ASSESSMENT REPORT

The fire resistance performance of HB Fuller FireSound Grey Acrylic Sealant protecting control joints in concrete or masonry walls when tested in accordance with AS1530.4-2014 Section 2, 4 and 10 and AS4072.1-2005 as appropriate

EWFA Report No:

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Report Sponsor:

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Testing. Advising. Assuring.

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1 INTRODUCTION

This report was previously reviewed on 23/08/2016 with reference number 21503-02. Since the previous issue, a review of the referenced assessment report EWFA 45628 was undertaken together with the extension of validity for a further 5 years. This report has been updated to incorporate the changes made. Refer to revised Assessment Report EWFA 45628.1 for details.

This report presents an assessment of the fire resistance performance of HB Fuller FireSound Grey Acrylic Sealant protecting control joints in concrete or masonry walls when tested in accordance with AS1530.4-2014 sections 2, 4, and 10, and AS4072.1-2005, as appropriate.

The tested systems are described in Section 2 and are subject to the proposed variations described in Section 3 if tested in accordance with the referenced test method described in Section 4. The conclusions of the report are summarised in Section 5.

The validity of this assessment is conditional on compliance with Sections 7, 8 and 9 of this report.

Summaries of the test data on which this assessment is based are provided in the Appendices together with a summary of the critical issues leading to the assessment conclusions including the main points of argument.

2 TESTED PROTOTYPES

This assessment is based on a fire resistance tests WFRA 40869 and 41003.

The test specimen reported in WFRA 40869 comprised a 120mm thick concrete floor slab incorporating various control joints protected with HB Fuller FireSound Grey Acrylic sealant and tested in accordance with AS1530.4-1997 Sections 2, 4 and 10 and AS4072.1-1992 as appropriate.

The test specimen reported in WFRA 41003 comprised a 140mm thick hollow core concrete block wall incorporating various control joints protected with HB Fuller FireSound Grey Acrylic sealant and tested in accordance with AS1530.4-1997 Sections 2, 4 and 10 and AS4072.1-1992 as appropriate.

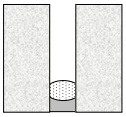
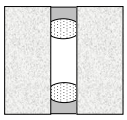
In addition, reference is made to WFRA 45628.1, which presents an assessment of the performance of HB Fuller FireSound Grey Acrylic sealant when used for control joints in concrete floors based on data from WFRA 40869 and finite element modelling of various configurations.

3 VARIATION TO TESTED PROTOTYPES

The proposed construction is to be as assessed in WFRA 45628.1 except for the following variations;

a) The control joints are to be orientated vertically and installed in walls.
b) The control joints are to be installed in normal weight concrete, lightweight concrete or, hollow or solid block masonry construction.
c) The control joints are to include those tested in WFRA 41003.

Table 1 – Proposed Configuration for HB Fuller FireSound Grey Acrylic Sealant Control Joints in Concrete or Masonry Walls

Required Wall Construction		Joint Configuration			
Minimum Wall FRL	**Min Wall Width (mm)**	**Joint Width (mm)**	**Seal Depth (mm)**	**Flexible Urethane Foam Backing Rod Depth (mm)**	**Seal Position**
120/120/120 or -/120/120	120	10	10	30	Fire Side only  OR Both Sides 
		20	10	30	
		30	15	30	
		40	20	30	
		50	20	45	
180/180/180 or -/180/180	150	10	10	30	
		20	10	30	
		30	15	30	
		40	20	30	
		50	20	45	
240/240/240 or -/240/240	170	20	10	30	
		30	15	30	
		40	20	30	
		50	20	45	

4 REFERENCED TEST PROCEDURES

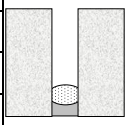
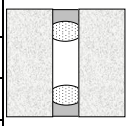
This report is prepared with reference to the requirements of AS1530.4-2014 Sections 2, 4 and 10 and AS4072.1-2005 as appropriate to control joints.

5 FORMAL ASSESSMENT SUMMARY

Based on the discussion presented in this report, it is the opinion of this testing authority that if the tested prototype described in Section 2 had been modified within the scope of Section 3, it

will achieve the fire resistance as stated below in Table 2 if tested in accordance with the test method referenced in Section 4 and subject to the requirements of Section 7.

