



# Regulatory information report

## Assessment of Georg Fischer COOL-FIT 2.0 and COOL-FIT 4.0 pipes with Hilti fire protection systems

Sponsor: Georg Fischer Limited and Hilti Australia Pty Ltd

Report number: FAS190212 Revision: RIR1.1

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## Quality management

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	Expiry: 31/07/2026	Name Signature	Prepared by	Reviewed by	Authorised by
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## Executive summary

This report contains the minimum information required for regulatory compliance and refers to the referenced assessment report FAS190212 R1.1.

The analysis conducted in the referenced assessment report documents the findings of the assessment undertaken to determine the expected fire resistance levels (FRL) of Georg Fischer COOL-FIT 2.0 and COOL-FIT 4.0 pipes penetrating rigid and flexible walls and rigid floors – protected with Hilti Firestop collars (CFS-C P) and either Hilti CP 606 Firestop acrylic sealant or cementitious mortar (equivalent to Hilti Firestop Mortar CP 633) – if tested in accordance with AS 1530.4:2014 and assessed in general accordance with AS 4072.1:2005.

COOL-FIT 2.0 and COOL-FIT 4.0 pipes are described as pre-insulated plastic piping systems. As per the product specifications, both types of pipes are made from PE 100. They also have a GF-HE hard foam insulation sleeve protected with a PE jacket.

Hilti Firestop collars (CFS-C P) are pipe closure devices used to form penetration seals where combustible pipes penetrate walls and floors.

Hilti CP 606 Firestop sealant is a water based acrylic sealant and Hilti Firestop Mortar CP 633 is a cement-based mortar classified as M10 with a compressive strength equal to or lower than 10 N/mm<sup>2</sup>.

The analysis in sections 5 and 6 of the referenced report found that the COOL-FIT 2.0 and COOL-FIT 4.0 pipes, together with the described variations, are expected to achieve the fire resistance levels (FRL) as shown in Table 5 and Table 6, if tested in accordance with AS 1530.4:2014 and assessed in general accordance with AS 4072.1:2005.

The variations and outcome of the referenced assessment report 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 31 July 2026.

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## 1. Introduction

This report contains the minimum information sufficient for regulatory compliance and refers to the assessment report FAS190212 R1.1.

The analysis conducted in the referenced assessment report documents the findings of the assessment undertaken to determine the expected fire resistance levels (FRL) of Georg Fischer COOL-FIT 2.0 and COOL-FIT 4.0 pipes penetrating rigid and flexible walls and rigid floors – protected with Hilti Firestop collars (CFS-C P) and either Hilti CP 606 Firestop acrylic sealant or cementitious mortar (equivalent to Hilti Firestop Mortar CP 633) – if tested in accordance with AS 1530.4:2014<sup>1</sup> and assessed in general accordance with AS 4072.1:2005<sup>2</sup>.

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

The referenced assessment was carried out at the request of Georg Fischer Limited and Hilti Australia Pty Ltd. The sponsor details are included in Table 1.

**Table 1 Sponsor details**

Sponsor	Address
Georg Fischer Limited	Unit 1, 100 Belmore Road North Riverwood NSW, 2210 Australia
Hilti Australia Pty Ltd	1G Homebush Bay Drive Rhodes NSW 2138 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 if it was 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 2019<sup>3</sup>.

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.

<sup>1</sup> 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.

<sup>2</sup> Standards Australia, 2005, Components for the protection of openings in fire-resistant separating elements: Service penetrations and control joints (Reconfirmed 2016), AS 4072.1:2005 (R2016), Standards Australia, NSW.

<sup>3</sup> Passive Fire Protection Forum (PFPF), 2019, Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, Passive Fire Protection Forum (PFPF), UK.

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.

The referenced 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.

The referenced 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

The referenced assessment report has been prepared to meet the evidence of suitability requirements of the National Construction Code Volumes One and Two – Building Code of Australia (NCC) 2019 including amendments<sup>4</sup> under A5.2 (1) (d).

