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Title:

The Fire Resistance Performance of Rockwool 'OSCB 60' If Tested Utilising The General Principles Of ASFP TGD 19 (November 2017)

WF Assessment Report No:

421826A

Prepared for:

ROCKWOOL LIMITED

Pencoed,
Bridgend,
Mid Glamorgan,
CF35 6NY

Date:

30th January 2020

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Foreword

This assessment report has been commissioned by ROCKWOOL LIMITED and relates to the performance of Open State Cavity Barriers.

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 of similar Firestopping systems, 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 using the general principles of ASFP TGD 19 (November 2017). This assessment cannot be considered for a CE marking application nor can the conclusion be used to establish a formal classification against EN13501-2.

This assessment has been written using appropriate test evidence generated at a UKAS accredited laboratory to the relevant test standard. The supporting test evidence has been deemed appropriate to support this assessment.

The defined scope presented in this assessment report relates to the behaviour of the Open State Cavity Barriers under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard.

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 ROCKWOOL LIMITED 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.

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Executive Summary

Objective

This report considers the expected fire resistance performance of ROCKWOOL LIMITED 'OSCB 60' if tested utilising the general principles of ASFP TGD 19 (November 2017).

Report Sponsor

ROCKWOOL LIMITED

Address

Pencoed,
Bridgend,
Mid Glamorgan,
CF35 6NY

Summary of Conclusions

Should the recommendations given in this report be followed, it can be concluded that the ROCKWOOL LIMITED 'OSCB 60' should be capable of providing up to 60 minutes integrity and 60 minutes insulation (where appropriate and as discussed within this assessment) performance, if tested utilising the general principles of ASFP TGD 19 (November 2017) when installed into cavities up to 425 mm.

This assessment represents our opinion as to the performance likely to be demonstrated on a test utilising the general principles of ASFP TGD 19 (November 2017), 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

30th January 2025

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Introduction

This report considers the expected fire resistance performance of ROCKWOOL LIMITED 'OSCB 60' up to up to 425 mm overall cavity width, installed horizontally into an open state cavity application.

The proposed barriers are required to provide a fire resistance performance of up to 60 minutes integrity and 60 minutes insulation performance if tested utilising the general principles of ASFP TGD 19 (November 2017)

The Building Regulations 2000, Requirement B3 (4) requires that a building shall be designed and constructed so that the unseen spread of fire and smoke within concealed spaces in its structure and fabric is inhibited. Such sealing is affected by what are termed cavity barriers/closers.

Walls and floors often incorporate 'open-state' voids behind rainscreen cladding to allow for ventilation in cold state. In the case of rainscreen cladding, the fire spread from one part of a building to another is via the cavity between the rainscreen and the backing wall. Such fire spread is usually upwards therefore, it is important that appropriate 'open-state' cladding cavity barriers are fitted to resist the spread of flame from one part of a building to another.

The scope of BS EN 1366-4: 2006 does not specifically include for the testing of cavity closers and by the nature of the open state of such barrier they would fail the integrity requirements of BS EN 1366-4: 2006 before the test has started. With this in mind the ASFP technical group TG3 developed an industry led testing standard ASFP TGD 19 (November 2017) for the fire resistance testing of open state cavity barriers.

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

Supporting construction

It is assumed that the ROCKWOOL LIMITED 'OSCB 60' will be installed into the horizontal orientation. The associated substrates shall be capable of providing at least the same fire resistance performance required by the fire barriers.

Is further assumed that the substrates are of rigid construction unless detailed within this assessment report.

Cavity Fire Barrier

It is also assumed that the cavity closers will be identical to those detailed in test report WF 397020, WF 397021, WF 399419 and WF 407778 unless specifically detailed otherwise within this appraisal.

Installation

It is assumed that the cavity fire barriers will be fitted by competent installers, in a similar manner to the specimens tested under the references WF 397020, WF 397021, WF 399419 and WF 407778.

