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Title:

The Fire Resistance Performance Of HILTI CP-674-V Linear Joint Seals

WF Assessment Report No:

409542

Prepared for:

HILTI (GB) Ltd

1 Trafford Wharf Road,
Manchester
M17 1BY

Date:

27th March 2019

Warringtonfire Testing and Certification Limited
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TABLE OF CONTENTS

SECTION **PAGE**

Foreword

This assessment report relates to the fire resistance performance of HILTI CP 674-V, Linear Joint Seals, when installed within horizontal solid floor assemblies.

This assessment is for National Application and has been written in accordance with the general principles outlined in BS EN 15725: 2010; *Extended application reports on the fire performance of construction products and building elements*, as appropriate.

This assessment uses established empirical methods of extrapolation and experience of fire testing similar assemblies, in order 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 EN 1366-4: 2006 + A1 2010.

This assessment has been written using appropriate test evidence generated at accredited test laboratories. The supporting test evidence has been deemed appropriate to support the manufacturers stated design and is summarised in this report.

The defined scope presented in this assessment report relates to the behaviour of the proposed design under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the door and screen assembly in use.

This assessment has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the PFPF guidelines to undertaking assessments in lieu of fire tests. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used in lieu of fire tests for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

Executive Summary

Objective

This report presents an appraisal of the fire resistance performance of HILTI CP 674-V, linear gap sealing system if tested in accordance with EN 1366-4: 2006 + A1 2010.

Report Sponsor

HILTI (GB) Ltd

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Summary of Conclusions

Should the recommendations given in this report be followed, it can be concluded that HILTI CP 674-V, linear gap sealing system, should provide up to 180 minutes integrity and 120 minutes insulation performance if tested in accordance with EN 1366-4 : 2006 + A1 2010

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with EN 1366-4: 2006, on the basis of the evidence referred to above. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Valid until

1st March 2024

Introduction

This report provides a considered opinion regarding the fire resistance performance HILTI CP 674-V, when installed as a floor mounted linear gap sealing system.

The proposed linear gap seals are required to provide up to 180 minutes integrity and 120 minutes insulation performance with respect to EN 1366-4: 2006, when installed into floor mounted linear gap sealing systems.

FTSG

The data referred to in the supporting data section has been considered for the purpose of this appraisal which has been prepared in accordance with the Fire Test Study Group Resolution No. 82: 2001.

Assumptions

Installation

It is assumed that the linear joint seal will be installed into the gaps in the proposed supporting construction in a similar manner to the tested specimens.

Elements of construction

It is assumed that the joint seals will be installed into joints within floors with a min density of 2200 kg/m3 and a minimum thickness of 200mm. The floor shall have at least the same fire rating as that required of the seal.

Proposals

It is proposed that HILTI CP 674-V linear gap sealing system will provide up to 180 minutes integrity and 120 minutes insulation performance, when used in horizontal supporting constructions, if tested in accordance with EN 1366-4: 2006.

The following table outlines the scope of application for the CP 674-V linear gap seal.

Floor Substrate	Seal Configuration	Seal Width mm	Integrity minutes	Insulation minutes
Concrete/Concrete	Unexposed Face	21-263	**180**	**120**

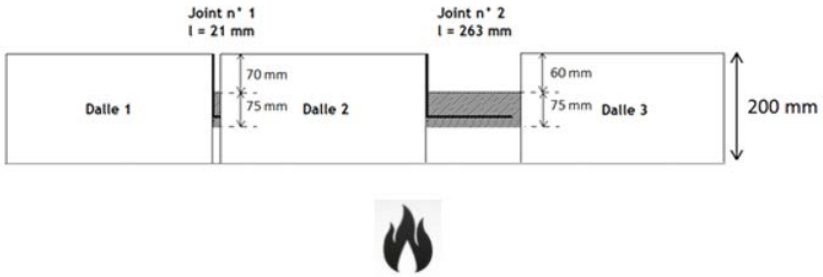
Basic Test Evidence

EFECTIS EFR-16-F-000574

A fire resistance test has been conducted to assess the ability of two horizontally orientated specimens of linear gap sealing systems, to reinstate the fire resistance of a pre-cast, reinforced, concrete floor when tested in accordance with EN 1366-4: 2006 +A1:2010.

Specimen	Integrity (minutes)		Insulation (mins)
	Cotton Pad	Sustained flaming	
1	185*	185*	185*
2	185*	185*	122

*The test duration. The test was discontinued after a period of 185 minutes.



Assessed Performance

Product details

The HILTI CP 674-V linear gap seal briefly comprises a foil faced stone wool slab of overall thickness of 75mm, with one of the longitudinal sides faced with an intumescent strip along its length and for the full 75mm height of the slab. The HILTI CP 674-V 21-23 had a nominal density of 100 kg/m³ whilst the HILTI CP 674-V 241-288 had a density of 150 kg/m³

Each section of HILTI CP 674-V Linear firestop was fixed using 3 HILTI steel brackets, which were in turn fixed back to the concrete floor slab above the firestop. Once the firestop was installed then CFS-S SIL sealant was used to seal over the top of the butt joint between product sections and at the interface with the supporting structure.