The referenced assessment has been written in accordance with the general principles outlined in EN 15725:2010<sup>5</sup> 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) provisions of the NCC under A5.4 for fire resistance levels as applicable to the assessed systems.

The referenced assessment report may also be used to demonstrate compliance with the requirements for evidence of suitability under NCC 2016 including amendments<sup>6</sup>.

## 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 25 June 2021, Georg Fischer Limited and Hilti Australia Pty Ltd confirmed that:

- To their knowledge the component or element of structure, which is the subject of the referenced assessment, has not been subjected to a fire test to the standard against which the referenced assessment is being made.
- They agree to withdraw the referenced 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 the referenced assessment is being made and the results are not in agreement with the referenced assessment.
- They are not aware of any information that could adversely affect the conclusions of the referenced 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 the referenced assessment

- The scope of the referenced assessment report is limited to an assessment of the variations to the tested systems described in section 4.3.
- The referenced assessment 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.

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

<sup>5</sup> 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.

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

- The referenced assessment is applicable to floor systems exposed to fire from below in accordance with the requirements of AS 1530.4:2014 where horizontal elements must be exposed to heat from the underside only and to wall systems exposed to fire from either side (but not simultaneously) 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.
- For services penetrating wall systems, the Hilti Firestop CFS-C P fire collars must be installed on both exposed and unexposed sides.
- For services penetrating floor systems, the Hilti Firestop CFS-C P fire collars must be installed on the exposed side.
- If an equivalent regular cement-based mortar is used to replace Hilti CP 633, the mixing ratio of water to mortar must be maintained at 6.5 litres of water to 25 kg of mortar and the minimum cured density must be 1570 kg/m<sup>3</sup>. The mortar must be filled in the annular gap to the entire depth of the separating element.
- For COOL-FIT 2.0 pipes penetrating walls and floors, when CP 606 is used, mineral wool backfilling (density minimum 40 kg/m<sup>3</sup>) is optional for pipes with outer diameters up to, but not including, 125 mm. For pipes with outer diameter equal to or larger than 125 mm, mineral wool backfilling (density minimum 40 kg/m<sup>3</sup>) is mandatory.
- For COOL-FIT 4.0 pipes penetrating walls and floors, when CP 606 is used, mineral wool backfilling (density minimum 40 kg/m<sup>3</sup>) is optional for pipes with outer diameters larger than 90 mm and up to 250 mm in walls and up to 160 mm in floors.
- The FRLs provided are only applicable to U/C and C/C pipe end configurations.
- The annular gap between the pipe and the aperture in the separating element must be in the range of 0-20 mm and not exceed 20 mm.
- If the vertical separating element is a flexible plasterboard wall:
  - The minimum wall thickness must be 116 mm and the wall must have an established performance of -/120/120 as tested or assessed by others.
  - The wall must have cavity insulation.
  - The aperture must also be lined with two layers of 13 mm thick fire rated plasterboard in all directions.
  - The fixings used for the collars must be threaded rod type going through the entire thickness of the wall and tightened on the other side.
- In the referenced tests, the pipes were supported in a certain manner – in accordance with the relevant test standard. In practice, the pipe support design must be considered by others in order to prevent any undue stresses on the fire protection or the separating element. These are larger pipes and when in service, they are expected to have a large mass. The support design is outside the scope of the assessment.
- The documentation that forms the basis for the referenced assessment report is listed in Appendix A of the referenced report.
- The referenced assessment report is only valid for the assessed systems 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 the referenced assessment report – may invalidate the findings of the referenced assessment. If there are changes to the system, a reassessment will need to be done by an accredited testing laboratory (ATL).
- The referenced assessment 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 the referenced assessment report as a result.
- The referenced 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 the expert handling, placing and finishing of the products on site. These variables are beyond the control and consideration of the referenced assessment report.