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Proposals

Open Cavity Up To 25mm

It is proposed that ROCKWOOL LIMITED 'OSCB 60', incorporating an open cavity of up to 25mm, installed into joint widths between 51 mm and 425 mm should be capable of providing up to 60 minutes integrity and 60 minutes insulation performance, if tested utilising the general principles of ASFP TGD 19 (November 2017).

Open Cavity 26mm – 35mm

It is proposed that ROCKWOOL LIMITED 'OSCB 60', incorporating an open cavity of 26mm – 30mm, installed into joint widths between 51 mm and 425 mm should be capable of providing up to 60 minutes integrity and 60 minutes insulation performance, if tested utilising the general principles of ASFP TGD 19 (November 2017).

ROCKWOOL LIMITED 'OSCB 60' fixing details

It is proposed that ROCKWOOL LIMITED 'OSCB 60' can be fixed back to the substrate using the following methods:

OSCB 60 width	Fixing method
≤ 75 mm	Direct fix using Steel screw 30 mm longer than the width of the cavity barrier.
	Or. ROCKWOOL LIMITED Fixing clip brackets at 500 mm centres.
76 mm - 300 mm	0.9 mm x 25 mm ROCKWOOL LIMITED Fixing clip brackets at 500 mm centres.
300 mm - 425 mm	1.5 mm x 25 mm ROCKWOOL LIMITED Fixing clip brackets at 500 mm centres.

Supporting Substrate

It is proposed that ROCKWOOL LIMITED 'OSCB 60', when fixed back to 9 mm thick OSB board and incorporating an open cavity of up to 25mm, installed into joint widths between 51 mm and 300 mm should be capable of providing up to 60 minutes integrity and 60 minutes insulation performance, if tested utilising the general principles of ASFP TGD 19 (November 2017).

Cladding rail penetrations

It is further proposed that where steel cladding rails pass through the ROCKWOOL LIMITED 'OSCB 60' cavity barrier then it should be capable of providing up to 60 minutes integrity performance, if tested utilising the general principles of ASFP TGD 19 (November 2017).

Installation against a ROCKPANEL Sub facing.

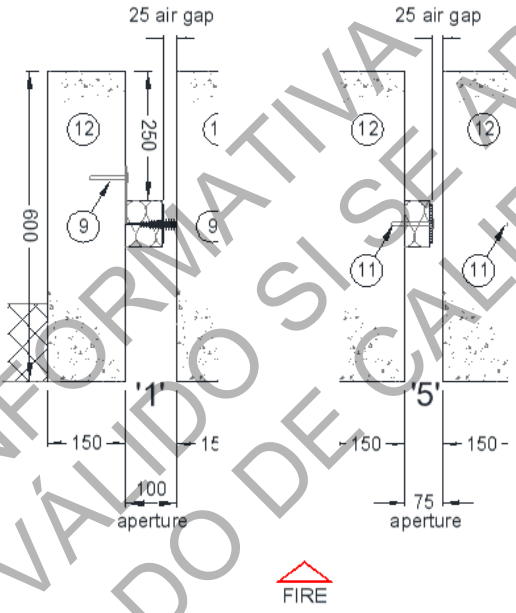
It is further proposed that ROCKWOOL LIMITED 'OSCB 60', incorporating an open cavity of up to 25mm, installed into joint widths between 51 mm and 425 mm should be capable of providing up to 60 minutes integrity and 60 minutes insulation performance, when installed against ROCKPANEL sub facing if tested utilising the general principles of ASFP TGD 19 (November 2017).

