BM TRADA

Prepared for:
Acoustic and Fire Door Solutions Ltd
3 Esplanade
Broughty Ferry
Dundee
DD52 2EL

Acoustic Test Report

CONFIDENTIAL

Report: Chilt/Z13038/Rev3

Report on the testing of doorsets for acoustic performance to BS EN ISO 10140-2:2010

Issue date: September 2013

UKAS TESTING 1762

BM TRADA – the new name for Chiltern International Fire Ltd

From July 1st 2013, Chiltern International Fire Ltd commenced trading under the name of its parent company BM TRADA and at the same time adopted a brand new visual identity.

Historically, the group has delivered its services through a number of individual companies: BM TRADA Certification Ltd, TRADA Technology Ltd, Chiltern International Fire Ltd (including Chiltern Dynamics) and a network of international offices. Both BM TRADA Group and these individual companies will now trade under the same name - BM TRADA - and adopt the new visual identity.

To coincide with this change, our Technical Reports, Test Reports, Products Assessments, company stationery and marketing collateral have been re-designed to carry the new branding and visual identity.

The validity of all documents previously issued by the individual companies including certificates, test reports and product assessments is unaffected by this change and a letter to this effect will be available to download from our website www.bmtradagroup.com.

About BM TRADA.

With origins dating back to 1934, we have a deep history and services which are highly valued by our customers. We offer independent certification, testing, inspection, training and technical services around the world. In all these areas we continue to use industry-leading experts in their chosen fields to develop and deliver services – an ethos that has been at the heart of our approach since we began.

In all these areas we use industry-leading experts in their chosen fields to develop and deliver services – an ethos that has been at the heart of our approach since we began.

A recent review of our businesses and customers revealed that the individual identities sometimes make communications confusing, and that in an already complex business area, clarity and simplicity in communications is rare, but valued. It also revealed that a single identity and combined offer would help us strengthen our appeal.

With this in mind, we brought the companies together under the name BM TRADA and took the opportunity to create a fresh new visual identity.

We have modernised our image and combined our strengths. However, our values, our people and the integrity of our services remain the same. I hope you will welcome these changes and the improvements they will bring.

Jon Osborn
Chief Operating Officer

Contents

1 Introduction

The specimens were supplied by the client and delivered to BM TRADA on 20 June 2013. The specimens were installed into a timber stud partition within the test chamber by BM TRADA.

Test details

The specimens were tested to BS EN ISO 10140-2:2010 Acoustics - Laboratory measurement of sound insulation of building elements. Measurement of airborne sound insulation

Testing was conducted at BM TRADA, Chiltern House, Stocking Lane, Hughenden Valley, Buckinghamshire. HP14 4ND from 10 July to 11 July 2013.

For details of the testing, please see section 3, Methodology.

Supporting construction description

The partition consisted of two wall leaves separated by a 150mm air gap. Each wall leaf was constructed of nominal 45mm x 90mm softwood studs at 600mm centres with two layers of 15mm plasterboard on each face. The stud wall cavities were filled with 100mm thick Rockwool insulation

2 Test Specimens

The specimens were identified as follows:

Test No.	Product Name & Description
P006	**Tri-sound S3D by Sauerland 57mm S3D single flush doorset** 57mm S3D single flush doorset. Frame Perimeter Seals 1No. NOR710, Leaf perimeter seals 1No. NOR720, Threshold NOR810db+
P007	**Tri-sound S3D by Sauerland 57mm S3D single glazed doorset** 57mm S3D single doorset with 23mm Pyrostop glazing, Frame perimeter caulked.
P009	**Tri-sound S3D by Sauerland 57mm S3D single glazed doorset** 57mm S3D single doorset with 23mm Pyrostop glazing. Frame Perimeter Seals 1No. NOR710, Leaf perimeter seals 1No. NOR720, Threshold NOR810db+
P011	**Tri-sound S3D by Sauerland 57mm S3D single glazed doorset** 57mm S3D single doorset with 12mm Pyrobelite glazing, Frame perimeter caulked.
P014	**Tri-sound S3D by Sauerland 57mm S3D single glazed doorset** 57mm S3D single doorset with 12mm Pyrobelite glazing. Frame Perimeter Seals 1No. NOR710, Leaf perimeter seals 1No. NOR720, Threshold NOR810db+

P015	**Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset** 57mm S3D equal pairs doorset with 23mm Pyrostop glazing, Frame perimeter caulked.
P017	**Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset** 57mm S3D equal pair doorset with 23mm Pyrostop glazing. Frame Perimeter Seals 1No. NOR710 Leaf perimeter seals 1No. NOR720 and 2No. NOR720 at meeting style on one leaf, Thresholds NOR810db+
P022	**Tri-sound S3D by Sauerland 57mm S3D single flush doorset** 57mm S3D single flush doorset, Frame perimeter caulked.
P023	**Tri-sound S3D by Sauerland 57mm S3D equal pairs flush doorset** 57mm S3D equal pair flush doorset. Frame Perimeter Seals 1No. NOR710 Leaf perimeter seals 1No. NOR720 and 2No. NOR720 at meeting style on one leaf, Threshold NOR810db+
P024	**Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset** 57mm S3D equal pair doorset with 12mm Pyrobelite glazing. Frame Perimeter Seals 1No. NOR710 Leaf perimeter seals 1No. NOR720 and 2No. NOR720 at meeting style on one leaf, Threshold NOR810db+

