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Assessment Number **BTC 15366LC**

AN ACOUSTIC LETTER OF CONFORMITY FOR A BRITISH GYPSUM GYPWALL ROBUST / EXTREME HYBRID PARTITION CLAD WITH A SINGLE LAYER OF 15mm GYPROC DURALINE ON ONE SIDE AND A DOUBLE LAYER OF 15mm GYPROC SOUNDBLOC AND 12.5mm GLASROC RIGIDUR H ON THE OTHER.

Assessment Date: 24th July 2007

www.btconline.co.uk

Applicant: **British Gypsum Limited**
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TABLE OF CONTENTS

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DETAILS OF THE REQUEST

It is required to assess the following constructions for airborne sound insulation performances of R_w = 49dB (without quilt) and R_w = 55dB (with 50mm quilt) if tested in accordance with BS EN ISO 140-3: 1995 and rated in accordance with BS EN ISO 717-1: 1997. The construction method is the same for either quilt specification.

Gypframe 72C50 Standard Flange Floor & Ceiling Channels are fixed to the head and base of the test aperture at 600mm centres with 25mm Gyproc drywall screws.

Gypframe 70AS50 AcouStuds are positioned between the head and base channels at each end of the aperture and fixed using 25mm Gyproc drywall screw fixings spaced at 600mm centres.

Gypframe 70AS50 AcouStuds are positioned between the head and base channels at 600mm centres.

A layer of insulation is positioned in the cavity as described in table 1.

The framework is clad with a single layer of 15mm Gyproc DuraLine on one side and a double layer of board, comprising an inner layer of 15mm Gyproc SoundBloc and an outer layer of 12.5mm Glasroc Rigidur H, on the other.

The single layer of 15mm Gyproc DuraLine is fixed around the perimeter of the board and to intermediate stud positions using 32mm Gyproc drywall screws at 300mm centres.

The inner layer of 15mm Gyproc SoundBloc is fixed around the perimeter of the boards with 32mm Gyproc drywall screws at 300mm centres.

The outer layer of 12.5mm Glasroc Rigidur H is fixed around the perimeter of the board and to intermediate stud positions with 40mm Glasroc Rigidur screws at 300mm centres.

All vertical joints were staggered between layers. All outer layer joints were taped and the perimeter sealed with Gyproc Sealant.

	Insulation thickness and type
System One	None
System Two	50mm Isover Acoustic Partition Roll

Table 1. Quilt specifications for assessed constructions.