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Basic Test Evidence

WF 397020

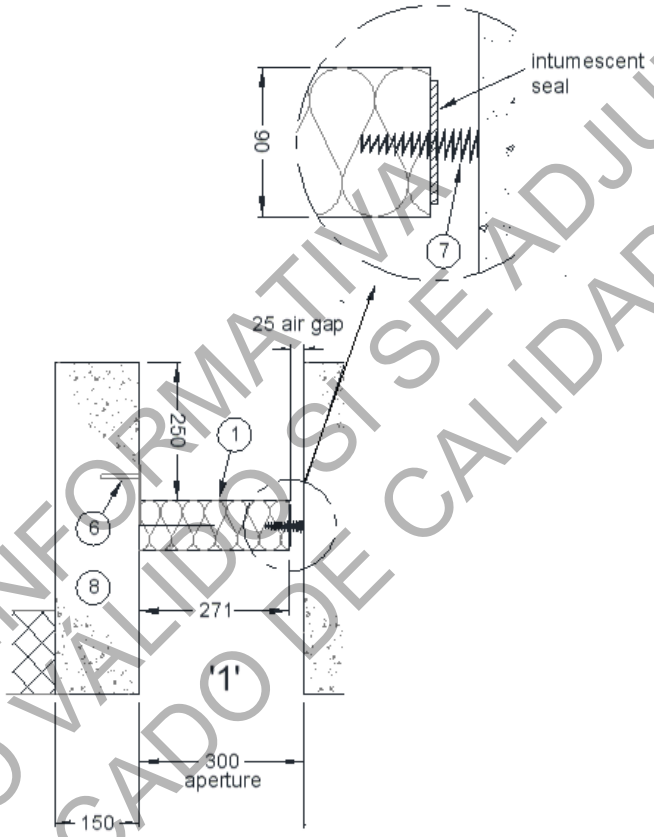
The test referenced WF 397020 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 60' specimens achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.



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WF 397021

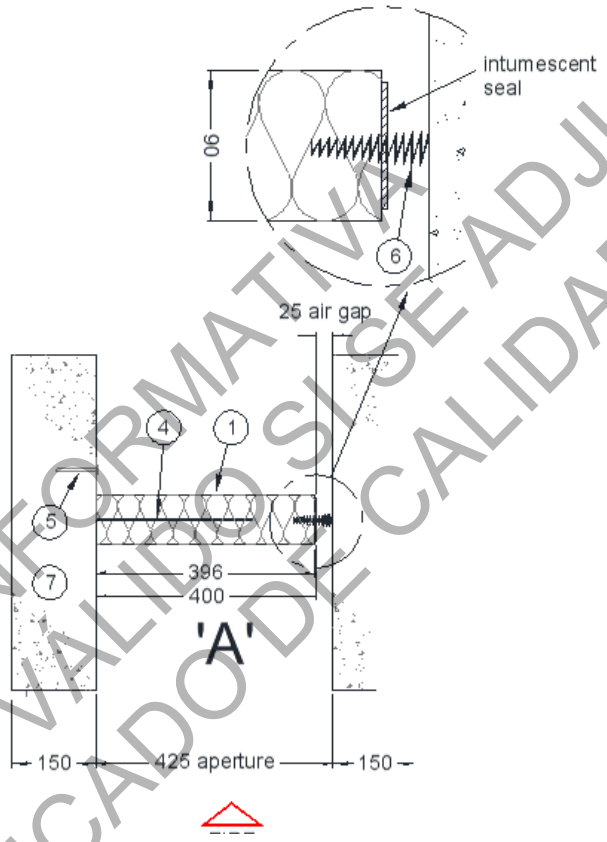
The test referenced WF 397021 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 60' specimen achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.



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WF 399419

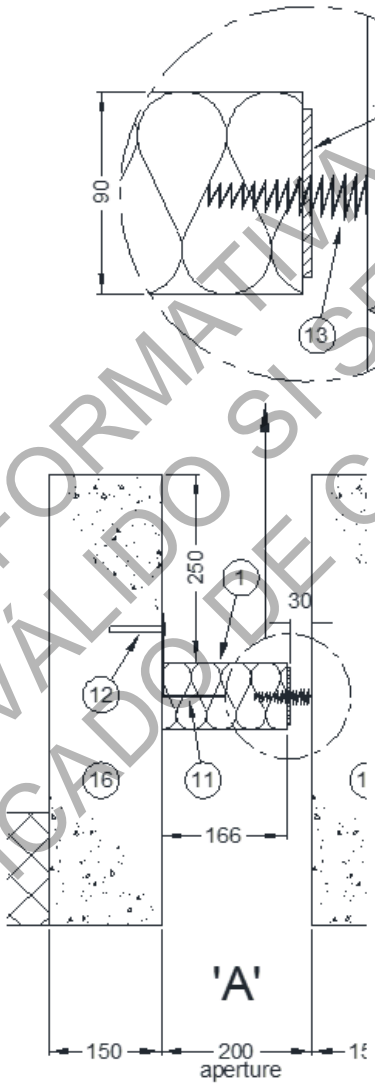
The test referenced WF 399419 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 60' specimen achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.