Table 2 - The fire Resistance of HB Fuller FireSound Grey Acrylic Sealant Control Joints in Concrete or Masonry Walls

Required Wall Construction		Joint Configuration				Fire Resistance of Control Joint	
Minimum Wall FRL	Min Wall Width (mm)	Joint Width (mm)	Seal Depth (mm)	Flexible Urethane Foam Backing Rod Depth (mm)	Seal Position	Integrity	Insulation
120/120/120 or -/120/120	120	10	10	30	Fire Side only  OR Both Sides	120	120
		20	10	30			
		30	15	30			
		40	20	30			
		50	20	45			
180/180/180 or -/180/180	150	10	10	30		180	180
		20	10	30			
		30	15	30			
		40	20	30			
		50	20	45			
240/240/240 or -/240/240	170	20	10	30		240	240
		30	15	30			
		40	20	30			
		50	20	45			

6 DIRECT FIELD OF APPLICATION

The application of the results of this assessment is for control joints in concrete or masonry walls exposed from one or both sides depending on design.

The results of the assessment are based on actual test data and the scope is necessarily limited to the specifications indicated Section 3 and discussed in the Appendices of the assessment.

7 REQUIREMENTS

This report details the methods of construction, test conditions and assessed results that would have been expected had the specific elements of construction described herein been tested in accordance with AS1530.4-2014.

Any further variations with respect to size, constructional details, loads, stresses, edge or end conditions, other than those identified in this report, may invalidate the conclusions drawn in this report.

8 VALIDITY

This assessment report does not provide an endorsement by Exova Warringtonfire Aus Pty Ltd of the actual products supplied.

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.

Because of 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.

The assessment can therefore only relate to the actual prototype test specimens, testing conditions, and methodology described in the supporting data, and does not imply any performance abilities of constructions of subsequent manufacture.

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 the subject of constant review and improvement and it is recommended that this report be reviewed on or, before, the stated expiry date.

The information contained in this report shall not be used for the assessment of variations other than those stated in the conclusions above. The assessment is valid provided no modifications are made to the systems detailed in this report. All details of construction should be consistent with the requirements stated in the relevant test reports and all referenced documents.

9 AUTHORITY

9.1 APPLICANT UNDERTAKINGS AND CONDITIONS OF USE

By using this report as evidence of compliance or performance the applicant(s) confirms 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, and
- they agree to withdraw this assessment from circulation should the component or element of structure be 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, and
- 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, agree to ask the assessing authority to withdraw the assessment.

9.2 GENERAL CONDITIONS OF USE

This report may only be reproduced in full without modifications by the report sponsor. Copies, extracts or abridgments of this report in any form shall not be published by other organisations or individuals without the permission of Exova Warringtonfire Aus Pty Ltd

9.3 AUTHORISATION ON BEHALF OF EXOVA WARRINGTONFIRE AUS PTY LTD

Prepared by:	Reviewed by:
	
Hon Wong	Omar Saad

9.4 DATE OF ISSUE

19/06/2017

9.5 EXPIRY DATE

30/06/2022

APPENDIX A - SUMMARY OF SUPPORTING DATA

A.1 TEST REPORT – WFRA 40869

A.1.1 Report Sponsor

A.1.1.1 HB Fuller Australia Company Pty Ltd, 16-20 Red Gum Drive, Dandenong South, VIC 3175.

A.1.2 Test Laboratory

A.1.2.1 Warrington Fire Research (Aust) Pty Ltd, Unit 2, 409-411 Hammond Road, Dandenong South, Victoria, 3175.

A.1.3 Test Date

A.1.3.1 The test was conducted on 21st August 2001.

A.1.4 Test standards prescribed

A.1.4.1 The test was conducted in accordance with AS1530.4-1997 and AS4072.1-1992 as appropriate for control joints.

A.1.5 General description of tested specimens

A.1.5.1 The specimen comprised a 120mm normal weight concrete slab incorporating four control joints protected by a sealant product confirmed by the manufacturer to be identical to hB Fuller FireSound Grey Acrylic. The control joints were designated Control Joints 1, 2, 3 and 4.

No	Description
1	50mm wide x 20mm deep bead of sealant on fire exposed side only
2	20mm wide x 10mm deep bead of sealant on fire and non-fire exposed sides
3	50mm wide x 20mm deep bead of sealant on fire and non-fire exposed sides
4	20mm wide x 10mm deep bead of sealant on fire exposed side only

A.1.6 Instrumentation

A.1.6.1 This was accordance with AS1530.4-1997 and AS4072.1-1992 as appropriate for control joints.