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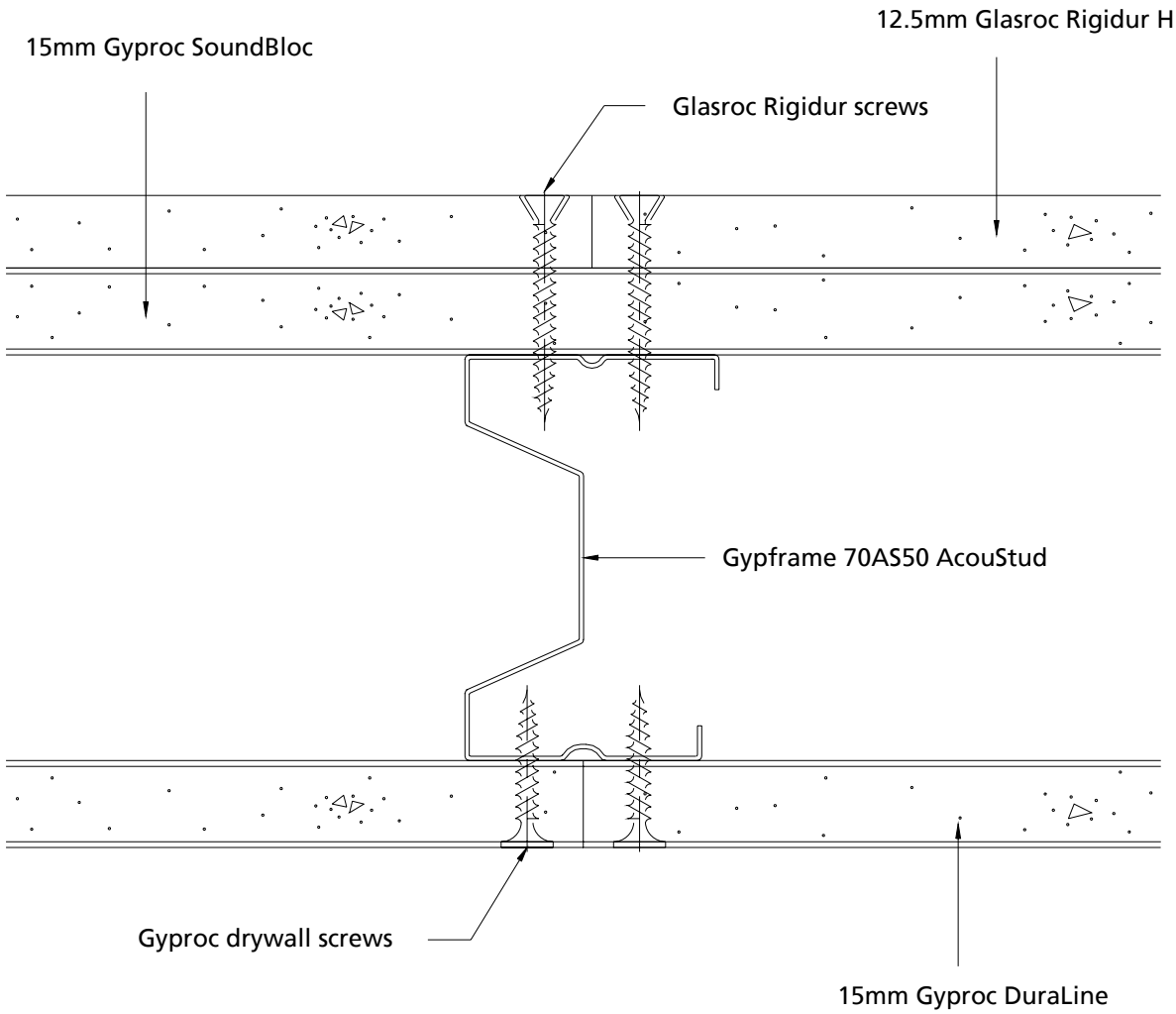

Figure 1. Cross sectional view through proposed partition system 1.

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The Building Test Centre
Fire Acoustics Structures

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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 Limited a major manufacturer of building products.

ASSESSMENT AUTHORISATION

Assessment Author	Reviewing Assessor
Robert Evans MEng. (Hons.), AMIMechE, AIFireE, AMIOA *Project Leader*	**Alexandra Chambers** B.Eng. AMIOA *Section Manager*

Assessment Date 24th July 2007.

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

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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 13 and 14). Furthermore, the test evidence has been reviewed by The Building Test Centre to ensure that the test reports are still valid.

BTC 13718A

An acoustic laboratory sound insulation test on a British Gypsum GypWall ROBUST partition clad with a single layer of 15mm Gyproc DuraLine conducted in accordance with BS EN ISO 140-3: 1995

The specimen was constructed in a test aperture having an opening of 2400mm high x 3600mm wide.

Gypframe 72DC60 Deep Flange Floor & Ceiling Channels were fixed to the head and base of the aperture using 25mm Gyproc drywall screw fixings spaced at 600mm centres.

Gypframe 70S50 'C' Studs were positioned between the head and base channels at each end of the aperture and fixed using 25mm Gyproc drywall screw fixings spaced at 600mm centres.

Gypframe 70S50 'C' Studs were positioned between the head and base channels at 600mm centres.

A single layer of 15mm Gyproc DuraLine was fixed on both sides of the metal framework. The layer of boards was screw fixed around the perimeter and with in the field of the boards at 300mm centres using 32mm Gyproc drywall screws.

All vertical joints were staggered between layers. All joints were taped and the perimeter sealed with Gyproc Sealant.

The tested constructions achieved the following results:

BTC 13718EA R_w (C; Ctr) = 42 (-2; -8) dB

The test was carried out in accordance with BS EN ISO 140-3: 1995 and rated in accordance with BS EN ISO 717-1: 1997. The test was carried out between the 26th and 28th January 2005 at The Building Test Centre. The test was carried out on behalf of British Gypsum Limited.

