The Building Test Centre
Fire Acoustics Structures

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Assessment Number **BTC 20703FA**

A FIRE TEST ASSESSMENT ON A BRITISH GYPSUM GYPWALL ROBUST PARTITION WITH 70MM STUD FRAMEWORK CLAD EACH SIDE WITH SINGLE LAYER OF 15mm GYPROC DURALINE AND INCORPORATING DIFFERENT MINERAL WOOL INSULATIONS IN THE CAVITY CONDUCTED IN ACCORDANCE WITH F.T.S.G. RESOLUTION No. 82 /PFPF GUIDE**.**

Assessment Date: 15th October 2018

www.btconline.co.uk

Applicant: **British Gypsum**
East Leake
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DETAILS OF THE REQUEST

It is required to assess the following constructions for fire resistance performance if tested in accordance with BS EN 1364-1: 2015.

The test specimen was constructed in the aperture having an overall opening of 3000mm (high) x 3000mm (wide).

Gypframe 72DC60 Deep Flange Floor & Ceiling channels were fixed to the head and base of the test aperture using 60mm fire resistant fixings at 600mm centres.

Gypframe 70S50 'C' Studs were positioned at 600mm centres between the channels. The right-hand stud viewed from the unexposed face was not fixed to the perimeter of the test frame, and the gap between the stud and the frame lining was filled with a 25mm thick rock mineral fibre gasket.

At the left-hand edge a Gypframe 70S50 'C' Stud was used to fix the partition the test frame using 60mm fire resistant fixings at 600mm centres.

A single layer of 25mm Isover Acoustic Partition Roll or 50mm Isover Acoustic Partition Roll or 80mm Isover Modular Roll was positioned within the stud cavity.

Both the unexposed face and exposed face of the specimen were clad with a single layer of 15mm Gyproc DuraLine. The boards were fixed with 25mm British Gypsum Drywall Screws at 300mm centres around the perimeter and within the field of the boards.

All vertical joints were staggered between layers, with a full board at the free end of the exposed face. A horizontal joint was positioned 2400mm from the base, on both sides of the specimen. A Gypframe GFS1 Fixing Strap was used behind the horizontal outer layer board joint.

All external board joints were taped and filled using Gyproc Paper Joint tape and Gyproc Joint Filler. All screw heads were spotted using Gyproc Joint Filler.

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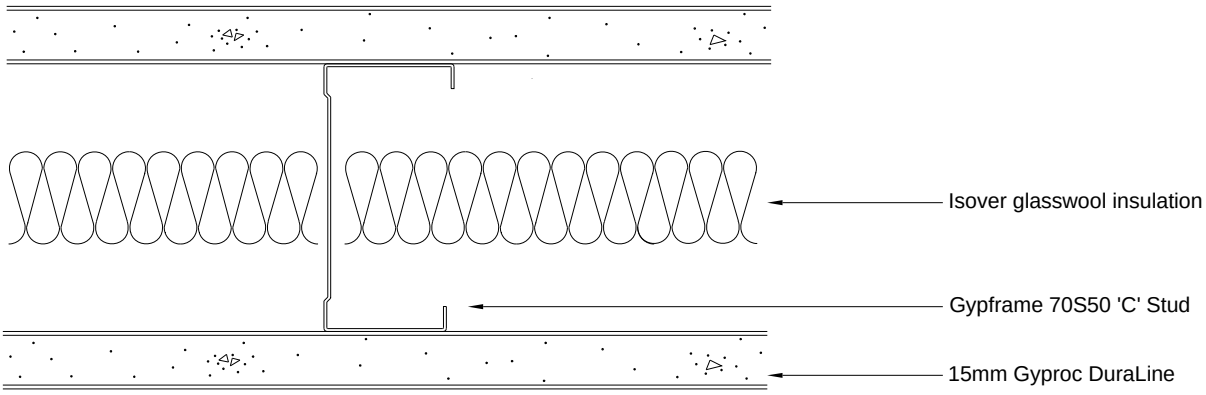

Figure 1 – Cross section of specimen

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THE ASSESSORS

The Building Test Centre operates as an independent accredited test house for the construction industry. The Building Test Centre has unrivalled experience in the development of drywall systems. The Building Test Centre is UKAS accredited under No. 0296 for fire resistance, reaction to fire, acoustic and structural testing. The Building Test Centre is wholly owned by British Gypsum a major manufacturer of building products.

The Building Test Centre is a founder member of the Fire Test Study Group an organisation comprising the UKAS accredited fire test laboratories conducting fire testing in the UK primarily for building control approval. The aim of the group is to ensure a common interpretation of test standards by all laboratories.

ASSESSMENT AUTHORISATION

Assessment Author

Paul Miller
BSc(Hons.),
Fire Test Manager

Reviewing Assessor

Philip Barnes
Principle Technical Consultant

Assessment Date 15th October 2018.

