled block concrete or masonry construction. The separating element may be varied to hollow core masonry. In such a case, the separating element must be tested or assessed to achieve the required FRL. For hollow core masonry, the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

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1. Introduction

This report documents the findings of the assessment undertaken to determine the expected fire resistance level (FRL) of head joints protected with HB Fuller Firesound sealant in accordance with AS 1530.4:2014¹ and assessed in accordance with AS 4072.1:2005².

This report may be used as Evidence of Suitability in accordance with the requirements of the relevant National Construction Code (NCC) to support the use of the material, product, form of construction or design as given within the scope of this assessment report. It also references test evidence for meeting deemed to satisfy (DTS) provisions of the NCC as applicable to the assessed systems.

This assessment was carried out at the request of HB Fuller Aust CO P/L.

The sponsor details are included in Table 5.

Table 5 Sponsor details

Sponsor	Address
HB Fuller Aust CO P/L	16-22 Redgum Drive Dandenong South 3175 VIC Australia

2. Framework for the assessment

2.1 Assessment approach

An assessment is an opinion about the expected performance of a component or element of structure subject to a fire test.

No specific framework, methodology, standard or guidance documents exists in Australia for doing these assessments. We have therefore followed the 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the Passive Fire Protection Forum (PFPF) in the UK in 2021³.

This guide provides a framework for undertaking 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.
- The 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.

This assessment uses established empirical methods and our experience of fire testing similar products to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance if the elements were to be tested in accordance with AS 1530.4:2014.

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, Standards Australia, NSW.

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

³ Passive Fire Protection Forum (PFPF), 2021, Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, Passive Fire Protection Forum (PFPF), UK.

This assessment has been written using appropriate test evidence generated at accredited laboratories to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturer's stated design.

2.2 Compliance with the National Construction Code

This assessment report has been prepared to meet the Evidence of Suitability requirements of the NCC 2019, including amendments⁴ under A5.2 (1) (d) and schedule 5 2(c).

This assessment has been written in accordance with the general principles outlined in EN 15725:2010⁵ for extended application reports on the fire performance of construction products and building elements. It also references test evidence for meeting a performance requirement or deemed to satisfy (DTS) provision of the NCC under A5.4 for fire resistance levels as applicable to the assessed systems.

This assessment report may also be used to demonstrate compliance with the requirements for Evidence of Suitability under NCC 2016 specification A2.3 (c), including amendments⁶.

2.3 Declaration

The 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the PFPF in the UK requires a declaration from the client. By accepting our fee proposal on 9 February 2022, HB Fuller Aust CO P/L 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.

3. Limitations of this assessment

- The scope of this report is limited to an assessment of the variations to the tested systems described in section 4.3.
- This report details the methods of construction, test conditions and assessed results that are expected if the systems were tested in accordance with AS 1530.4:2014.
- This assessment is applicable to wall systems exposed to fire from each side or one side in accordance with the requirements of AS 1530.4:2014 where vertical elements must be exposed to heat from the direction required to resist fire exposure.
- This report is only valid for the assessed system/s and must not be used for any other purpose. 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 need to be done by an Accredited Testing Laboratory (ATL) that is accredited to the same nominated standards of this report.
- The documentation that forms the basis for this report is listed in Appendix A.

⁴ National Construction Code Volumes One and Two - Building Code of Australia 2019 including Amendments, Australian Building Codes Board, Australia

⁵ European Committee for Standardization, 2010, Extended application reports on the fire performance of construction products and building elements, EN 15725:2010, European Committee for Standardization, Brussels, Belgium.

⁶ National Construction Code Volumes One and Two - Building Code of Australia 2016 including Amendments, Australian Building Codes Board, Australia

- 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.
- This assessment is based on the proposed systems being constructed under comprehensive quality control practices and following appropriate industry regulations and Australian Standards on quality of materials, design of structures, guidance on workmanship and expert handling, placing and finishing of the products on site. These variables are beyond the control and consideration of this report.

4. Description of the specimen and variations

4.1 System description

The proposed system consists of head joints in concrete, solid/core-filled or hollow core masonry block walls protected with HB Fuller Firesound sealant. The joints vary in their width and the application of sealant is subject to direction of exposure. The separating elements vary in their thickness.

4.2 Referenced test data

The assessment of the variation to the tested systems and the determination of the expected performance is based on the results of the fire tests documented in the reports summarised in Table 6. Further details of the tested systems are included in Appendix A.

Table 6 Referenced test data

Report number	Test sponsor	Test date	Testing authority
FRT190135 R1.0	HB Fuller Aust Co P/L	26 June 2019	Warringtonfire
FRT200212 R1.1		26 August 2020	
FRT200213 R1.0		25 August 2020	
FRT200323 R1.1		21 June 2021	

4.3 Variations to the tested systems

An identical system has not been subject to a standard fire test. We have therefore assessed the system using baseline test information for similar systems. The variations to the tested systems – together with the referenced standard fire tests – are described in Table 7.

Table 7 Variations to tested systems

Item	Reference test	Sealant orientation	Description	Variations
Separating element	FRT190135 R1.0, FRT200212 R1.0, FRT200213 R1.0, FRT200323 R1.1.	Single sided and double sided as shown in Figure 1 to Figure 3	The joints were tested in a 150 mm thick concrete floor and a 175 mm thick concrete wall.	It is proposed that the joints in minimum 120 mm, 150 mm and 175 mm thick concrete walls are assessed. The separating element maybe varied to include solid/core-filled or hollow core masonry block construction.
Head joints	FRT190135 R1.0, FRT200212 R1.0, FRT200213 R1.0, FRT200323 R1.1.	Single sided and double sided as shown in Figure 1 to Figure 3	Control joints or varying widths in 150 mm thick concrete floors and a 175 mm concrete wall were tested. The control joints were protected with varying depths and installation	It is proposed the control joint test results be assessed to cover head joints of similar dimension and protection detail.

Item	Reference test	Sealant orientation	Description	Variations
			detail of HB Fuller Firesound sealant	

The proposed head joints and their protection with HB Fuller Firesound are illustrated in Figure 1 – Figure 3.