## 4. Description of the specimen and variations

### 4.1 System description

Test reports 18666A, 18667A, 19692A, 19928A, 232000488-01 and 232000488-02 detail the fire resistance performance of several service penetrations protected with a range of Hilti sealing systems. The services considered in the referenced assessment are Georg Fischer COOL-FIT 2.0 and COOL-FIT 4.0 plastic pipes (PE100/PUR/PE100) protected with Hilti Firestop collars CFS-C P and either Hilti Firestop Acrylic Sealant CFS-S ACR (marketed as CP 606 in Australia) or Hilti Firestop Mortar CP 633.

The collars are composed of two parts: the cylindrical steel housing and a graphite based intumescent layer which expands when heated to close off the annular gap caused by the melting of the plastic pipes. Threaded rods or screw anchors are used to fix the collars to the separating element/supporting construction.

The separating elements considered in the referenced assessment are minimum 100 mm thick flexible and rigid walls and minimum 150 mm thick rigid floors.

### 4.2 Referenced test data

The assessment of the variations 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 2. Further details of the tested system are included in in Appendix B of the referenced report.

**Table 2 Referenced test data**

Test report	Test sponsor	Test date	Testing authority
18666A	Hilti AG	4 December 2017	Warringtonfire Belgium
18667A		4 December 2017	
19692A		28 May 2019	
19928A		16 October 2019	
232000488-01		27 October 2020	
232000488-02		28 October 2020	MPA NRW
FSP 2022 Revision A	George Fischer Pty Ltd	20 June 2019	Warringtonfire Australia
FRT190415 R1.0		26 February 2020	
FRT190416 R1.0		27 February 2020	

### 4.3 Variations to the tested systems

We have assessed the proposed systems using baseline test information for similar systems as given in in Appendix B of the referenced report. The variations to the tested systems – together with the referenced standard fire tests – are described in Table 3.

**Table 3 Variations to tested systems**

Reference tests	Description	Variations
18666A 18667A	The referenced tests were conducted in accordance with BS EN 1366-3:2009 <sup>7</sup> and BS EN 1363-1:2012 <sup>8</sup> .	The likely fire resistance performance of Georg Fischer COOL-FIT 2.0 and COOL-FIT 4.0 pipes if tested in

<sup>7</sup> European Committee for Standardization, 2009, Fire resistance tests for service installations. Penetration seals, BS EN 1366-3:2009, European Committee for Standardization, Brussels, Belgium.

<sup>8</sup> European Committee for Standardization, 2012, Fire resistance tests – General requirements, BS EN 1363-1:2012, European Committee for Standardization, Brussels, Belgium.

Reference tests	Description	Variations
19692A 19928A 232000488-01 232000488-02		accordance with AS 1530.4:2014 and AS 4072.1:2005. This includes extending applicable pipe end configurations to U/C and C/C.
	Local fire protection was provided with either annular sealant Hilti Firestop Acrylic Sealant CFS-S ACR (identical to CP 606) and Hilti CP 633 Firestop Mortar class 10 according to EN 998-2 <sup>9</sup> . In some specimens, the sealant was applied onto a backfilling of mineral wool (density: 40 kg/m <sup>3</sup> ).	Replacing Hilti Firestop mortar CP 633 with regular cement-based mortar with equivalent mixing ratio of mortar to water and cured density as CP 633. Use of both CP 606 acrylic sealant and regular cement-based mortar as options to seal the annular gap for all pipe sizes. The maximum annular gap must be 20 mm. Use of both HUS3-H6 and threaded rod fixings as options to fix the firestop collars. The number of fixings will depend on the size of the collar used.
	The dimensions of the pipes given in the referenced tests are stated to be measured values and not the nominal values.	Assessing the wall thickness of the COOL-FIT pipes within a tolerance range of $\pm 0.5$ mm to match with the nominal sizes given in Georg Fischer product data sheets.
	A range of COOL-FIT 4.0 pipe sizes were tested in both rigid walls and floors.	Assess the following COOL-FIT 4.0 pipe diameters in addition to those tested: <ul style="list-style-type: none"> <li>• d40/110</li> <li>• d50/110</li> <li>• d63/125</li> <li>• d90/160</li> <li>• d110/180</li> </ul>
FSP 2022 rev A FRT190415 R1.0 FRT190416 R1.0	The referenced tests, 18666A, 19928A and 232000488-01, were conducted with the services penetrating rigid aerated concrete walls (density: 550 kg/m <sup>3</sup> ).	Applicability of plasterboard walls as the vertical separating element.