This assessment is not valid unless it incorporates the Declaration by Applicant form duly signed by the applicant.

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ASSESSMENT AMENDMENTS

Page	Amendments	Date

Report Amendments Author	Amendments Authorised by
Name *Role*	**Name** *Role*

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TEST EVIDENCE

The test evidence used in this assessment has been used under the authorisation of the test report owner and has been used with their permission (see Pages 14 and 15). Furthermore, the test evidence has been reviewed in accordance with Annex D of the PFPF guide to ensure that the test reports are still valid.

BTC 20111F

A FIRE RESISTANCE TEST ON A GYPWALL METAL STUD PARTITION WITH 70MM STUD FRAMEWORK CLAD EACH SIDE WITH A SINGLE LAYER OF 15MM GYPROC DURALINE EX KIRKBY THORE WITH 75MM ISOVER ACOUSTIC SLAB IN THE CAVITY, CONDUCTED IN ACCORDANCE WITH BS EN 1364 1: 2015. (ULTRAEMBOSSED C STUD).

The specimen was constructed in a refractory concrete lined steel restraint test frame with an opening of 3000mm (high) x 3000mm (wide).

Gypframe 72DC60 Deep Flange Floor and Ceiling Channels were fixed to the head and base of the test aperture at 600mm centres using 60mm fire resistant fixings.

Gypframe 70S50 'C' Studs were positioned at 600mm centres between the channels. The right hand stud viewed from the unexposed face was not fixed to the perimeter of the test frame, and the gap between the stud and the frame lining was filled with a 25mm thick rock mineral fibre gasket.

At the left-hand edge a Gypframe 70S50 'C' Stud was used to fix the partition to the test frame, using 60mm fire resistance fixings at 600mm centres.

Thermocouples were added to the studs at mid height on the web, hot and cold flanges of the central two studs.

75mm Isover Acoustic Slab was positioned in the cavity.

Both the unexposed face and the exposed face of the specimen were clad with a single layer of 15mm Gyproc DuraLine. The boards were fixed with 25mm British Gypsum Drywall Screws at 300mm centres around the perimeter and within the field of the boards.

All vertical joints were staggered between layers, with a full board at the free end of the exposed face. A horizontal joint was positioned at 2400mm from the base, on both faces of the specimen. A Gypframe GFS1 Fixing Strap was used behind the horizontal outer layer board joint.

All external board joints were taped and filled using Gyproc Paper Joint Tape and Gyproc Joint Filler as appropriate. All screw heads were spotted using Gyproc Joint Filler.

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The tested construction achieved the following results:

Insulation	66 minutes
Integrity	86 minutes

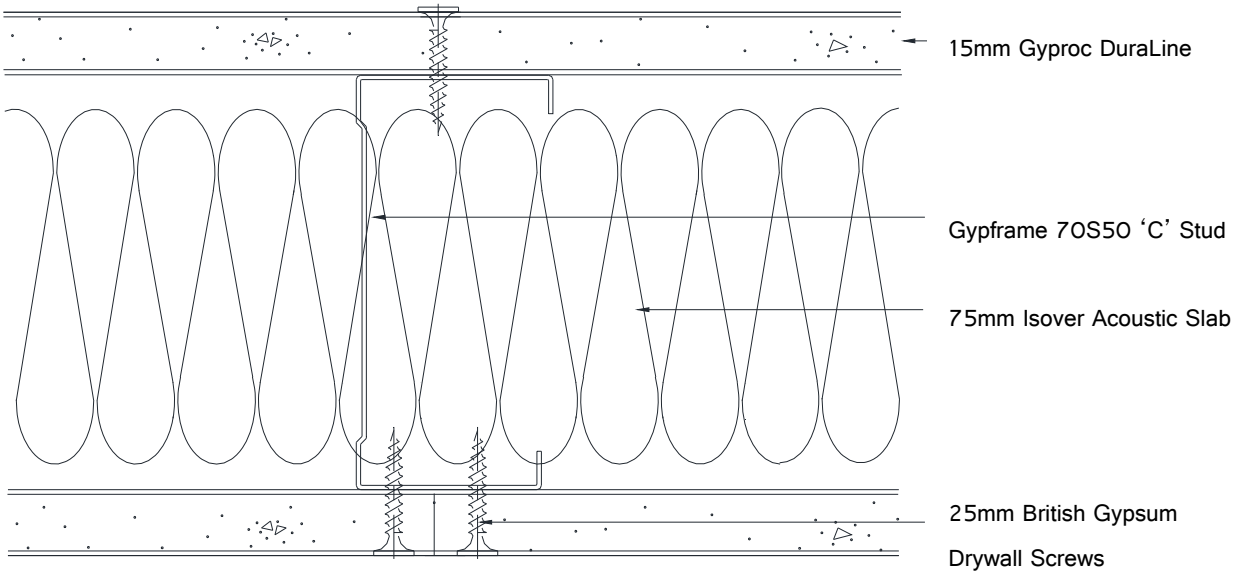

Figure 2 – Cross section of specimen

The test was carried out in accordance with BS EN 1364-1: 2015 taking into account Fire Test Study Group standard interpretations where appropriate. The test was carried out on the 13th June 2017 at the Building Test Centre, UKAS accreditation No. 0296. The test was carried out on behalf of British Gypsum.