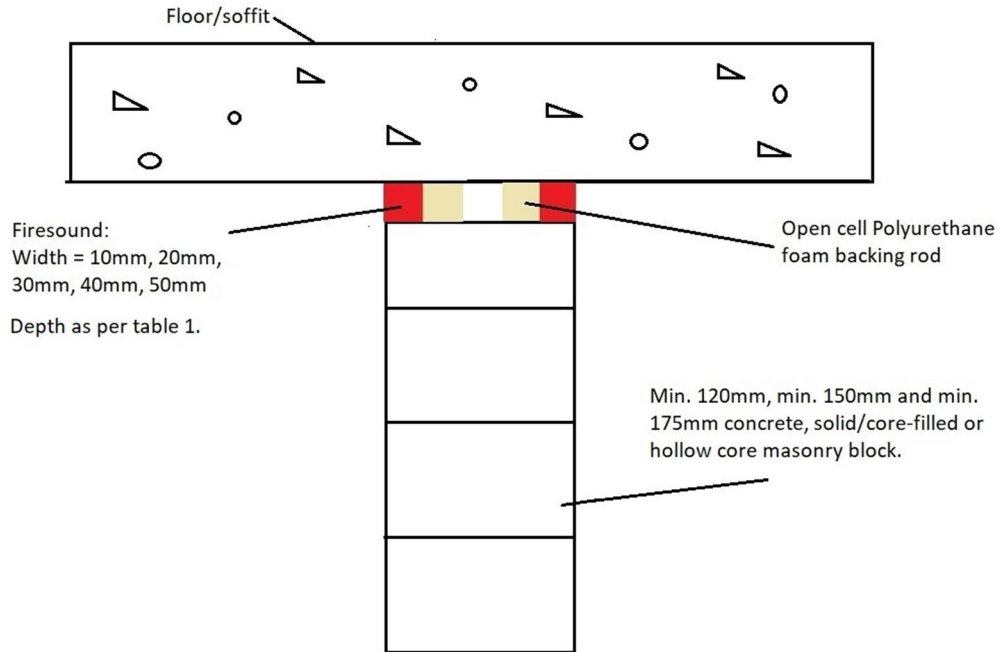


Figure 1 Head joint detail sealant applied on both sides

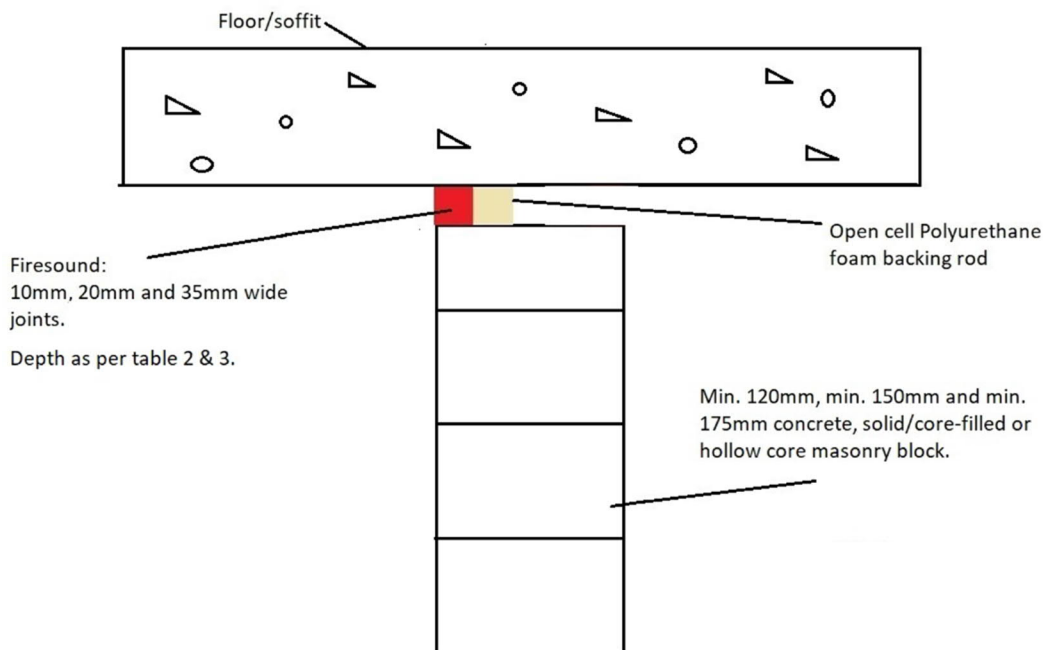


Figure 2 Head joint detail sealant applied on one side

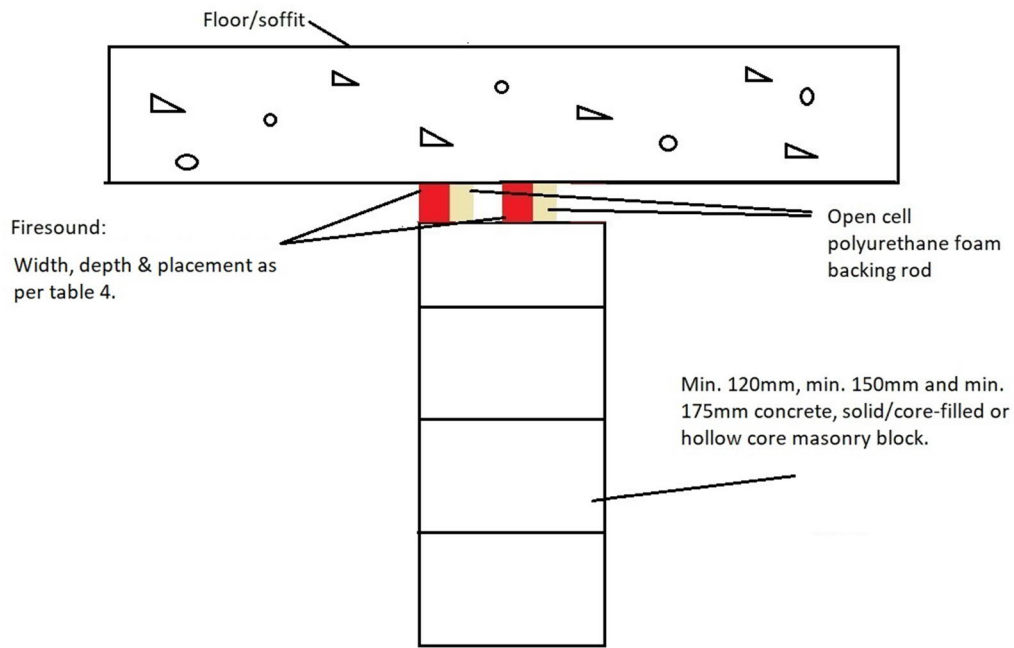


Figure 3 Head joint detail double caulked sealant applied on one side

5. Assessment of head joint protected with HB Fuller Firesound sealant

5.1 Description of variation

A series of control joints protected with HB Fuller Firesound sealant was tested in concrete walls and floors. It is proposed that the control joints in walls or floors be assessed to the proposed head joint details in walls with sealant applied either on the fire side or the non-fire side or on both sides as illustrated in Figure 1 – Figure 3.

This assessment analyses the available test data and assesses the applicable fire resistance level of the proposed joints in accordance with AS 1530.4:2014 and AS 4072.1:2005.

5.2 Methodology

The method of assessment used is summarised in Table 8.

Table 8 Method of assessment

Assessment method	
Level of complexity	Intermediate assessment
Type of assessment	Qualitative – interpolation/comparative

5.3 Application of control joint data to head joints

When head joint details span horizontally across the head of a vertical wall system, it is considered that the pressure would be highest at the top of the furnace when tested in accordance with AS 1530.4:2014. In consideration of this phenomenon, test data for control joints spanning vertically in vertical wall systems needs to be analysed with caution when assessing them for head joint applications. The location at which the pressure is measured within the furnace must be identified and approximations made to correlate these pressures with what would be present at the top of the furnace. It is considered, for vertical specimens, that for every 1 m rise within the furnace, the pressure would rise by 8 Pa. Accordingly, it is considered that the expected pressure conditions can be calculated from the control joint test data.

FRT190135 consisted of a 175 mm thick wall specimen with vertical control joints. For the purpose of this assessment, control joints A and B are considered. For this test specimen, with a height of 1900 mm, the furnace pressure was measured 230 mm below the mid-height of the control joint and corrected to 15 Pa at the mid height of the control joints. Based on the approximation of pressure increase per meter increase in height, detailed above, the corrected furnace pressure for the top of the specimen is 22.6 Pa. Inspection of the test images post test reveals no clear difference between the sealant at mid height and at the top of the specimen. Therefore, the test results for integrity and insulation of the control joints can be deemed applicable to the 22.6 Pa conditions.

Additionally, the fire tests FRT200212, FRT200213 and FRT200323 are also used for assessment of the proposed head joints in this report. These tests consisted of control joints in 150 mm thick floor specimens. For the duration of all these tests, the furnace pressure measurements ranged from 17 Pa to 22 Pa. Measured at 150 mm or 250 mm below the underside of the slabs and corrected to 100 mm below the underside of the slabs for each test. The pressure condition matches that of the corrected FRT190135 pressure condition and provides confidence for the floor specimen test results to be applied to the proposed head joint details.

Confidence in the performance of the HB Fuller Firesound sealant in head joints can be taken from the two head joints tested in plasterboard wall systems in FRT210008. The test showed that the sealant remained in place throughout the test period while being applied in the horizontal orientation within the vertical separating elements at the head of the tested system.