A.1.7 Test Results

No	Description	Integrity	Insulation
1	50mm wide x 20mm deep bead of sealant on fire exposed side only	No failure at 241 minutes	65 Minutes on Sealant
2	20mm wide x 10mm deep bead of sealant on fire and non-fire exposed sides	No failure at 241 minutes	145 Minutes on Sealant
3	50mm wide x 20mm deep bead of sealant on fire and non-fire exposed sides	No failure at 241 minutes	166 Minutes on slab No failure at 241 minutes on Sealant
4	20mm wide x 10mm deep bead of sealant on fire exposed side only	No failure at 241 minutes	167 Minutes on slab No failure at 241 minutes on Sealant

A.1.7.1 The test was discontinued after a period of 241 minutes.

A.1.7.2 The calculated pressure in the furnace was 20Pa at 100mm from the soffit of the slab.

A.2 TEST REPORT – WFRA 41003

A.2.1 Report Sponsor

A.2.1.1 HB Fuller Australia Company Pty Ltd, 16-20 Red Gum Drive, Dandenong South, VIC 3175.

A.2.2 Test Laboratory

A.2.2.1 Warrington Fire Research (Aust) Pty Ltd, Unit 2, 409-411 Hammond Road, Dandenong South, Victoria, 3175.

A.2.3 Test Date

A.2.3.1 The test was conducted on 15th August 2003.

A.2.4 Test standards prescribed

A.2.4.1 The test was conducted in accordance with AS1530.4-1997 and AS4072.1-1992 as appropriate for control joints.

A.2.5 General description of tested specimens

A.2.5.1 The specimen comprised a 140mm hollow core masonry wall incorporating two control joints protected by a sealant product confirmed by the manufacturer to be identical to HB Fuller FireSound Grey Acrylic and various other services. The control joint of interest in this report was designated Control Joint H.

No	Description
H	Control joint sealed on non-exposed side with HB Fuller FireSound Grey Acrylic Sealant 10mm wide x 5mm deep.

A.2.6 Instrumentation

A.2.6.1 This was accordance with AS1530.4-1997 and AS4072.1-1992 as appropriate for control joints.

A.2.7 Test Results

No	Description	Integrity	Insulation
H	Control joint sealed on non-exposed side with HB Fuller FireSound Sealant 10mm wide x 5mm deep.	No failure at 181minutes	148 Minutes on Sealant 141 Minutes on Blocks

A.2.7.1 The test was discontinued after a period of 181 minutes.

A.2.7.2 The calculated pressure in the furnace was 15Pa, 360mm from the bottom wall.

A.3 RELEVANCE OF WFRA 41003 TEST DATA TO AS 1530.4-2014 FROM AS 1530.4-1997.

A.3.1 General

A.3.1.1 The fire resistance tests WFRA 41003 was conducted in accordance with AS1530.4-1997 and AS4072.1-1992, which differs from AS1530.4-2014 and AS 4072.1-2005.

A.3.1.2 The differences in test method considered capable of significantly altering specimen performance are discussed below.

A.3.2 Furnace Temperature measurement

A.3.2.1 The specification for furnace thermocouples in AS1530.4-2014 and AS1530.4-1997 are not appreciably different.

A.3.3 Furnace Temperature Regime

A.3.3.1 The specification for furnace thermocouples in AS1530.4-2014 and AS1530.4-1997 are not appreciably different.

A.3.3.2 AS1530.4-2014 specifies furnace temperature to follow the following trend:

$$T_{AS15304-2014} = 345\log_{10}(8t+1) + 20$$

A.3.3.3 AS1530.4-1997 specifies furnace temperature to follow the following trend:

$$T_{AS15304-1997} = 345\log_{10}(8t+1) + T_o \qquad 10^oC \le T_o \le 40^oC$$

A.3.3.4 The parameters outlining the accuracy of control of the furnace temperature in AS1530.4-2014 and AS1530.4-1997 are not appreciably different.

A.3.4 Specimen Temperature Measurement

A.3.4.1 The parameters outlining the accuracy of control of the furnace temperature in AS1530.4-2014 and AS1530.4-1997 are not appreciably different.

A.3.4.2 AS 1530.4-2014 specifies specimen thermocouples as Type K, MIMS thermocouples with a stainless steel sheaf having a wire diameter not exceeding 0.5 mm and an overall diameter of 3mm. The thermocouples shall be supported by a heat-resisting tube with the measuring junction protruding a minimum 25 mm. Each thermocouple shall have the tail of its measuring junction soldered to the centre of a 12mm diameter x 0.2mm thick copper disc. The disc shall be covered by 30 ± 0.5mm x 30 ± 0.5mm x 2.0 ± 0.5mm thick inorganic insulating pad having a density of 900 ± 100kg/m3.