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BTC 20112F

A FIRE RESISTANCE TEST ON A GYPWALL METAL STUD PARTITION WITH 70MM STUD FRAMEWORK CLAD EACH SIDE WITH A SINGLE LAYER OF 15MM GYPROC DURALINE EX KIRKBY THORE, CONDUCTED IN ACCORDANCE WITH BS EN 1364 1: 2015. (ULTRAEMBOSSED C STUD).

The specimen was constructed in a refractory concrete lined steel restraint test frame with an opening of 3000mm (high) x 3000mm (wide).

Gypframe 72DC60 Deep Flange Floor and Ceiling Channels were fixed to the head and base of the test aperture at 600mm centres using 60mm fire resistant fixings.

Gypframe 70S50 'C' Studs were positioned at 600mm centres between the channels. The right hand stud viewed from the unexposed face was not fixed to the perimeter of the test frame, and the gap between the stud and the frame lining was filled with a 25mm thick rock mineral fibre gasket.

At the left-hand edge a Gypframe 70S50 'C' Stud was used to fix the partition to the test frame, using 60mm fire resistance fixings at 600mm centres.

Thermocouples were added to the studs at mid height on the web, hot and cold flanges of the central two studs.

Both the unexposed face and the exposed face of the specimen were clad with a single layer of 15mm Gyproc DuraLine. The boards were fixed with 25mm British Gypsum Drywall Screws at 300mm centres around the perimeter and within the field of the boards.

All vertical joints were staggered between layers, with a full board at the free end of the exposed face. A horizontal joint was positioned at 2400mm from the base, on both faces of the specimen. A Gypframe GFS1 Fixing Strap was used behind the horizontal outer layer board joint.

All external board joints were taped and filled using Gyproc Paper Joint Tape and Gyproc Joint Filler as appropriate. All screw heads were spotted using Gyproc Joint Filler.

The tested construction achieved the following results:

Insulation	66 minutes
Integrity	90 minutes

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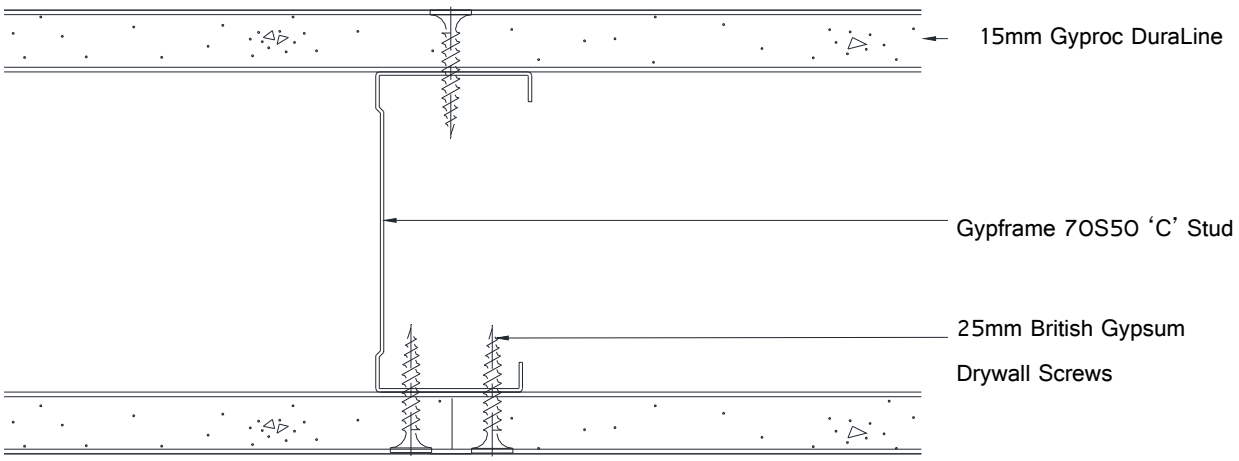

Figure 3 – Cross section of specimen

The test was carried out in accordance with BS EN 1364-1: 2015 taking into account Fire Test Study Group standard interpretations where appropriate. The test was carried out on the 12th June 2017 at the Building Test Centre, UKAS accreditation No. 0296. The test was carried out on behalf of British Gypsum.