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WF 399420

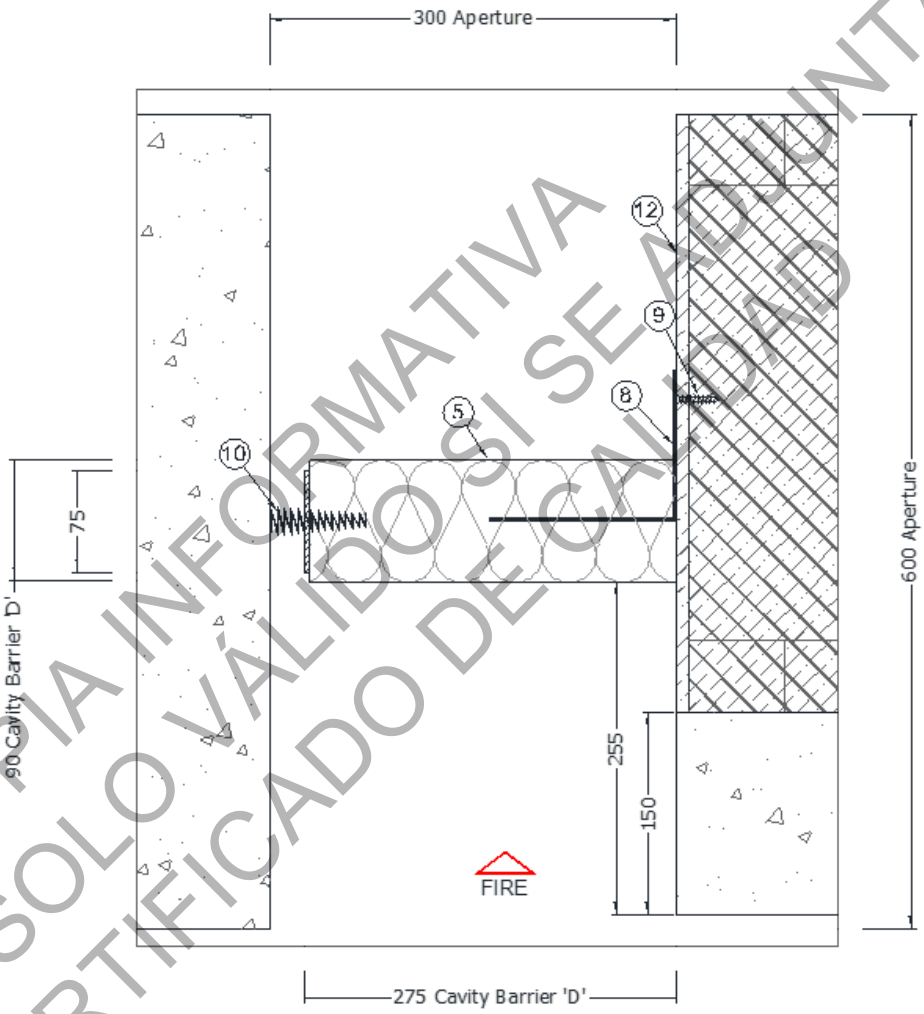
The test referenced WF 399420 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 60' specimens achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.



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WF 407778

The test referenced WF 407778 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 44' specimens achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.



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Assessed Performance

The product briefly comprises Polythene enclosed stone wool insulation, supplied with a 4mm thick graphite based intumescent strip fitted along a single edge. The barriers are fastened to one face of the supporting construction using the outlined steel/stainless steel fixings/brackets and allowed a ventilation gap. Coarse wound screws were installed through the outer face of the fire seal at maximum 333 mm centres.