A.3.4.3 AS 1530.4-1997 specifies specimen thermocouples as Type K, MIMS thermocouples with a stainless steel sheaf having a wire diameter not exceeding 0.5 mm and an overall diameter of 3mm. The thermocouples shall be supported by a heat-resisting tube with the measuring junction protruding a minimum 25 mm. Each thermocouple shall have the tail of its measuring junction soldered to the centre of a 12mm diameter x 0.2mm thick copper disc. The disc shall be covered by an oven-dry pad, not less than 30mm square, made from material having a value √(kpc) not greater than 600 at 150°C, and of such thickness as will give a thermal resistance (R = t/K) of 0.015 K/W – 0.025 K/W at 150°C.

A.3.4.4 For control joints installed in horizontal separating elements, AS1530.4-2014 requires thermocouples to be located as follows:

a) At least three on the surface of the seal, with one thermocouple for each 0.3m^2 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 from each 500mm of the perimeter.

c) On the surface of the separating element 25mm from the edge of opening, with one thermocouple for each 500mm of the perimeter.

d) Thermocouples used for the evaluation of the insulation performance of control joints 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 these circumstances, the size of the pad may be reduced to facilitate the fitting of the thermocouple.

A.3.4.5 AS 4072.1-1992 requires thermocouples used for the evaluation of the insulation performance of control joints shall be positioned on the unexposed face of the sealing system and adjacent separating element, except where the unexposed face of the seal is within the separating element. Where this occurs, thermocouples shall only be fitted to the seal when the joint width is greater than the distance of the seal from the non-fire side of the specimen.

A.3.4.6 The testing requirement and thermocouple locations for AS 4072.1-2005 are now described in AS 1530.4-2014, as outlined in A.3.4.4 above.

A.3.4.7 Specimen in test WFRA 41003 was sealed on the unexposed side of the wall separating element only and the thermocouples were positioned in such a manner that they meet the requirements of AS1530.4-2014.

A.3.4.8 Based on the above discussion, it is considered the insulation performance of specimens tested in WFRA 41003 can be used to assess the performance in accordance with AS1530.4-2014 and AS 4072-2005.

A.3.5 Structural Adequacy Performance Criteria

A.3.5.1 Structural adequacy performance is not applicable to control joints.

A.3.6 Integrity Performance Criteria

A.3.6.1 AS1530.4-2014 deems integrity failure to have occurred upon collapse, sustained (10 seconds) flaming, ignition of an applied cotton pad or if a 6mm gap gauge can protrude into the furnace and can be moved 150mm along the gap (not applicable at the sill), or if a 25mm gap gauge can protrude into the furnace.

A.3.6.2 AS1530.4-1997 deems integrity failure to occur upon collapse, the development of cracks, fissures, or other openings through which flames or hot gases can pass.

A.3.6.3 By inspection of test observation of test WFRA 41003, the sealant along Control Joint H was changing shape from concave to convex whereas there were no splits in the material at 120 minutes and both control joints were intact with no gaps or cracks visible at 240 minutes.

A.3.7 Insulation Performance Criteria

A.3.7.1 The insulation criteria specified in AS1530.4-2014 and the same as those specified in AS1530.4-1997.

A.3.8 Application of Test Data to AS1530.4-2014

A.3.8.1 The minor variations in furnace heating regimes and specimen thermocouple specification are not considered likely to significantly affect the behaviour of the specimens relevant to this assessment.

A.3.8.2 In light of the above, it is considered that the integrity and insulation behaviour of the specimens tested in WFRA 41003 can be used to assess the likely performance if the specimen was tested in accordance with AS1530.4-2014.

A.4 EXTRACT OF ASSESSMENT REPORT – WFRA 45628.1

A.4.1 Report Sponsor

A.4.1.1 HB Fuller Australia Company Pty Ltd, 16-20 Red Gum Drive, Dandenong South, VIC 3175.

A.4.2 Test Laboratory

A.4.2.1 Warrington Fire Research (Aust) Pty Ltd, Unit 2, 409-411 Hammond Road, Dandenong South, Victoria, 3175.

A.4.3 Test Date

A.4.3.1 The test report was prepared on 12th August 2002.