## 4.4 Schedule of components

Table 4 outlines the schedule of components for the assessed systems subject to a fire test, as referenced in in Appendix B of the referenced report.

**Table 4 Schedule of components of assessed systems**

Item	Description	
<b>Separating element</b>		
1.	Item name	Rigid wall
	Size	Minimum 100 mm thick aerated concrete with a minimum density of 550 kg/m <sup>3</sup>
	Specification	Designed to AS 3600:2018 <sup>10</sup> by others.
2.	Item name	Concrete floor slab
	Size	Minimum 150 mm thick aerated concrete with a minimum density of 550 kg/m <sup>3</sup>
	Specification	Designed to AS 3600:2018 by others.
3.	Item name	Flexible plasterboard wall

<sup>9</sup> German Institute for Standardisation, 2017, Specification for mortar for masonry – Part 2: Masonry mortar, EN 998-2:2017, German Institute for Standardisation, Germany.

<sup>10</sup> Standards Australia, 2018, Concrete structures, AS 3600:2018 (Incorporating Amendment No. 1), Standards Australia, NSW.

Item		Description		
	Size	Wall framing	Minimum 64 mm deep steel frame (designed to AS/NZS 4600:2018 <sup>11</sup> by others)	
		Wall and aperture lining	Minimum 2 × 13 mm fire rated plasterboard	
	Specification	<p>Two layers of 13 mm thick fire rated plasterboards fixed onto both sides of the framing to construct a minimum 116 mm thick steel framed wall system. The aperture must also be lined with two layers of 13 mm thick fire rated plasterboard in all directions.</p> <p>The system must have been either tested or assessed to AS 1530.4:2014 to achieve an FRL of -/120/120 by an accredited testing laboratory.</p>		
<b>Fire-stopping protections</b>				
<b>Sealant</b>				
4.	Item name	Hilti CP 606 Firestop sealant		
	Installation	Floors	Must be applied to a depth of 15 mm in the annular gap of the separating element (item 2) on both the exposed and unexposed sides and finished flush with the separating element	
		Walls	Must be applied to a depth of 15 mm in the annular gap of the separating element (item 1 and item 3) on both the exposed and unexposed sides and finished flush with the separating element	
5.	Item name	Hilti Firestop Mortar CP 633 OR regular cement-based mortar		
	Specification	<p>The mixing ratio must be 6.5 litres of water to 25 kg of mortar</p> <p>The minimum cured density must be 1570 kg/m<sup>3</sup>.</p>		
	Installation	Floors	Must be applied to the full depth of the floor separating element (150 mm thickness) (item 2)	
		Walls	Must be applied to the full depth of the wall separating element (100 mm thickness) (item 1 and item 3)	
6.	Item name	Mineral wool backfilling		
	Density	40 kg/m <sup>3</sup>		
	Installation	<p>For COOL-FIT 2.0 pipes penetrating walls and floors, when CP 606 (item 4) is used, mineral wool backfilling is optional for pipes with outer diameters up to, but not including, 125 mm. For pipes with outer diameter equal to or larger than 125 mm, mineral wool backfilling is mandatory.</p> <p>For COOL-FIT 4.0 pipes penetrating walls and floors, when CP 606 (item 4) is used, mineral wool backfilling is optional for pipes with outer diameters larger than 90 mm and up to 250 mm in walls and up to 160 mm in floors.</p>		
<b>Fire collar</b>				
7.	Item name	Hilti Firestop collars (CFS-C P)		
	Size	<b>Nominal outer diameter of pipe</b>	<b>Collar size</b>	<b>Required number of fastening hooks and fasteners (item 9 and item 10)</b>
		75	CFS-C P 75/2.5"	3
		90	CFS-C P 90/3"	3
		110	CFS-C P 110/4"	4
		125	CFS-C P 125/5"	4
		160	CFS-C P 160/6"	6
		200	CFS-C P 200/8"	8