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BTC 15076A

An acoustic laboratory sound insulation test on a British Gypsum GypWall CLASSIC partition clad with a single layer of 15mm Gyproc SoundBloc conducted in accordance with BS EN ISO 140-3: 1995

Gypframe 72C50 Standard Floor & Ceiling Channels were fixed to the head and base of the aperture using screws spaced at 600mm centres.

Gypframe 70S50 'C' Studs were positioned between the head and base channels at 600mm centres.

A single layer of 15mm Gyproc SoundBloc was fixed on both sides of the metal framework. The layer of boards was screw fixed around the perimeter and with in the field of the boards at 300mm centres using 32mm Gyproc drywall screws.

All vertical joints were staggered between layers. All joints were taped and the perimeter sealed with Gyproc Sealant.

The tested construction achieved the following results:

BTC 15076BA R_w (C; Ctr) = 41 (-3; -9) dB

The test was carried out in accordance with BS EN ISO 140-3: 1995 and rated in accordance with BS EN ISO 717-1: 1997. The test was carried out on the 31st January 2007 at The Building Test Centre. The test was carried out on behalf of British Gypsum Limited.

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Fire Acoustics Structures

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BTC 15290A

An acoustic laboratory sound insulation test on a British Gypsum GypWall ROBUST / EXTREME hybrid partition clad with a single layer of 15mm Gyproc DuraLine on one side, a double layer of 15mm Gyproc DuraLine and 12.5mm Glasroc Rigidur H on the other and 50mm Isover Acoustic Partition Roll in the cavity; conducted in accordance with BS EN ISO 140-3: 1995

The test specimen was constructed in an aperture having an overall opening of 2400mm (high) x 3600mm (wide).

Gypframe 72C50 Standard Floor & Ceiling Channels were fixed to the head and base of the aperture using 25mm Gyproc drywall screw fixings spaced at 600mm centres.

Gypframe 70AS50 AcouStuds were positioned between the head and base channels at each end of the aperture and fixed using 25mm Gyproc drywall screw fixings spaced at 600mm centres.

Gypframe 70AS50 AcouStuds were positioned between the head and base channels at 600mm centres.

A layer of 50mm thick Isover Acoustic Partition Roll (1200) was positioned in the cavity between the studs.

The source room side was clad with a single layer of 15mm Gyproc DuraLine. The layer of boards was screw fixed around the perimeter of the boards and at intermediate stud positions at 300mm centres using 32mm Gyproc drywall screws.

The receiving room side was clad with an inner layer of 15mm Gyproc DuraLine and an outer layer of 12.5mm Glasroc Rigidur H. The inner layer of boards was screw fixed around the perimeter of the boards at 300mm centres using 32mm Gyproc drywall screws. The outer layer of boards was screw fixed around the perimeter of the boards and at intermediate stud positions at 300mm centres using 40mm Glasroc Rigidur screws.

All vertical joints were staggered between layers. All joints were taped and the perimeter sealed with Gyproc Sealant.

The tested construction achieved the following results:

BTC 15290A R_w (C; Ctr) = 56 (-3; -7) dB

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The test was carried out in accordance with BS EN ISO 140-3: 1995 and rated in accordance with BS EN ISO 717-1: 1997. The test was carried out on the 6th June 2007 at The Building Test Centre. The test was carried out on behalf of British Gypsum Limited.

BTC 15291A

An acoustic laboratory sound insulation test on a British Gypsum GypWall ROBUST / EXTREME hybrid partition clad with a single layer of 15mm Gyproc DuraLine on one side and a double layer of 15mm Gyproc DuraLine and 12.5mm Glasroc Rigidur H on the other, conducted in accordance with BS EN ISO 140-3: 1995

The test specimen was constructed in an aperture having an overall opening of 2400mm (high) x 3600mm (wide).

Gypframe 72C50 Standard Floor & Ceiling Channels were fixed to the head and base of the aperture using 25mm Gyproc drywall screw fixings spaced at 600mm centres.

Gypframe 70AS50 AcouStuds were positioned between the head and base channels at each end of the aperture and fixed using 25mm Gyproc drywall screw fixings spaced at 600mm centres.

Gypframe 70AS50 AcouStuds were positioned between the head and base channels at 600mm centres.

The source room side was clad with a single layer of 15mm Gyproc DuraLine. The layer of boards was screw fixed around the perimeter of the boards and at intermediate stud positions at 300mm centres using 32mm Gyproc drywall screws.