Open Cavity Up To 25mm

Test reports WF 397020, WF 397021 and WF 399419 provide evidence for ROCKWOOL LIMITED 'OSCB 60' used in various overall joint widths. The 25mm open cavity and 4 mm thick intumescent is consistent across the specimens tested three specimens. The tested joint widths were 75mm, 100mm, 300mm and 425mm. In all instances the ROCKWOOL LIMITED 'OSCB 60' product achieved over the required 60 minutes Integrity and Insulation criteria required and so its performance across the range is assured.

Open Cavity 26mm – 30mm

Test report WF 399420 and specifically 'specimen A' incorporated an ROCKWOOL LIMITED 'OSCB 60' product that was installed into a 200 mm cavity. The tested specimen is installed at the mid width of the range covered by the scope of this assessment and the results showed that there was a drop in performance when the product was required to close a larger ventilation joint (30mm as opposed to 25mm). This increase ventilation joint width is clearly a more onerous configuration and therefore its use across the range needs to be discussed.

The ROCKWOOL LIMITED 'OSCB 60' when tested at various joint widths and incorporating a consistent 25mm ventilation joint, showed identical performance across the range. The specimens all achieved over 60 minutes Integrity and Insulation performance. The assumption can therefore be made that the increase in width of the Stone mineral 'carrier' does not impact on the performance of the intumescent strip. Based on this and given the proven overrun of the above test results, it can be positively appraised that the use of the product within a ventilation gap up to 30 mm, can be positively appraised across the range and up to a maximum joint width of 425mm.

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ROCKWOOL LIMITED 'OSCB 60' fixing details

It is proposed that ROCKWOOL LIMITED 'OSCB 60' can be fixed back to the substrate using the following methods:

OSCB 60 width	Fixing method
≤ 75 mm	Direct fix using Steel screw 30 mm longer than the width of the cavity barrier.
	Or. ROCKWOOL LIMITED Fixing clip brackets at 500 mm centres.
76 mm - 300 mm	0.9 mm x 25 mm ROCKWOOL LIMITED Fixing clip brackets at 500 mm centres.
300 mm - 425 mm	1.5 mm x 25 mm ROCKWOOL LIMITED Fixing clip brackets at 500 mm centres.

The fixing method outlined within the scope of the above table have been directly tested and shown to achieve in excess of 60 minutes' integrity and insulation performance and as such the scope is positively appraised.

Supporting Substrate

It is proposed that ROCKWOOL LIMITED 'OSCB 60', when fixed back to 9 mm thick OSB board and incorporating an open cavity of up to 25mm, installed into joint widths between 51 mm and 300 mm should be capable of providing up to 60 minutes integrity and 60 minutes insulation performance, if tested utilising the general principles of ASFP TGD 19 (November 2017).

Test report WF 407778 outlines an 'OSCB 44' open state cavity barrier specimen, which is installed against and fixed to a 9 mm thick OSB board that is fixed back to a timber framed structure. The specimen D achieved a considerable overrun above the required 60 minutes Integrity and Insulation.

The tested specimen was not identical to the 'OSCB 60' product because the Intumescent layer affixed to the face of the stone mineral board 'carrier' was different to that used within 'OSCB 60' product. The performance of the OSCB 44 product was similar to other tested specimens where the product was installed fixed to a concrete structure. The fixing of back to the OSB board did not appear to have an influence on the performance of intumescent and it remained fixed and stable for over 60 minutes.

The proposal is to use Specimen D of WF report 407778 to support a similar fixing method back to 9mm thick OSB board fixed on a timber frame. The supporting data shows that the tested specimen, which was 275 mm long (within a 300 mm cavity) did not suffer from a collapse when fixed back to a more flexible structure. Nor did the flexible structure impact on the performance of the Intumescent. It can therefore be positively appraised that the 'OSCB 60' product can be fixed in a similar manner to the OSCB 44 product and achieve 60 minutes Integrity and Insulation performance.