<sup>11</sup> Standards Australia and Standards New Zealand 2018, Cold-formed steel structures, AS / NZS 4600:2018, Standards Australia, NSW and Standards New Zealand, Wellington

Item		Description	
	Installation	Floors	Installed on the exposed side of the separating element and secured to the separating element with screws (item 9) or threaded rods (item 10).
		Walls	Installed on the exposed and unexposed sides of the separating element and secured to the separating element with screws (item 9) or threaded rods (item 10).
<b>Services</b>			
8.	Item name	COOL-FIT 2.0 or COOL-FIT 4.0 pipes	
	Configuration	As shown in Figure 1	
<b>Fixings</b>			
9.	Item name	Anchor	
	Product name	HUS3-H6 Concrete screw anchor	
	Size	As required for the separating elements given in item 1 and item 2	
	Installation	Used to fix Hilti Firestop collars (item 7) to aerated concrete separating elements (item 1 and item 2)	
10.	Item name	Threaded rod and nut	
	Material	Zincified steel	
	Size	M6 or M8	
	Installation	Used to fix Hilti Firestop collars (item 7) to rigid or flexible separating elements (item 1 and item 3) The fixings used in flexible walls must go through the entire thickness of the wall and be tightened on the other side.	

Figure 1 shows the general layering configuration of the assessed COOL-FIT 2.0 and COOL-FIT 4.0 pipes with components such as inner pipe, PUR foam and outer jacket. The outer and inner diameters of the pipes given in Table 5 and Table 6 refer to the dimensions shown.

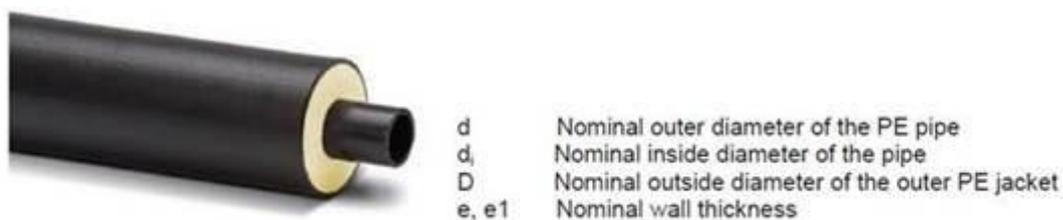


Figure 1 Configuration of COOL-FIT 2.0 and COOL-FIT 4.0 pipes

## 5. Assessment outcome

Table 5 and Table 6 below give the assessed Georg Fischer COOL-FIT 2.0 and COOL-FIT 4.0 pipes protected with Hilti Firestop collars and either Hilti CP 606 acrylic sealant or Hilti Firestop Mortar CP 633 / a regular contentitious mortar in the annular gap between the pipe and the separating element. The configuration of the COOL-FIT pipes is shown in Figure 1 denoting the nominal outer and inner diameters.

The Hilti CP 606 acrylic sealant must be applied at the annular gap to a depth of 15 mm in the annular gap of the separating element on both the exposed and unexposed sides and finished flush with the separating element. The mortar must be applied at the annular gap to the full depth of the separating element.