Further confidence can be taken in the application of control joint test data of floors to the proposed head joint details in walls due to floor elements providing a more onerous condition for sealant protection details than that of walls. When pressure conditions are comparable, as has been established above, the floor specimen would present a more onerous case than that of walls due to

the gravitational effect that can cause the sealant to detach and fall off in floor elements. Such behaviour would largely depend on the fire resistance properties of the sealant and their ability to maintain a connection with the separating element. This is not the case for sealant in the horizontal or vertical joints in the vertical wall element.

5.4 Head joints with sealant on both sides

In test FRT200213 R1.0, specimen A consisted of a 50 mm wide control joint with 25 mm deep HB Fuller Firesound sealant on both sides, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using open cell backing rods. This construction achieved an FRL of -/240/180. The insulation failure at 213 minutes was recorded on the separating element. The joint otherwise maintained insulation for up to 240 minutes. Therefore, it is considered that if the sealant is installed in a 175 mm thick separating element with an established FRL of -/240/240, the temperature adjacent to the joint is not expected to fail insulation for at least 240 minutes. As discussed in section 5.3, this data for the sealant protection detail can be applied to head joint protection details of the same widths and depths of sealant and thickness of separating element.

Specimen B consisted of a 30 mm wide control joint with 15 mm deep HB Fuller Firesound sealant on both sides, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using open cell backing rods. This construction achieved an FRL of -/240/180. The insulation failure at 215 minutes was recorded on the separating element. The joint otherwise maintained insulation for up to 240 minutes. Therefore, it is considered that if the sealant is installed in a separating element with an established FRL of -/240/240, the joint would retain the FRL of the separating element. As discussed in section 5.3, this data for the sealant protection detail can be applied to head joint protection details of the same widths and depths of sealant and thickness of separating element.

In test FRT190135 R1.0, specimen B consisted of a 40 mm wide joint with 20 mm deep HB Fuller Firesound sealant on both sides, installed in a 175 mm concrete wall system and tested in accordance with AS 1530.4:2014. This construction achieved an FRL of -/240/240. At 240 minutes, the maximum temperature on the sealant was recorded to be 155°C. It is proposed that the tested joint will be installed in a head joint, as discussed in section 5.3, this data for the sealant protection detail can be applied to head joint protection details of the same widths and depths of sealant and thickness of separating element due to the pressure correction for the top of the furnace and comparisons between the referenced test data. As the wider 50 mm × 25 mm and narrower 30 mm × 15 mm joints have demonstrated their ability to maintain integrity performance in the floor up to 240 minutes, it is reasonable to conclude that the proposed 40 mm × 20 mm joint would also maintain integrity up to 240 minutes. Based on the above, a 40 mm wide head joint with 20 mm wide sealant applied on both sides is positively assessed for an FRL of -/240/240.