Cladding rail penetrations

WF test report WF 399420 details a fire resistance test where an OSCB 44 specimen was tested with cladding rails penetrating the 90 mm thick Stone Mineral wool board referenced 'ROCKWOOL LIMITED FB PLUS'. This 'FB PLUS' product is the same as that used in the 'OSCB 60' product. The cladding rails were constructed from 2 mm thick Aluminium and had a 'T Profile' of 60 mm long by 100 mm wide.

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The results from the tested specimen (5) within WF 399420 showed that whilst the cladding rail induced an early insulation failure (TC's recorded a failure point on the cladding rail, above the cavity barrier, at 14 minutes) their inclusion did not cause an Integrity failure until after 60 minutes (75 minutes).

Given the ROCKWOOL LIMITED FB PLUS is used on both the OSCB 44 & OSCB 60 products then then provided that the cladding rails only penetrate the Stone Wool Insulation then a similar performance would be achieved and as such the cladding rail penetrations, if tested passing through the 'OSCB 60' product then a similar 60 minutes Integrity performance would be achieved. Further certainty is offered from the 15 minute Integrity overrun achieved on the supporting data specimen.

Installation against a ROCKPANEL Sub facing.

WF test report WF 399420 details a fire resistance test where an OSCB 44 specimen (E) was tested within a joint that incorporated a non-combustible 'Rockpanel' sub facing. The Rockpanel, which was 9 mm thick and was fixed back to steel channel and it formed the face with which the intumescent expanded against.

The test report 399420 incorporated two specimens of the 'OSCB44 cavity barrier and they were referenced D and E. Both specimens were of the same overall cavity width and they both had the same ventilation gap (44mm). Specimen D had an aerated concrete sub facing which the intumescent expanded against, whilst Specimen E incorporated the Rockpanel Sub facing. The results achieved were all above 60 minutes for Integrity and Insulation.

The results from the test show that the change of sub facing does not have a bearing on the integrity performance of the product with Specimen E actually achieving a better result than Specimen D. The insulation performance of Specimen E was lower than that achieved on Specimen D, however these increased temperatures were associated to metallic items penetrating the barrier.

The closure times for the products were also identical with each specimen fully closing within 5 minutes.

The results from the test offer assurance that the Rockpanel sub facing does not impair the performance of the intumescent in closing the ventilation gap and that is offers almost identical performance to aerated concrete. Based on this the appraisal of Rockpanel sub facings can be positively appraised for use with the 'OSCB 60' product.

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Conclusions

Should the recommendations given in this report be followed, it can be concluded that the ROCKWOOL LIMITED 'OSCB 60' should be capable of providing up to 60 minutes integrity and 60 minutes insulation (where appropriate and as discussed within this assessment) performance, if tested utilising the general principles of ASFP TGD 19 (November 2017) when installed into cavities up to 425 mm.

This assessment represents our opinion as to the performance likely to be demonstrated on a test utilising the general principles of ASFP TGD 19 (November 2017), 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 ROCKWOOL LIMITED 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 30th January 2025, after which time it is recommended that it be returned for re-appraisal.

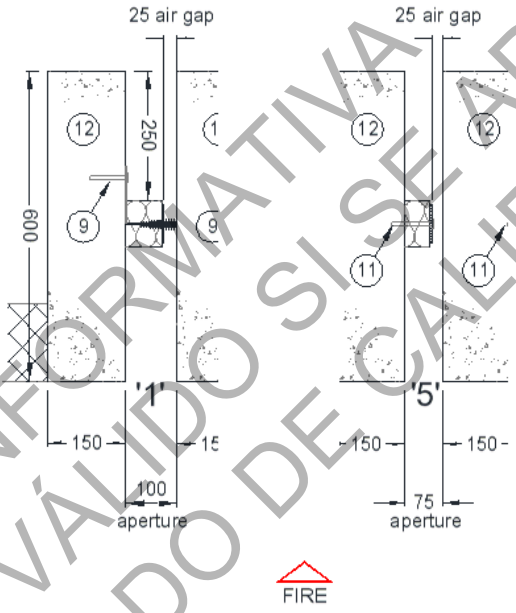
The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.

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Summary of Primary Supporting Data

WF 397020

The test referenced WF 397020 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 60' specimens achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.