**Table 5 COOL-FIT 2.0 and COOL-FIT 4.0 pipes protected with Hilti Firestop collars and CP 606 sealant with a gap width of 0-20 mm and sealant thickness/depth of 15 mm**

Pipe	Separating element	OD × wall thickness (mm)	ID × wall thickness (mm)	Collar size	FRL with Hilti HUS3-H6 fixing	FRL with threaded rod fixing	Mineral wool backfilling
Georg Fischer COOL-FIT 2.0	Rigid aerated concrete wall (100 mm thickness) with a density of 550 kg/m <sup>3</sup> Or Flexible wall with two layers of 13 mm thick fire-rated plasterboard on each side (116 mm thickness) Note: Only the FRLs given for threaded rod type fixings are applicable for flexible walls. The fixings in flexible walls must be threaded rod type going through the entire thickness of the wall and tightened on the other side.	75 × 3.0	32 × 2.9	CFS- C P 75/2.5"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M8 threaded rod FRL: -/120/120	Mandatory with both fixing types
		90 × 3.0	40 × 3.7	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M8 threaded rod FRL: -/120/120	Optional
		90 × 3.0	50 × 4.6	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M8 threaded rod FRL: -/120/120	Optional
		110 × 4.0	63 × 5.8	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M8 threaded rod FRL: -/120/120	Optional
		125 × 4.0	75 × 6.8	CFS- C P 125/5"	4 × Hilti HUS3-H6 FRL: -/90/90	4 × M8 threaded rod FRL: -/120/120	Mandatory with HUS3-H6 fixing
		140 × 4.0	90 × 8.2	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/90/90	-	Mandatory with both fixing types
		160 × 4.0	110 × 10.0	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/90/90	-	Mandatory with both fixing types
	Rigid aerated concrete floor (150 mm thickness) with a density of 550 kg/m <sup>3</sup>	75 × 3.0	32 × 2.9	CFS- C P 75/2.5"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M8 threaded rod FRL: -/120/90	Mandatory with both fixing types
		90 × 3.0	40 × 3.7	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M8 threaded rod FRL: -/120/90	Optional

Pipe	Separating element	OD × wall thickness (mm)	ID × wall thickness (mm)	Collar size	FRL with Hilti HUS3-H6 fixing	FRL with threaded rod fixing	Mineral wool backfilling
		90 × 3.0	50 × 4.6	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M8 threaded rod FRL: -/120/90	Optional
		110 × 4.0	63 × 5.8	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M8 threaded rod FRL: -/120/90	Optional
		125 × 4.0	75 × 6.8	CFS- C P 125/5"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M8 threaded rod FRL: -/120/90	Mandatory with both fixing types
		140 × 4.0	90 × 8.2	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/120/120	-	Mandatory with both fixing types
		160 × 4.0	110 × 10.0	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/120/120	-	Mandatory with both fixing types
Georg Fischer COOL-FIT 4.0	Rigid aerated concrete wall (100 mm thickness) with a density of 550 kg/m <sup>3</sup> Or Flexible wall with two layers of 13 mm thick fire-rated plasterboard on each side (116 mm thickness) Note: Only the FRLs given for threaded rod type fixings are applicable for flexible walls. The fixings in flexible walls must be threaded rod type going through the entire thickness of the wall and tightened on the other side.	90 × 3.0	32 × 2.9	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M6 threaded rod FRL: -/120/120	Optional
		110 × 3.4	40 × 3.7	CFS- C P 110/4"	4 × Hilti HUS3 H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120	Optional
		110 × 3.4	50 × 4.6	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120	Optional
		125 × 3.8	63 × 5.8	CFS- C P 125/5"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120	Optional
		140 × 4.0	75 × 6.8	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/120/120	-	Optional
		160 × 4.0	90 × 8.2	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/90/90	-	Optional
		180 × 4.0	110 × 10.0	CFS- C P 200/8"	8 × Hilti HUS3 H6-80 FRL: -/90/90	-	Optional