A.4.4 Test standards prescribed

A.4.4.1 The test was conducted in accordance with AS1530.4-1997 and assessed to AS 1530.4-2014 and AS4072.1-2005 as appropriate for control joints in floors.

A.4.5 Conclusions of WFRA 45628.1 for concrete floors

Separating element type	Min element thickness (mm)	Max joint width (mm)	Min Sealant depth (mm)	Backing rod depth (mm)	Seal Position	Fire Resistance Level (FRL) of system	
						Integrity	Insulation
Solid normal weight/light-weight concrete floors FRL 120/120/120)	120	20 30 40 50	10 20 20 20	30 30 30 45	Fire side only	120	120
Solid normal weight/light-weight concrete floors (FRL 180/180/180)	150	20 30 40 50	10 20 20 20	30 30 30 45	Fire side only	180	180
Solid normal weight/light-weight concrete floors (FRL 240/240/240)	170	20 30 40 50	10 20 20 20	30 30 30 45	Fire side only	240	240
Solid normal weight/light-weight concrete floors (FRL 120/120/120)	120	20 30 40 50	10 15 20 20	30 30 30 30	Both sides	120	120
Solid normal weight/light-weight concrete floors (FRL 180/180/180)	150	20 30 40 50	10 15 20 20	30 30 30 30	Both sides	180	180
Solid normal weight/light-weight concrete floors (FRL 240/240/240)	170	20 30 40 50	10 15 20 20	30 30 30 30	Both sides	240	240

APPENDIX B - ASSESSMENT OF SPECIFIC VARIATIONS

B.1 APPLICATION OF RESULTS FROM WFRA 40869 AND 41003 TO WALLS

B.1.1 General

B.1.1.1 With reference to AS1530.4-2014 and AS4072.1-2005 a key difference in the testing requirements for control joints in floors and control joints in walls is the specified furnace pressure.

B.1.1.2 In addition to the difference in pressure conditions, the increased tendency for sealant to fall from gaps in floor specimens than from gaps in wall specimens has also been considered.

B.1.1.3 With reference to WFRA 40869, the test was conducted on a floor system with a test pressure of 20Pa at 100mm below the soffit.

B.1.1.4 If a similar specimen was subject to test in a vertical orientation, in a wall of 3m x 3m, the pressure would vary depending on height and the maximum pressure required at the centre of the penetration would be 15Pa or, 20.4 Pa at 100mm from the top of the wall.

B.1.1.5 The pressure of 20 Pa in WFRA 40869 was therefore within 0.4 Pa of the indicated value of 20.4 Pa and existed along the full length of the tested control joint.

B.1.1.6 The specimen tested in WFRA 40869 was also subjected to the effect of gravity, which would act to increase the likelihood that the sealant would fall out of the joint and allow the passage of hot gases or flames through the gap.

B.1.1.7 Based on the above, it is considered that the horizontal control joint in WFRA 40869 represented a more onerous case than would a vertically oriented test specimen of 3m x 3m tested with a furnace pressure of 15 Pa at 1500mm from the base of the wall.

B.1.1.8 The conclusions of WFRA 45628.1 are based on test data from WFRA 40869 and from finite element modelling of concrete elements subjected to heating in accordance with AS1530.4-2014. This modelling has been reviewed and it is confirmed that the conclusions would be unchanged if the specimens were orientated as walls.

B.1.1.9 Based on the discussion above, it is considered reasonable that the insulation and integrity values assessed in WFRA 45628.1 for floors be applied to the integrity and insulation performance of vertically oriented constructions.

B.2 INTEGRITY PERFORMANCE FOR WALLS OF VARIOUS THICKNESS

B.2.1 Proposal

B.2.1.1 The proposed constructions are summarised in Table 1.

B.2.1.2 The critical aspect of the integrity performance for joints on the fire side of a wall is the depth of the joint, joint width, and successful adhesion to the substrate.

B.2.2 Discussion

B.2.2.1 The proposed systems in Table 1 differ from the construction assessed in WFRA 45628.1 that they relate to floors made from concrete and the thickness of the proposed masonry walls may be greater than the minimum stated in the Table 1.

B.2.2.2 The integrity performances of the assessed joints in WFRA 45628.1 were based on tests of joints of same cross section adhered to normal weight concrete as described in WFRA 40869, with exception of the 10mm x 10mm joint.