The receiving room side was clad with an inner layer of 15mm Gyproc DuraLine and an outer layer of 12.5mm Glasroc Rigidur H. The inner layer of boards was screw fixed around the perimeter of the boards at 300mm centres using 32mm Gyproc drywall screws. The outer layer of boards was screw fixed around the perimeter of the boards and at intermediate stud positions at 300mm centres using 40mm Glasroc Rigidur screws.

All vertical joints were staggered between layers. All joints were taped and the perimeter sealed with Gyproc Sealant.

The tested construction achieved the following results:

BTC 15291A R_w (C; Ctr) = 50 (-2; -7) dB

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The test was carried out in accordance with BS EN ISO 140-3: 1995 and rated in accordance with BS EN ISO 717-1: 1997. The test was carried out on the 7th June 2007 at The Building Test Centre. The test was carried out on behalf of British Gypsum Limited.

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DISCUSSION

With non-loadbearing lightweight steel stud constructions, the level of airborne sound insulation performance is affected by the surface density and composition of the exposed face and unexposed face linings, the width of the partition and the amount of insulation material positioned within the cavity.

The constructions detailed under DETAILS OF THE REQUEST are a combination of the linings and metal framework used in partition systems BTC 15076A and BTC 15291A. To determine whether the new system would achieve the required sound insulation performance, test evidence from both these tests and other similar tests needs to be examined.

BTC 13718A and BTC 15076A describe tests conducted on the same framework components but using different types of boards. BTC 13718A was constructed using 15mm Gyproc DuraLine whereas BTC 15076A was constructed using 15mm Gyproc SoundBloc. The latter partition achieved an acoustic sound insulation performance of R_w = 41dB, which was 1dB lower than the 15mm Gyproc DuraLine construction.

From the above test evidence, if a construction lining comprising 15mm Gyproc DuraLine was replaced with 15mm Gyproc SoundBloc, there would be a downgrade in performance.

Applying this assumption to BTC 15291A, the acoustic performance of the system would be reduced by 1dB when the inner layer of 15mm Gyproc DuraLine was replaced with 15mm Gyproc SoundBloc. The estimated performance of the modified system would be R_w = 49dB - the required acoustic performance for System One construction detailed under the DETAILS OF THE REQUEST.

System 2 detailed under DETAILS OF THE REQUEST includes 50mm Isover Acoustic Partition Roll in the cavity. The acoustic performances measured in BTC 15290A and BTC 15291A, show there was a 6dB benefit gained from the inclusion of the quilt in the partition. Assuming a similar benefit would be measured for the System 2 construction, the required performance of 55dB would be achieved.

From the above discussions it can be concluded that the System 1 and 2 constructions proposed under DETAILS OF THE REQUEST would achieve a laboratory airborne sound insulation performance of 49dB and 55dB, respectively, when tested in accordance with BS EN ISO 140-3: 1995 and BS EN ISO 717-1:1997.

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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 laboratory airborne insulation testing, in accordance with BS EN ISO 140-3: 1995 and BS EN ISO 717-1:1997, they would provide the following performances:

System 1: **Estimated weighted airborne sound reduction index R_w = 49dB**
System 2: **Estimated weighted airborne sound reduction index R_w = 55dB**

LIMITATIONS

This assessment addresses itself solely to the ability of the partition system described to satisfy the criteria of a laboratory airborne sound insulation 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 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 .....

For and behalf of British Gypsum Limited.

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AUTHORITY FOR USE OF TEST EVIDENCE

Test Report Numbers: BTC 13718A, BTC 15076A, BTC 15290A and BTC 15291A

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

AN ACOUSTIC LETTER OF CONFORMITY FOR A BRITISH GYPSUM GYPWALL ROBUST / EXTREME HYBRID PARTITION CLAD WITH A SINGLE LAYER OF 15mm GYPROC DURALINE ON ONE SIDE AND A DOUBLE LAYER OF 15mm GYPROC SOUNDBLOC AND 12.5mm GLASROC RIGIDUR H ON THE OTHER.

Assessment client: British Gypsum Limited

Signed: ..... Print Name .....

Job Title: .....

Department: .....

For and behalf of **British Gypsum Limited**