In test FRT200323 R1.1, specimen D consisted of a 10 mm wide control joint with 10 mm deep HB Fuller Firesound sealant on the exposed side, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using an open cell backing rod. This construction achieved an FRL of -/240/240. This test validates the performance of HB Fuller sealant while protecting a 10 mm joint on fire side. It is proposed that the sealant be applied on both sides. The additional layer of sealant is expected to act as a secondary barrier and hence improve the joint performance. Based on the above and the analysis in section 5.3, a 10 mm wide head joint with 10 mm wide sealant applied on both sides is positively assessed for an FRL of -/240/240.

In the test FRT190135 R1.0, specimen A consisted of a 20 mm wide joint with 10 mm deep HB Fuller Firesound sealant on both sides, was tested in a 175 mm concrete wall system. This construction achieved an FRL of -/240/240. At 240 minutes, the maximum temperature on the sealant was recorded to be 156°C. Based on the above and the analysis in section 5.3, a 20 mm wide head joint with 10 mm wide sealant applied on both sides is positively assessed for a FRL of -/240/240.

The expected performance of the sealant in isolation was discussed above. However, in practice, the FRL of the joints will be governed by the FRL of the separating element they are installed into. As per AS/NZS 3600:2018, 120 mm, 150 mm and 175 mm concrete walls and floors are indicated to achieve FRLs of -/120/120, -/180/180 and -/240/240 respectively, if appropriate design conditions are met. Based on the above, the applicable FRLs of the head joints are summarised in Table 9.

Table 9 Head joints with sealant on both sides in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness		
				120 mm	150 mm	175 mm
50 mm	HB Fuller Firesound applied with open cell backing rod	25 mm	Applied on both sides as illustrated in Figure 1	-/120/120	-/180/180	-/240/240
40 mm		20 mm				
30 mm		15 mm				
20 mm		10 mm				
10 mm		10 mm				

5.5 Head joints with sealant on one side

5.5.1 Sealant on fire side

In test FRT200323 R1.1, specimen D consisted of a 10 mm wide control joint with 10 mm deep HB Fuller Firesound sealant on the exposed side, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using an open cell backing rod. This construction achieved an FRL of -/240/240.

Specimen E consisted of a 20 mm wide control joint with 15 mm deep HB Fuller Firesound sealant on the exposed side, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using an open cell backing rod. This construction achieved an FRL of -/240/30.

Specimen F consisted of a 35 mm wide control joint with 25 mm deep HB Fuller Firesound sealant on the exposed side, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using an open cell backing rod. This construction achieved an FRL of -/240/60.

The above observations establish the ability of 35 mm, 20 mm and 10 mm wide joints with respective sealant depths of 25 mm, 15 mm and 10 mm to achieve up to 240 minutes of integrity and insulation performance (as applicable) in a concrete floor when applied on the exposed side. It is proposed the protection detail will be applied in head joints in concrete walls. The insulation performance of the joints is expected to remain identical in both wall and floor applications. However, as discussed in section 5.3, joints in floors are considered more onerous in terms of integrity due to the gravitational effect. As the joints were tested in floors, it is reasonable to conclude that similar or better performance would be achieved if they are installed in walls. The pressure condition was also converted for assessment of the head joint as the top of the furnace. Based on the above, the proposed control joints are positively assessed in walls.

In practice, the FRL of the joints will be governed by the FRL of the separating element they are installed into. As per AS/NZS 3600:2018, 120 mm, 150 mm and 175 mm concrete walls are expected to achieve FRLs of -/120/120, -/180/180 and -/240/240 respectively, if appropriate design conditions are met. Based on the above, the applicable FRLs of the head joints are summarised in Table 10.

Table 10 Head joints with sealant on fire side in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness		
				120 mm	150 mm	175 mm
35 mm	HB Fuller Firesound™	25 mm	Applied on the exposed side	-/120/60	-/180/60	-/240/60

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness		
				120 mm	150 mm	175 mm
20 mm	applied with open cell backing rod	15 mm	as illustrated in Figure 2	-/120/30	-/180/30	-/240/30
10 mm		10 mm		-/120/120	-/180/180	-/240/240

5.5.2 Sealant on non-fire side

In test FRT200212 R1.0, specimen C consisted of a 10 mm wide control joint with 10 mm deep HB Fuller Firesound sealant applied on the unexposed side, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using an open cell backing rod. This construction achieved an FRL of -/240/180. The insulation failure at 183 minutes was recorded on the separating element. The joint otherwise maintained insulation for up to 240 minutes. It is therefore considered that if the joint was installed into a 175 mm separating element with an established FRL of -/240/240, the temperature adjacent to the joint is not expected to fail insulation at least up to 240 minutes.

Specimen A consisted of a 35 mm wide control joint with 25 mm deep HB Fuller Firesound sealant on the unexposed side, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using an open cell backing rod. This construction achieved an integrity performance of 241 minutes and an insulation performance of 105 minutes. It is proposed the 35 mm wide joint will be installed in 120 mm concrete floor. The reduction in floor thickness is likely to increase the recorded temperature on the unexposed side. However, it is considered that, this is not sufficient to cause insulation failure for at least 90 minutes. Based on the above and the discussion in section 5.3, a 35 mm wide head joint with 25 mm deep HB Fuller Firesound sealant on the unexposed side, installed in a 120 mm concrete wall, is positively assessed for -/120/90.

Specimen B consisted of a 20 mm wide control joint with 15 mm deep HB Fuller Firesound sealant on the unexposed side, installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealant was applied using an open cell backing rod. This construction achieved an integrity performance of 241 minutes and an insulation performance of 124 minutes. It is proposed the protection detail will be installed in a 20 mm head joint in a 120 mm thick concrete wall. This signifies a reduction in separating element thickness, which is likely to reduce the insulation of the joint. Therefore, a 20 mm wide head joint with 15 mm deep HB Fuller Firesound sealant on the unexposed side, installed in a 120 mm concrete wall, is conservatively assessed to -/120/90.