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DISCUSSION

With non-loadbearing lightweight steel stud constructions, the duration of fire performance is governed by the level of protection offered by the exposed face and unexposed face linings and the support provided to these linings by the steel framework and fixings.

The construction described under DETAILS OF THE REQUEST varies from the tested construction detailed in test reports BTC 20111F and BTC 20112F. The variations are:

	Requested construction	Tested construction (BTC 20111F)	Tested construction (BTC 20112F)
1. Cavity Insulation	25mm Isover Acoustic Partition Roll or 50mm Isover Acoustic Partition Roll or 80mm Isover Modular Roll	75mm Isover Acoustic Slab	None
2. Height	3900mm	3000mm	3000mm
3. Insulation and integrity performance	60 minutes 60 minutes	66 minutes 86 minutes	66 minutes 90 minutes

Cavity Insulation

Product Name	Thickness (mm)	Insulation type	Thermal conductivity (W/mK)*	Manufacturers Declaration of Performance
Isover Acoustic Partition Roll	25	Glass mineral wool	0.039	0007-CPR-131001 1st October 2013
Isover Acoustic Partition Roll	50	Glass mineral wool	0.039	0007-CPR-131001 1st October 2013
Isover Acoustic Slab	75	Glass mineral wool	0.036	0008-CPR-130701 1st July 2013
Isover Modular Roll	80	Glass mineral wool	0.043	0006-CPR-130701 1st July 2013

* values taken from manufacturers Declaration of Performance

The effect of including insulation in this type of construction can be analysed by comparing BTC 20111F and BTC 20112F.

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BTC 20111F incorporated 75mm Isover Acoustics Slab. This product was chosen in order to evaluate the effect of fully filling the cavity but more importantly, using the highest performing insulation in terms of thermal conductivity (lowest value W/mK). BTC 20112F was tested with no insulation. Comparing the two, both achieved 66 minutes insulation performance. The laboratory takes the view that it is reasonable to assume no reduction in performance would be expected when using an insulation detailed in the table above.

Extension of height

The EN standard states that the height of constructions tested a minimum of 3m, may be increased to 4m with the following conditions:

a) if the maximum lateral deflection of the test specimen was not in excess of 100mm
b) the expansion allowances are increased pro-rata.

	Tested construction (BTC 20111F)	**Tested construction (BTC 20112F)**
Deflection at 60 minutes (mm)	80mm	56mm
Time to reach 100mm deflection	Not reached, TT 90 minutes 49mm	Not reached, TT 90 minutes 85mm

From the data in the table above, it can be seen that with this type of construction if the cavity is left empty or full filled, the deflection at 60 minutes did not reach 100mm (maximum 80mm deflection). It is therefore reasonable to assume that the insulations described under the DETAILS OF REQUEST will perform within this range.

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CONCLUSION

In view of the foregoing evidence, it is our opinion that if the constructions described under DETAILS OF THE REQUEST were subjected to fire resistance testing, in accordance with BS EN 1364-1: 2015, they would provide the following periods of fire:

Insulation:	**60 minutes**
Integrity:	**60 minutes**

LIMITATIONS

This assessment addresses itself solely to the ability of the partition system described to satisfy the criteria of the fire resistance test and does not imply any suitability for use with respect to other unspecified criteria.

This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to the assessing authority the assessment will be unconditionally withdrawn and the applicant will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years after which time it is recommended that it be submitted to the assessing authority for re-appraisal. The opinions and interpretations expressed in this assessment are outside the scope of UKAS accreditation.

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DECLARATION BY THE APPLICANT

We the undersigned confirm that we have read and complied with the obligations placed on us by FTSG Resolution No. 82.

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 this assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be subjected to 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 conclusion of this assessment.

If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the assessment.

Signed: .....Print Name .....Rob Evans.....

For and on behalf of British Gypsum.

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AUTHORITY FOR USE OF TEST EVIDENCE

Test Report Numbers: BTC 20111F, BTC 20112F

We the undersigned agree to the above Test Reports being used as supporting evidence for the following assessment:

A FIRE TEST ASSESSMENT ON A BRITISH GYPSUM GYPWALL ROBUST PARTITION WITH 70MM STUD FRAMEWORK CLAD EACH SIDE WITH SINGLE LAYER OF 15mm GYPROC DURALINE AND INCORPORATING DIFFERENT MINERAL WOOL INSULATIONS IN THE CAVITY CONDUCTED IN ACCORDANCE WITH F.T.S.G. RESOLUTION No. 82 /PFPF GUIDE.

Assessment client: British Gypsum

Signed: ..... Print Name .....Rob Evans.....

Job Title: .....Principle Scientist.....

Department: .....Technical.....

For and on behalf of British Gypsum.