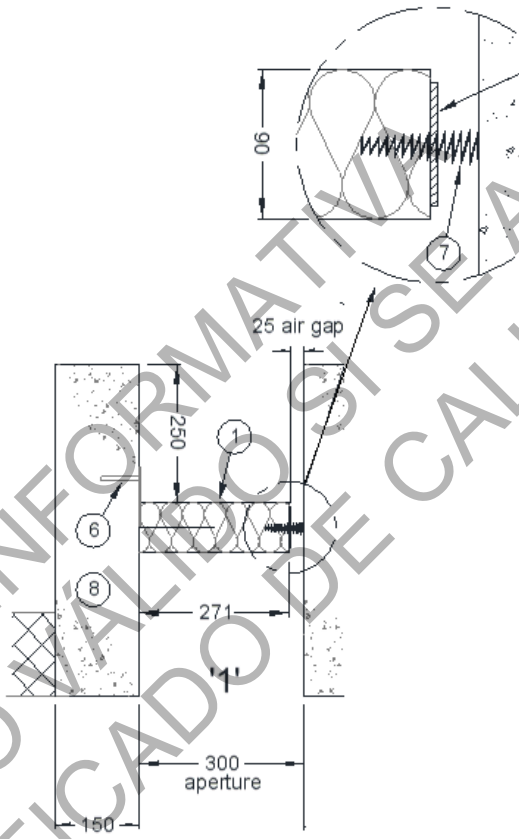


Date of Test: 11th April 2018.

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WF 397021

The test referenced WF 397021 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 60' specimen achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.

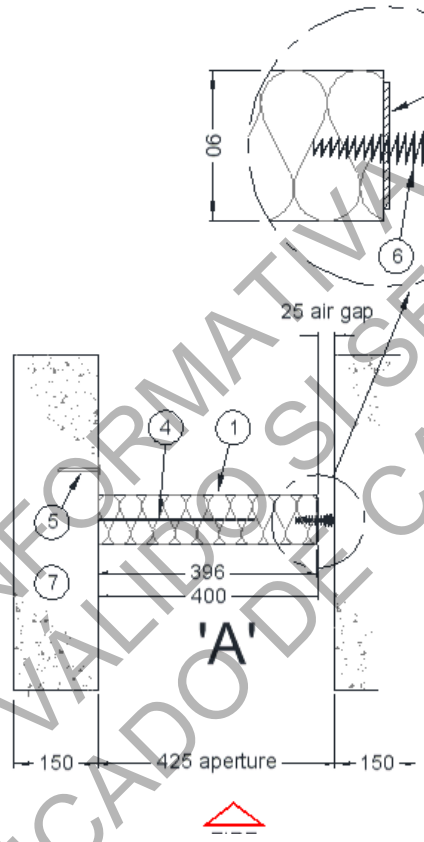


Date of Test: 28th March 2018.

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WF 399419

The test referenced WF 399419 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 60' specimen achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.

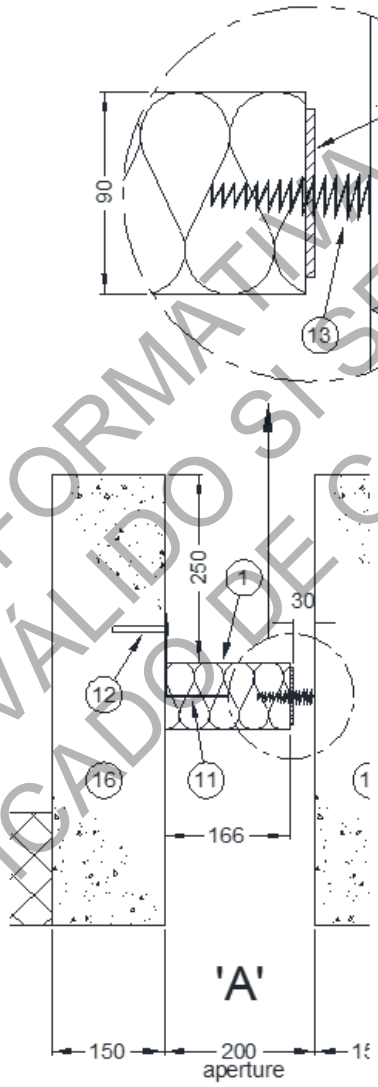


Date of Test: 29th May 2018

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WF 399420

The test referenced WF 399420 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 60' specimen achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.