CP 647-V 21-23 Linear Gap seal

Manufacturer	:	HILTI
Reference	:	CP 647-V 21-23Linear Gap seal
Material	:	Mineral wool 21 mm wide x 75 mm deep with a 4 mm wide x 75 mm deep graphite/vermiculite based intumescent strip along a single edge wrapped with a polythene sleeve
Density	:	100 kg/m^3 stated
Specimen size	:	1000 mm long x 26 mm wide x 75 mm deep
Fixing Method	:	The barrier is secured with 3 fixing brackets impaled through the mineral wool slab. The brackets were fixed back to the face of the opening with HUS3-P screws

CP 647-V 241-268 Linear Gap seal

Manufacturer	:	HILTI
Reference	:	CP 647-V 241-288 Linear Gap seal
Material	:	Mineral wool 263 mm wide x 75 mm deep with a 4 mm wide x 75 mm deep graphite/vermiculite based intumescent strip along a single edge wrapped with a polythene sleeve
Density	:	150 kg/m^3 stated
Specimen size	:	1000 mm long x 263 mm wide x 75 mm deep
Fixing Method	:	The barrier is secured with 3 fixing brackets impaled through the mineral wool slab. The brackets were fixed back to the face of the opening with HUS3-P screws

Alternative Seal dimensions

The tests referenced above was conducted on two specimens of CP 647-V product. The specimens had different sizes and density and as such shall be considered as individual products. The alternative seal sizes allowable within the scope of this assessment are therefore up to the maximum size tested for each variant.

Where the performance of the seals varies depending upon joint width, a conservative approach may be adopted to interpolate intermediate sizes, by utilising the performance of the specimen which provided the shortest integrity and/or insulation time.

The following seal dimensions and performances (rounded down to periods reflecting building regulations) are therefore appraised on the basis of the above principles, for the sizes between that tested:

CP 647-V 21-23
Linear Gap seal

Floor Substrate 200mm	Seal Configuration	Seal Width mm	Integrity minutes	Insulation minutes
Concrete/Concrete	Unexposed Face	0 - 21	**180**	**180**

CP 647-V 241-268
Linear Gap seal

Floor Substrate 200mm	Seal Configuration	Seal Width mm	Integrity minutes	Insulation minutes
Concrete/Concrete	Unexposed Face	21-263	**180**	**120**

Conclusion

Should the recommendations given in this report be followed, it can be concluded that HILTI CP 674-V, linear gap sealing system, should provide up to 180 minutes integrity and 120 minutes insulation performance if tested in accordance with EN 1366-4 : 2006 + A1 2010

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with EN 1366-4: 2006, on the basis of the evidence referred to above. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Validity

This assessment is issued on the basis of test data and information available at the time of issue. If contradictory evidence becomes available to **Warringtonfire** the assessment will be unconditionally withdrawn and **HILTI (GB) Ltd** will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years i.e. until 1st February 2024, after which time it is recommended that it be returned for re-appraisal.

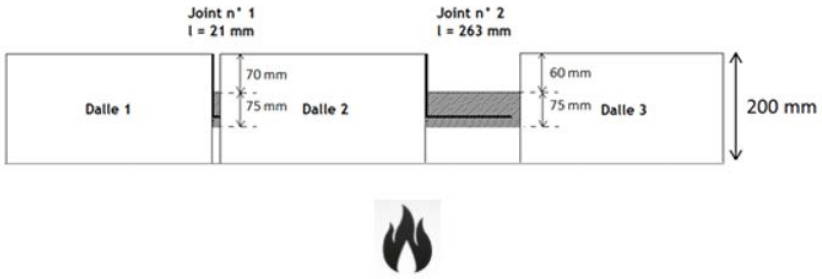
The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.

Summary of Primary Supporting Data

EFECTIS EFR-16-F-000574

A fire resistance test has been conducted to assess the ability of two horizontally orientated specimens of linear gap sealing systems, to reinstate the fire resistance of a pre-cast, concrete floor when tested in accordance with EN 1366-4: 2006 +A1:2010.

Specimen	Integrity (minutes)		Insulation (mins)
	Cotton Pad	Sustained flaming	
1	185*	185*	180*
2	185*	185*	122



Test Sponsor : Hilti (GB) Ltd

Test Date : 26 April 2016

Declaration by HILTI (GB) Ltd

We the undersigned confirm that we have read and complied with the obligations placed on us by the UK Fire Test Study Group Resolution No. 82: 2001.

We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.

We are not aware of any information that could adversely affect the conclusions of this assessment.

If we subsequently become aware of any such information we agree to cease using the assessment and ask **warringtonfire** to withdraw the assessment.

Signed:

For and on behalf of:

Signatories

Responsible Officer

R Wakefield* - Senior Certification Engineer

Approved

C Abbott* - Principal Certification Engineer

* For and on behalf of **Warringtonfire**.

Report Issued: 27th March 2019

The assessment report is not valid unless it incorporates the declaration duly signed by the applicant.