In practical applications, the FRL of the joints will be dictated by the separating element they are installed into. As per AS/NZS 3600:2018, 120 mm, 150 mm and 175 mm concrete walls are stipulated to achieve FRL of -/120/120, -/180/180 and -/240/240, respectively, if appropriate design conditions are met. Based on the above, the applicable FRLs of the head joints are summarised in Table 11.

Table 11 Head joints with sealant on non-fire side in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness		
				120 mm	150 mm	175 mm
35 mm	HB Fuller Firesound™ applied with open cell backing rod	25 mm	Applied on the unexposed side as illustrated in Figure 2	-/120/90	-/180/90	-/240/90
20 mm		15 mm		-/120/90	-/180/120	-/240/120
10 mm		10 mm		-/120/120	-/180/180	-/240/240

5.6 Double caulked head joints

In test FRT200323 R1.1, specimen A consisted of a 35 mm wide double caulked control joint with 30 mm and 20 mm deep sealant installed in a 150 mm concrete floor and tested in accordance with

AS 1530.4:2014. The sealants were applied 45 mm apart and installed using backing rods. This construction achieved an FRL of -/240/240.

Specimen C consisted of a 10 mm wide double caulked control joint with 10 mm and 10 mm deep sealant installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealants were applied back-to-back and installed using backing rods. This construction achieved an FRL of -/240/240.

Specimen B consisted of a 25 mm wide double caulked control joint with 25 mm and 15 mm deep sealant installed in a 150 mm concrete floor and tested in accordance with AS 1530.4:2014. The sealants were applied back-to-back and installed using backing rods. This construction achieved an FRL of - /240/90. The reduction in insulation performance can be attributed to back-to-back installation of the sealant as it offers heat transfer through conduction in addition to radiation and convection.

It is proposed that the sealants be applied 45 mm apart with an air gap. This is expected to eliminate the primary mode of heat transfer through conduction. Furthermore, the sealant depth will be increased to 30 mm and 20 mm. This proposal replicates the construction of 35 mm joints, which achieved an FRL of -/240/240. The proposal to reduce width signifies a 10 mm decrease in sealant, which is being replaced by a more heat resistant concrete element. Therefore, the proposed construction is expected to achieve similar or better performance. Based on the above and the discussion in section 5.3, the proposed 25 mm wide double caulked head joint with 30 mm and 20 mm deep sealant is positively assessed for an FRL of -/240/240.

In practical applications, the FRL of the joints will be dictated by the separating element they are installed into. As per AS/NZS 3600:2018, 120 mm, 150 mm and 175 mm concrete walls are stipulated to achieve FRL of -/120/120, -/180/180 and -/240/240, respectively, if appropriate design conditions are met. Based on the above, the applicable FRLs of the head joints are summarised in Table 12.

Table 12 Double caulked head joints in concrete walls

Head joint width	Local fire-stopping protection	First layer sealant depth	Second layer sealant depth	Distance between sealant	FRL		
					Minimum separating element thickness		
					120 mm	150 mm	175 mm
35 mm	HB Fuller Firesound™ with open cell backing rod	30 mm	20 mm	Minimum 45 mm with an airgap	-/120/120	-/180/180	-/240/240*
25 mm wide		30 mm	20 mm				
10 mm wide		10 mm	10 mm	Applied back-to-back or with an air gap	-/120/120	-/180/180	-/240/240

*Distance between the face of the exposed separating element and first layer of sealant must not be more than 40 mm.

It is proposed that the sealant depth of 25 mm wide double caulked joint be varied to be 30 mm and 15 mm when installed in 120 mm concrete wall. The tested 25 mm joint with 25 mm and 15 mm sealant depth achieved an FRL of -/240/90. It is noted that, the insulation failure at 115 minutes was recorded at the centre of the control joint. As discussed above, the insulation failure at 115 minutes is attributed to the back-to-back installation of the sealant, which facilitates additional heat transfer through conduction. In the proposed system, the sealant will be applied with a 45 mm air gap, effectively eliminating heat transfer through conduction. Additionally, the first layer sealant depth is being increased from 25 mm to 30 mm, which is expected to offer increased fire resistance. Based on the above, it is concluded that the proposed variations to the construction of 25 mm wide joint are sufficient for an insulation performance of at least 120 minutes.

It is further proposed that the intermediate sizes between 35 mm, 25 mm and 10 mm joints – specifically, 11 mm – 25 mm and 26 mm – 35 mm – are assessed. The proposal includes replicating the sealant depth of the widest joint of the range which is either tested or assessed for an FRL of up to -/240/240. As the widest joint with the same sealant depth has achieved an FRL up to -/240/240, it is reasonable to conclude that the narrower joint of the range would also achieve the same FRL. Based on the above, the joints listed in Table 13 are positively assessed for the shown FRL.

Table 13 Double caulked head joints in concrete walls

Head joint width	Local fire-stopping protection	First layer sealant depth	Second layer sealant depth	Distance between sealant	FRL		
					Minimum separating element thickness		
					120 mm	150 mm	175 mm
26 mm – 35 mm	HB Fuller Firesound with open cell backing rod	30 mm	20 mm	Minimum 45 mm with an airgap as shown in Figure 3	-/120/120	-/180/180	-/240/240**
11 mm – 25 mm wide		30 mm	20 mm*				
10 mm wide		10 mm	10 mm	Applied back-to-back or with an air gap as shown in Figure 3	-/120/120	-/180/180	-/240/240

*Can be reduced to 15 mm if installed in 120 mm concrete wall for -/120/120.
**Distance between the face of the separating element and first layer of sealant must not be more than 40 mm.

5.7 Applicable separating element

It is proposed that the applicability of the separating element be extended to include solid block/core-filled masonry and hollow core masonry constructions. In principle, such an assessment is possible provided the proposed separating elements can achieve the required period of fire resistance. Solid block/core-filled masonry is expected to achieve the same fire resistance performance as solid block concrete, and hence is positively assessed.