Pipe	Separating element	OD × wall thickness (mm)	ID × wall thickness (mm)	Collar size	FRL with Hilti HUS3-H6 fixing	FRL with threaded rod fixing	Mineral wool backfilling
		250 × 5.0	160 × 9.5	CFS- C P 250/10"	12 × Hilti HUS3-H6 FRL: -/120/120	-	Optional
	Rigid aerated concrete floor (150 mm thickness) with a density of 550 kg/m <sup>3</sup>	90 × 3.0	32 × 2.9	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M6 threaded rod FRL: -/120/120	Mandatory with both fixing types
		110 × 3.4	40 × 3.7	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120	Optional
		110 × 2.7	50 × 4.6	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120	Optional
		125 × 3.8	63 × 5.8	CFS- C P 125/5"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/90/90	Mandatory with threaded rod fixing
		140 × 4.0	75 × 6.8	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/120/120	6 × M6 threaded rod FRL: -/90/90	Mandatory with threaded rod fixing
		160 × 4.0	90 × 8.2	CFS- C P 160/6"	-	6 × M6 threaded rod FRL: -/90/90	Mandatory with both fixing types

**Table 6 COOL-FIT 2.0 and COOL-FIT 4.0 pipes protected with Hilti Firestop collars and Hilti Firestop Mortar CP 633 or equivalent cementitious mortar\* with a gap width of 0-20 mm and mortar thickness/depth of the entire thickness of the separating element (100 mm for walls and 150 mm for floors)**

Pipe	Separating element	OD × wall thickness (mm)	ID × wall thickness (mm)	Collar size	FRL with Hilti HUS3-H6 fixing	FRL with threaded rod fixing
Georg Fischer COOL-FIT 2.0	Rigid aerated concrete wall (100 mm thickness) with a density of 550 kg/m <sup>3</sup> Or Flexible wall with two layers of 13 mm thick fire-rated plasterboard on each side (116 mm thickness) Note: Only the FRLs given for threaded rod type fixings are applicable for flexible walls. The fixings in flexible walls must be threaded rod type going through the entire thickness of the wall and tightened on the other side.	75 × 3.0	32 × 2.9	CFS- C P 75/2.5"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M6 threaded rod FRL: -/120/120
		90 × 3.0	40 × 3.7	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M6 threaded rod FRL: -/120/120
		90 × 3.0	50 × 4.6	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M6 threaded rod FRL: -/120/120
		110 × 4.0	63 × 5.8	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120
		125 × 4.0	75 × 6.8	CFS- C P 125/5"	4 × Hilti HUS3-H6 FRL: -/120/120	6 × M6 threaded rod FRL: -/120/120
		140 × 4.0	90 × 8.2	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/120/120	6 × M6 threaded rod FRL: -/120/120
		160 × 4.0	110 × 10.0	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/120/120	-
		200 × 5.0	140 × 12.7	CFS- C P 200/8"	8 × Hilti HUS3-H6 FRL: -/120/120	-
	Rigid aerated concrete floor (150 mm thickness) with a density of 550 kg/m <sup>3</sup>	75 × 3.0	32 × 2.9	CFS- C P 75/2.5"	3 × Hilti HUS3-H6 FRL: -/60/60	3 × M6 threaded rod FRL: -/120/120
		90 × 3.0	40 × 3.7	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/60/60	3 × M6 threaded rod FRL: -/120/120
		90 × 3.0	50 × 4.6	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/60/60	3 × M6 threaded rod FRL: -/120/120
		110 × 4.0	63 × 5.8	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/60/60	4 × M6 threaded rod FRL: -/120/120