B.2.2.3 The assessed specification for the 10mm x 10mm joint was developed from Control Joint H as described in WFRA 41003. Control Joint H was a vertical joint of 10mm wide and 5mm deep on the fire side of a 140mm thick concrete block wall that achieved 180 minutes integrity. The insulation performance on the unexposed surface of the blocks adjacent to the seal was 141 minutes.

B.2.2.4 If a similar specification of 10mm x 5mm seal were tested in a thinner masonry unit, capable of at least 120 minutes insulation, then the temperatures of the block material in the vicinity of the sealant would also be similar.

B.2.2.5 It is therefore considered that the integrity performance of the Control Joint H in WFRA 41003 would not be detrimentally affected by this change.

B.2.2.6 The integrity performance achieved by Control Joint H also confirms the adhesion of the sealant to masonry units when tested in a vertical orientation.

B.2.2.7 Based on the discussion in Appendix B1 regarding test specimen orientation it is considered reasonable that the integrity performance of the proposed control joints assessed in WFRA 45628 are applicable to proposed construction.

B.2.2.8 Based on the above discussion and in absence of any foreseeable detrimental effect on integrity performance, the proposed constructions in Table 1 are positively assessed for 120, 180 and 240 minutes integrity, based on design, if tested in accordance with AS1530.4 2014.

B.3 INSULATION PERFORMANCE FOR WALLS OF VARIOUS THICKNESS

B.3.1 Proposal

B.3.1.1 The proposed constructions are summarised in Table 1.

B.3.1.2 For control joints on the fire side of the wall only, which are narrower than their depth from the non-fire side, the critical aspect of their insulation performance is the temperature of the support construction in the vicinity of the joint.

B.3.1.3 For control joints on the fire side of the wall only, which are not narrower than their depth from the non-fire side, the critical aspect of their insulation performance is the temperature of the sealant or backing rod on the non-fire side. As the proposed construction does not consider joints of this configuration, this issue is not relevant to the proposed construction.

B.3.1.4 The critical aspect of the insulation performance for control joints with sealant positioned on both sides is the temperature of the sealant on the non-fire side and the temperature of the support construction in the vicinity of the joint.

B.3.2 Discussion

B.3.2.1 The proposed systems in Table 1 differ from the construction assessed in WFRA 45628.1 in that they relate to floors made from concrete, and that the thickness of the masonry walls may be greater than the minimum stated in the Table 1.

B.3.2.2 The insulation performance of the assessed joints in WFRA 45628.1 were based on tests of joints of the same cross section and adhered to normal weight concrete as described in WFRA 40869, in conjunction with finite element modelling of various joint and sealant configurations.

B.3.2.3 Based on the discussion in Appendix B1, regarding test specimen orientation, it is considered reasonable that the insulation performance of the control joints assessed in WFRA 45628.1 is applicable to the proposed constructions.

B.3.2.4 The proposed constructions, however, include a joint size that was not assessed in WFRA 45628.1, but was tested in WFRA 41003, i.e. Control Joint H.

B.3.2.5 Control Joint H was a vertical joint of 10mm wide and 5mm deep on the fire side of a 140mm thick concrete block wall. The achieved performance of 180 minutes without failure, 148 minutes insulation on the sealant, and 141 minutes insulation on the blocks.

B.3.2.6 If this specimen was tested in a thinner masonry unit, capable of achieving at least 120 minutes insulation, then the temperatures of the block material in the vicinity of the sealant would be similar to that tested.

B.3.2.7 It is therefore considered that the insulation performance of the Control Joint H in WFRA 41003 would not be detrimentally affected by this change.

B.3.2.8 The proposed construction includes the option of seals of 10mm wide and 10mm deep on both sides of the wall. In this case, the insulation performance would be measured on the sealant.

B.3.2.9 With reference to WFRA 41003 Control Joint H, the sealant joint showed no signs of burn through or blackening of the backing rod material and the temperatures on the back of the sealant met the insulation criteria for 148 minutes, demonstrating a high level of insulation performance.

B.3.2.10 Based on the discussion above, it is considered reasonable that the insulation performance of the proposed 10mm x 10mm control joint on each side of the wall would achieve the insulation performance of the surrounding construction as assessed in WFRA 45628.1.

B.3.2.11 Furthermore, in absence of any foreseeable detrimental effect on the insulation performance, the proposed constructions summarised in Table 1 are positively assessed for 120, 180 and 240 minutes insulation, based on design, if tested in accordance with AS1530.4 2014.