In the case of hollow core masonry blocks, it is stipulated that the separating element is either tested or assessed for the required period of FRL by others. With consideration to the baseline test data on solid concrete blocks, it is further stipulated that the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

5.8 Assessment outcome

Based on the above discussions, it is the opinion of this testing laboratory that the systems and the variations listed in Table 14– Table 17 are expected to achieve the FRLs as shown in accordance with AS 1530.4:2014 and assessed in accordance with AS 4072.1:2005.

Table 14 Head joints with sealant on both sides in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness*		
				120 mm	150 mm	175 mm
50 mm	HB Fuller Firesound applied with	25 mm	Applied on both sides as	-/120/120	-/180/180	-/240/240
40 mm		20 mm				

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness*		
				120 mm	150 mm	175 mm
30 mm	open cell backing rod	15 mm	illustrated in Figure 1			
20 mm		10 mm				
10 mm		10 mm				

*The stipulated separating element thickness is applicable to solid block/core-filled concrete or masonry construction. The separating element may be varied to hollow core masonry. In such a case, the separating element must be tested or assessed to achieve the required FRL. For hollow core masonry, the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

Table 15 Head joints with sealant on fire side in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness*		
				120 mm	150 mm	175 mm
35 mm	HB Fuller Firesound applied with open cell backing rod	25 mm	Applied on the exposed side as illustrated in Figure 2	-/120/60	-/180/60	-/240/60
20 mm		15 mm		-/120/30	-/180/30	-/240/30
10 mm		10 mm		-/120/120	-/180/180	-/240/240

*The stipulated separating element thickness is applicable to solid block/core-filled concrete or masonry construction. The separating element may be varied to hollow core masonry. In such a case, the separating element must be tested or assessed to achieve the required FRL. For hollow core masonry, the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

Table 16 Head joints with sealant on non-fire side in concrete walls

Head joint width	Local fire-stopping protection	Sealant depth	Sealant application	FRL		
				Minimum separating element thickness*		
				120 mm	150 mm	175 mm
35 mm	HB Fuller Firesound applied with open cell backing rod	25 mm	Applied on the unexposed side as illustrated in Figure 2	-/120/90	-/180/90	-/240/90
20 mm		15 mm		-/120/90	-/180/120	-/240/120
10 mm		10 mm		-/120/120	-/180/180	-/240/240

*The stipulated separating element thickness is applicable to solid/core-filled block concrete or masonry construction. The separating element may be varied to hollow core masonry. In such a case, the separating element must be tested or assessed to achieve the required FRL. For hollow core masonry, the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

Table 17 Double caulked head joints in concrete walls

Head joint width	Local fire-stopping protection	First layer sealant depth	Second layer sealant depth	Distance between sealant	FRL
					Minimum separating element thickness***

					120 mm	150 mm	175 mm
26 mm – 35 mm	HB Fuller Firesound with open cell backing rod	30 mm	20 mm	Minimum 45 mm with an airgap as shown in Figure 3	-/120/120	-/180/180	-/240/240**
11 mm – 25 mm wide		30 mm	20 mm*				
10 mm wide		10 mm	10 mm	Applied back-to-back or with an air gap as shown in Figure 3	-/120/120	-/180/180	-/240/240

*Can be reduced to 15 mm if installed in 120 mm concrete wall for -/120/120.

**Distance between the face of the exposed separating element and first layer of sealant must not be more than 40 mm.

***The stipulated separating element thickness is applicable to solid/core-filled block concrete or masonry construction. The separating element may be varied to hollow core masonry. In such a case, the separating element must be tested or assessed to achieve the required FRL. For hollow core masonry, the joints must not overlap the hollow core. The backing rod and the sealant must be sandwiched between rigid surfaces only.

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 resistance, but it should be recognised that a single test method will not provide a full assessment of fire resistance 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 test data, information and experience available at the time of preparation. If contradictory evidence becomes available to the assessing authority, the assessment will be unconditionally withdrawn and the report sponsor will be notified in writing. Similarly, the assessment should be re-evaluated, if the assessed construction is subsequently tested since actual test data is deemed to take precedence.

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 of the proposed systems expected to be demonstrated on a test in accordance with AS 1530.4:2014, based on the evidence referred to in this report.

This assessment is provided to HB Fuller Aust CO P/L for their own specific purposes. This report may be used as Evidence of Suitability in accordance with the requirements of the relevant National Construction Code. Building certifiers and other third parties must determine the suitability of the systems described in this report for a specific installation.

Appendix A Summary of supporting test data

A.1 Test report – FRT190135 R1.0

Table 18 Information about test report

Item	Information about test report															
Report sponsor	HB Fuller Aust Co P/L															
Test laboratory	Warringtonfire Australia, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.															
Test date	The fire resistance test was done on 26 June 2019.															
Test standards	The test was done in accordance with AS 1530.4:2014.															
Variation to test standards	The pressure was up to 3 Pa below the limits prescribed in the standard during the 90–100 minute period. The pressure and temperature were within the limits for the rest of the test duration. The time under pressure is unlikely to have affected the outcome of the test.															
General description of tested specimen	A 20 mm and 40 mm wide control joints protected with HB Fuller Firesound in 175 mm thick concrete wall were tested. The construction details of the tested specimens are given below:															
	<table border="1"> <thead> <tr> <th>Control joint</th> <th>Service</th> <th>Local fire-stopping protection</th> <th>Aperture size (mm)</th> <th>Sealant depth (mm)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Control joint</td> <td>HB Fuller Firesound</td> <td>20 × 1000</td> <td>10</td> </tr> <tr> <td>B</td> <td>Control joint</td> <td>HB Fuller Firesound</td> <td>40 × 1000</td> <td>20</td> </tr> </tbody> </table>	Control joint	Service	Local fire-stopping protection	Aperture size (mm)	Sealant depth (mm)	A	Control joint	HB Fuller Firesound	20 × 1000	10	B	Control joint	HB Fuller Firesound	40 × 1000	20
	Control joint	Service	Local fire-stopping protection	Aperture size (mm)	Sealant depth (mm)											
A	Control joint	HB Fuller Firesound	20 × 1000	10												
B	Control joint	HB Fuller Firesound	40 × 1000	20												
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.															