Pipe	Separating element	OD × wall thickness (mm)	ID × wall thickness (mm)	Collar size	FRL with Hilti HUS3-H6 fixing	FRL with threaded rod fixing
		125 × 4.0	75 × 6.8	CFS- C P 125/5"	4 × Hilti HUS3-H6 FRL: -/60/60	4 × M6 threaded rod FRL: -/120/120
		140 × 4.0	90 × 8.2	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/60/60	3 × M6 threaded rod FRL: -/120/120
		160 × 4.0	110 × 10.0	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/60/60	6 × M6 threaded rod FRL: -/120/120
		200 × 3.4	140 × 9.5	CFS- C P 200/8"	8 × Hilti HUS3-H6 FRL: -/60/60	8 × M6 threaded rod FRL: -/120/120
		200 × 5.0	140 × 12.7	CFS- C P 200/8"	8 × Hilti HUS3-H6 FRL: -/60/60	-
Georg Fischer COOL-FIT 4.0	Rigid aerated concrete wall (100 mm thickness) with a density of 550 kg/m <sup>3</sup> Or Flexible wall with two layers of 13 mm thick fire-rated plasterboard on each side (116 mm thickness) Note: Only the FRLs given for threaded rod type fixings are applicable for flexible walls. The fixings in flexible walls must be threaded rod type going through the entire thickness of the wall and tightened on the other side.	90 × 3.0	32 × 2.9	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M6 threaded rod FRL: -/120/120
		110 × 3.4	40 × 3.7	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120
		110 × 3.4	50 × 4.6	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120
		125 × 3.8	63 × 5.8	CFS- C P 125/5"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120
		140 × 4.0	75 × 6.8	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/120/120	6 × M6 threaded rod FRL: -/120/120
		160 × 4.0	90 × 8.2	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/120/120	6 × M6 threaded rod FRL: -/120/120
		180 × 4.0	110 × 10.0	CFS- C P 200/8"	-	8 × M6 threaded rod FRL: -/120/120
		250 × 7.0	160 × 16.6	CFS- C P 250/10"	-	12 × M6 threaded rod FRL: -/120/120

Pipe	Separating element	OD × wall thickness (mm)	ID × wall thickness (mm)	Collar size	FRL with Hilti HUS3-H6 fixing	FRL with threaded rod fixing
	Rigid aerated concrete floor (150 mm thickness) with a density of 550 kg/m <sup>3</sup>	90 × 3.0	32 × 2.9	CFS- C P 90/3"	3 × Hilti HUS3-H6 FRL: -/120/120	3 × M6 threaded rod FRL: -/120/120
		110 × 3.4	40 × 3.7	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/120/120	4 × M6 threaded rod FRL: -/120/120
		110 × 2.7	50 × 4.6	CFS- C P 110/4"	4 × Hilti HUS3-H6 FRL: -/90/60	4 × M6 threaded rod FRL: -/120/120
		125 × 3.8	63 × 5.8	CFS- C P 125/5"	4 × Hilti HUS3-H6 FRL: -/90/60	4 × M6 threaded rod FRL: -/120/120
		140 × 4.0	75 × 6.8	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/90/60	6 × M6 Threaded rod FRL: -/90/90
		160 × 4.0	90 × 8.2	CFS- C P 160/6"	6 × Hilti HUS3-H6 FRL: -/90/60	6 × M6 Threaded rod FRL: -/90/90
		180 × 4.0	110 × 10.0	CFS- C P 200/8"	8 × Hilti HUS3-H6 FRL: -/90/60	8 × M6 Threaded rod FRL: -/90/90
		250 × 5.0	160 × 9.5	CFS- C P 250/10"	12 × Hilti HUS3-H6 FRL: -/45/45	12 × M6 Threaded rod FRL: -/90/90
		250 × 4.0	160 × 9.5	CFS- C P 250/10"	-	12 × M6 threaded rod FRL: -/90/90
		250 × 7.4	160 × 16.6	CFS- C P 250/10"	-	12 × M6 threaded rod FL: -/90/90

\*If an equivalent regular cement-based mortar is used to replace Hilti CP 633, the mixing ratio of water to mortar must be maintained at 6.5 litres of water to 25 kg of mortar and the cured density must be minimum 1570 kg/m<sup>3</sup>.

## 6. Validity

Warringtonfire Australia does not endorse the tested or assessed product in any way. The conclusions of the referenced 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.

The referenced 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 the referenced assessment report be reviewed on, or before, the stated expiry date.

The referenced 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 the referenced assessment report.

The referenced assessment is provided to Georg Fischer Limited and Hilti Australia Pty Ltd for their own specific purposes. The referenced assessment report may be used as Evidence of Suitability in accordance the requirements of the relevant National Construction Code. Building certifiers and other third parties must determine the suitability of the systems described in the referenced assessment report for a specific installation.

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