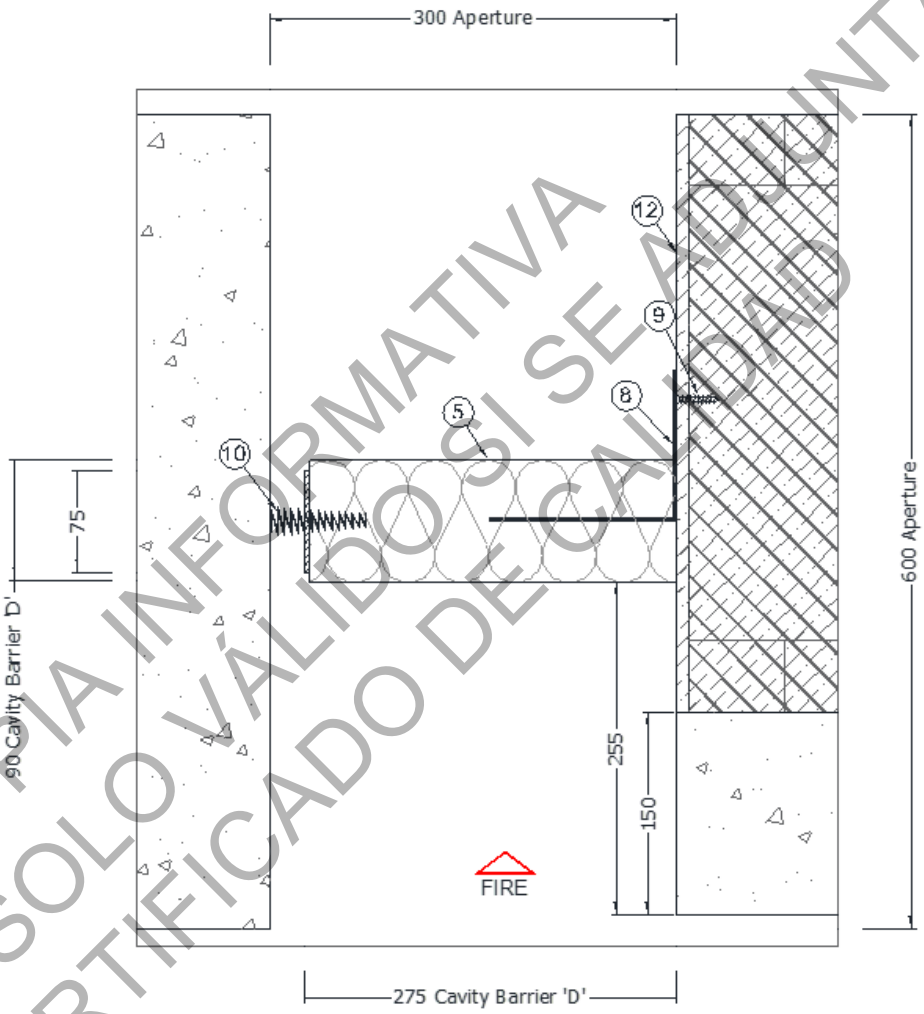


Date of Test: 11th June 2018

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WF 407778

The test referenced WF 407778 and described briefly in the supporting data section of this report describes a fire resistance test utilising the general principles of ASFP TGD 19 (November 2017). The 'OSCB 44' specimen achieved a considerable overrun over the required 60 minutes Integrity and Insulation performance. The results are held in a confidential file.



Date of Test: 19th December 2018

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Declaration by ROCKWOOL LIMITED.

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:

_____

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Signatories



Responsible Officer

R. Wakefield* - Principal Engineer



Approved

A. Kearns* - Technical Manager

* For and on behalf of Warringtonfire.

Report Issued: 30th January 2020

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

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