The test specimen achieved the following results – see Table 19.

Table 19 Results summary for this test report

Control joint	Criteria	Results	Fire resistance level (FRL)
A	Structural adequacy	Not applicable	-/240/240
	Integrity	No failure at 241 minutes	
	Insulation	No failure at 241 minutes	
B	Structural adequacy	Not applicable	-/240/240
	Integrity	No failure at 241 minutes	
	Insulation	No failure at 241 minutes	

A.2 Test report – FRT200212 R1.0

Table 20 Information about test report

Item	Information about test report																				
Report sponsor	HB Fuller Australia Pty Ltd																				
Test laboratory	Warringtonfire Australia, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.																				
Test date	The fire resistance test was done on 26 August 2020.																				
Test standards	The test was done in accordance with AS 1530.4:2014.																				
Variation to test standards	None																				
General description of tested specimen	<p>A series of control joints protected with HB Fuller Firesound in 150 mm thick concrete floor was tested. The applicable construction details of the tested specimens are given below:</p> <table border="1"> <thead> <tr> <th>Control joint</th> <th>Service</th> <th>Local fire-stopping protection</th> <th>Aperture size (mm)</th> <th>Sealant depth (mm)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Control joint</td> <td>HB Fuller Firesound</td> <td>35 × 1000</td> <td>25 mm on the unexposed side</td> </tr> <tr> <td>B</td> <td>Control joint</td> <td>HB Fuller Firesound</td> <td>20 × 1000</td> <td>15 mm on the unexposed side</td> </tr> <tr> <td>C</td> <td>Control joint</td> <td>HB Fuller Firesound</td> <td>10 × 1000</td> <td>10 mm on the unexposed side</td> </tr> </tbody> </table>	Control joint	Service	Local fire-stopping protection	Aperture size (mm)	Sealant depth (mm)	A	Control joint	HB Fuller Firesound	35 × 1000	25 mm on the unexposed side	B	Control joint	HB Fuller Firesound	20 × 1000	15 mm on the unexposed side	C	Control joint	HB Fuller Firesound	10 × 1000	10 mm on the unexposed side
Control joint	Service	Local fire-stopping protection	Aperture size (mm)	Sealant depth (mm)																	
A	Control joint	HB Fuller Firesound	35 × 1000	25 mm on the unexposed side																	
B	Control joint	HB Fuller Firesound	20 × 1000	15 mm on the unexposed side																	
C	Control joint	HB Fuller Firesound	10 × 1000	10 mm on the unexposed side																	
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.																				

The test specimen achieved the following results – see Table 21.

Table 21 Results summary for this test report

Control joint	Criteria	Results	Fire resistance level (FRL)
A	Structural adequacy	Not applicable	-/240/90
	Integrity	No failure at 241 minutes	
	Insulation	Failure at 105 minutes	
B	Structural adequacy	Not applicable	-/240/120
	Integrity	No failure at 241 minutes	
	Insulation	Failure at 124 minutes	
C	Structural adequacy	Not applicable	-/240/180
	Integrity	No failure at 241 minutes	
	Insulation	Failure at 183 minutes	

A.3 Test report – FRT200213 R1.0

Table 22 Information about test report

Item	Information about test report															
Report sponsor	H B Fuller Australia Pty Ltd															
Test laboratory	Warringtonfire Australia, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.															
Test date	The fire resistance test was done on 25 August 2020.															
Test standards	The test was done in accordance with AS 1530.4:2014.															
Variation to test standards	The pressure was up to 2 Pa below the limits prescribed in the standard during the 215–220 minute periods. The pressure and temperature were within the limits for the rest of the test. Due to the nature of the specimen and the fact that no significant events occurred during this time period, this under pressure is unlikely to have invalidated the test result.															
General description of tested specimen	<p>30 mm and 50 mm wide control joints protected on both the exposed and unexposed side with HB Fuller Firesound and open cell backing rods in 150 mm thick concrete floor were tested. The applicable construction details of the tested specimens are given below:</p> <table border="1"> <thead> <tr> <th>Penetration system</th> <th>Service</th> <th>Local fire-stopping protection</th> <th>Aperture size (mm)</th> <th>Sealant depth (mm)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Control joint</td> <td>H B Fuller Firesound</td> <td>30 × 1000</td> <td>15</td> </tr> <tr> <td>B</td> <td>Control joint</td> <td>H B Fuller Firesound</td> <td>50 × 1000</td> <td>25</td> </tr> </tbody> </table>	Penetration system	Service	Local fire-stopping protection	Aperture size (mm)	Sealant depth (mm)	A	Control joint	H B Fuller Firesound	30 × 1000	15	B	Control joint	H B Fuller Firesound	50 × 1000	25
Penetration system	Service	Local fire-stopping protection	Aperture size (mm)	Sealant depth (mm)												
A	Control joint	H B Fuller Firesound	30 × 1000	15												
B	Control joint	H B Fuller Firesound	50 × 1000	25												
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.															

The test specimen achieved the following results – see Table 23.

Table 23 Results summary for this test report

Control joint	Criteria	Results	Fire resistance level (FRL)
A	Structural adequacy	Not applicable	-/240/180
	Integrity	No failure at 241 minutes	
	Insulation	Failure at 215 minutes	
B	Structural adequacy	Not applicable	-/240/180
	Integrity	No failure at 241 minutes	
	Insulation	Failure at 213 minutes	

A.4 Test report – FRT200323 R1.1

Table 24 Information about test report

Item		Information about test report					
Report sponsor	HB Fuller Aust Co P/L						
Test laboratory	Warringtonfire Australia, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.						
Test date	The fire resistance test was done on 21 June 2021.						
Test standards	The test was done in accordance with AS 1530.4:2014.						
Variation to test standards	None						
General description of tested specimen	A series of single sided and double caulked control joints protected with HB Fuller Firesound were tested in a 150 mm thick concrete floor. The tested construction details are given below:						
	Control joint	Joint width	Local fire-stopping protection	First layer backing rod depth	First layer sealant thickness	Second layer backing rod depth	Second layer sealant thickness
	A	35 mm	<ul style="list-style-type: none"> HB Fuller Firesound Open cell backing rod 	95 mm from the exposed side	30 mm	20 mm from the exposed side	20 mm
	B	25 mm / 20 mm		60 mm from the exposed side	25 mm	15 mm from the exposed side	15 mm
	C	10 mm		35 mm from the exposed side	10 mm	10 mm from the exposed side	10 mm
	D	10 mm		10 mm from the exposed side	10 mm	–	–
	E	20 mm		15 mm from the exposed side	15 mm	–	–
	F	35 mm		25 mm from the exposed side	25 mm	–	–
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.						

The test specimen achieved the following results – see Table 25.

Table 25 Results summary for this test report

Control joint	Criteria	Results	Fire resistance level (FRL)
A	Structural adequacy	Not applicable	-/240/240
	Integrity	No failure at 241 minutes	
	Insulation	No failure at 241 minutes	
B	Structural adequacy	Not applicable	-/240/90
	Integrity	No failure at 241 minutes	

Control joint	Criteria	Results	Fire resistance level (FRL)
	Insulation	Failure at 115 minutes	
C	Structural adequacy	Not applicable	-/240/240
	Integrity	No failure at 241 minutes	
	Insulation	No failure at 241 minutes	
D	Structural adequacy	Not applicable	-/240/240
	Integrity	No failure at 241 minutes	
	Insulation	No failure at 241 minutes	
E	Structural adequacy	Not applicable	-/240/30
	Integrity	No failure at 241 minutes	
	Insulation	Failure at 42 minutes	
F	Structural adequacy	Not applicable	-/240/60
	Integrity	No failure at 241 minutes	
	Insulation	Failure at 65 minutes	

A.5 Test report – FRT210008 R1.0

Table 26 Information about test report

Item	Information about test report															
Report sponsor	H B Fuller Australia Pty Ltd															
Test laboratory	Warringtonfire Australia, 409-411 Hammond Road, Dandenong, Victoria 3175, Australia.															
Test date	The fire resistance test was done on 23 June 2021.															
Test standards	The test was done in accordance with AS 1530.4:2014.															
Variation to test standards	<ul style="list-style-type: none"> Control joints E and H were shorter than the full length specified in clause 10.4.2 of AS 1530.4:2014. The furnace pressure was measured at mid-height of the vertical control joints and not at mid-height of control joints D and H as specified in clause 10.8.2 of AS 1530.4:2014. <p>This means that the test was not conducted in strict accordance with AS 1530.4:2014 for control joints D, E and H, so an FRL cannot be assigned. The data obtained is for informational purposes only.</p> <ul style="list-style-type: none"> The pressure was up to 9 Pa above the limits prescribed in the standard during the 150-155 minute period. The pressure and temperature were within the limits for the rest of the test. This overpressure resulted in more onerous test conditions, so would not invalidate the test result. 															
General description of tested specimen	<p>The tested system consisted of a 128 mm thick steel stud fire rated plasterboard wall system clad with two layers of 16 mm thick fire rated plasterboard either side and a 116 mm thick steel stud fire rated plasterboard wall system clad with two layers of 13 mm thick fire rated plasterboard either side. The control joints relevant to this assessment were located at the head of the system and are outlined below:</p> <table border="1"> <thead> <tr> <th>Control joint</th> <th>Aperture size</th> <th>Protection</th> <th>Sealant thickness (mm)</th> <th>Sealant height (mm)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1000 mm wide × 20 mm high × 32 mm deep</td> <td>HB Fuller Firesound™ was applied into the aperture on both the exposed and unexposed side of the separating element. It was applied onto the wall track of the steel frame – between the two layers of 16 mm thick fire rated plasterboard and the brickwork of the test frame.</td> <td>32</td> <td>20</td> </tr> <tr> <td>E</td> <td>584 mm wide × 20 mm high × 26 mm deep</td> <td>HB Fuller Firesound™ was applied into the aperture on both the exposed and unexposed side of the separating element onto the wall track of the steel – between the two layers of</td> <td>26</td> <td>20</td> </tr> </tbody> </table>	Control joint	Aperture size	Protection	Sealant thickness (mm)	Sealant height (mm)	A	1000 mm wide × 20 mm high × 32 mm deep	HB Fuller Firesound™ was applied into the aperture on both the exposed and unexposed side of the separating element. It was applied onto the wall track of the steel frame – between the two layers of 16 mm thick fire rated plasterboard and the brickwork of the test frame.	32	20	E	584 mm wide × 20 mm high × 26 mm deep	HB Fuller Firesound™ was applied into the aperture on both the exposed and unexposed side of the separating element onto the wall track of the steel – between the two layers of	26	20
Control joint	Aperture size	Protection	Sealant thickness (mm)	Sealant height (mm)												
A	1000 mm wide × 20 mm high × 32 mm deep	HB Fuller Firesound™ was applied into the aperture on both the exposed and unexposed side of the separating element. It was applied onto the wall track of the steel frame – between the two layers of 16 mm thick fire rated plasterboard and the brickwork of the test frame.	32	20												
E	584 mm wide × 20 mm high × 26 mm deep	HB Fuller Firesound™ was applied into the aperture on both the exposed and unexposed side of the separating element onto the wall track of the steel – between the two layers of	26	20												

			13 mm thick fire rated plasterboard and the brickwork of the test frame.		
Instrumentation	The test report states that the instrumentation was in accordance with AS 1530.4:2014.				

The test specimen achieved the following results – see Table 23.

Table 27 Results summary for this test report

Control joint	Criteria	Results	Fire resistance level (FRL)
A	Structural adequacy	Not applicable	-/180/180
	Integrity	No failure at 195 minutes	
	Insulation	No failure at 195 minutes	
E	Structural adequacy	Not applicable	NA
	Integrity	No failure at 195 minutes	
	Insulation	Failure at 189 minutes	

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