3 Detailed Specimen Description

Tri-sound S3D by Sauerland 57mm

		Material/type		Dimensions (mm)	Density (kg/m³)
Stiles		2No Sapele*		32 x 45mm and 38 x 45mm	640*
Rails		2No Sapele*		32 x 45mm and 38 x 45mm	640*
Core		Trisound S3D by Sauerland	3No. layers extruded chipboard	13 thick (per layer)	560*
			2No. layers cork	3 thick	220*
Facings		High density MDF		6 thick	850*
Adhesive	Lippings	PVA D3*		-	-
	Facings	PVA D3*		-	-
	Core	Sauerland Factory glued to S3D pattern using EPI type glue*		-	-

***** As stated by client, not checked by laboratory

Door frame

		Material/type	Dimensions (mm)	Density (kg/m³)
Head & jambs		Sapele	32 x 95	640**
Stops		Sapele	12 x 32	640**
Stop fixings	Single	21No. 4 x 30 screws, 30mm from corners, Max centres at 290mm and Min centres at 210mm	-	-
	Equal pairs	25No. 4 x 30 screws, 30mm from corners, Max centres at 290mm and Min centres at 210mm	-	-
Rebate		Single type	63 x 12	-
Joints		Mortice and tenon joint fixed by 4No. 6 x 100 screws in each corner	-	-

***** As stated by client, not checked by laboratory ** Nominal density not checked by laboratory

Perimeter sealing details

	Make/type	Size (mm)	Location
Frame reveal	Norseal (Ref. NOR710)*	6 blade length	One rebate upstand and rebate platform
Threshold	Norseal (Ref. NOR810dB+)*	14 wide	On bottom rail of door leaf
Leaf Edges	Norseal (Ref. NOR720)*	3 blade length	Around perimeter of door leaf
	Norseal (Ref. NOR720)*	3 blade length	2No to one leaf at meeting style
Seal continuity	Seals interrupted by hardware	-	-

***** As stated by client, not checked by laboratory

Glazing

	Make/type/size (mm)	Location (dimensions in mm)
Glass types & configuration	Pyrobelite 12mm thick	-
	Pyrostop 23mm thick	-
Overall size (Pyrobelite 12mm)	1545 x 395mm(single) and 1545 x 195mm(pair)	-
Sight size (Pyrobelite 12mm)	1500 x 350mm(single) and 1500 x 150mm(pairs)	-
Overall size (Pyrostop 23mm)	1545 x 395mm(single) and 1545 x 195mm(pair)	-
Sight size (Pyrostop 23mm)	1500 x 350mm(single) and 1500 x 150mm(pairs)	-
Cassette	44 x 54 sapele cassette*	Perimeter of glazing aperture
Bead joints	Mitred joint fixed with 1No. pin per joint	-
Bead	12 x 10mm AW Oak Bead*	Internal perimeter of glazing aperture
Bead fixings	Fixed by 18No. 1 x 40 pins	65 from corners, Max. centres at 320 and Min. centres at 240
Gaskets	Norseal Glazing liner* 54mm x 2mm	Between cassette and glazing
	2no Interdens F* 10 x 2mm	Between bead and glazing
Sealants	NOR115*	Silicone backfill

***** As stated by client, not checked by laboratory

4 Methodology

Airborne Sound Insulation Test

- The loudspeakers were placed in the corners of the source room
- The sound level meter was calibrated prior to testing.
- 5 measurements were taken in the source room, at fixed positions.
- 5 measurements were taken in the receive room at fixed positions.
- Background measurements were taking at each third octave frequency between 50Hz and 5000Hz.
- 6 Reverberation measurements were taken in the receive room, in accordance with BS EN ISO 3382-2:2008 interrupted, engineering method.
- Calculations, including C & C_{tr}, were carried out in accordance with BS EN ISO 717-1

- The sound reduction index was calculated using the following formula from BS EN ISO 10140-2:2010:

$$R_w = L1 - L2 + 10Log\left(\frac{S}{A}\right)\ dB$$

Where:

L1 is the logarithmic average of the source room measurements
L2 is the logarithmic average of the receive room measurements
S is the area of the test specimen
A is the equivalent absorption area, where $A = \frac{0.16V}{T}$

Where:

V = The volume of the receive room
T = the reverberation time measured in seconds

1. Logarithmic average of 5 Measurements (L1 & L2)
2. Deduction of L1s from L2s
3. Area of test specimen (S) divided by equivalent sound absorption area (A)
4. Weighted Final Result R_w dB

Test Equipment

Equipment	Equipment reference number
Bruel & Kjear Sound Level Meter (Type 2270)	ACT-009
Bruel & Kjear Microphones (Type 4189)	ACT-010 & ACT-016
Bruel & Kjear Calibrator (Type 4231)	ACT-011
Amplifiers	ACT-007 & ACT-020
Noise Generators	ACT-008 & ACT-009
Loudspeakers (EV ZX1-90PA)	ACT-006, ACT-021, ACT-022
Graphic Equaliser (DBX Dual Channel)	ACT-023

5 Results

Certificate Ref.	Test Identification	Test Result R_w ($C;C_{tr}$)
MTZ/F13038/P006	Tri-sound S3D by Sauerland 57mm S3D single flush doorset	40 (0;-3) dB
MTZ/F13038/P007	Tri-sound S3D by Sauerland 57mm S3D single glazed doorset Frame perimeter caulked	42 (0;-3) dB
MTZ/F13038/P009	Tri-sound S3D by Sauerland 57mm S3D single glazed doorset	40 (0;-2) dB
MTZ/F13038/P011	Tri-sound S3D by Sauerland 57mm S3D single glazed doorset Frame perimeter caulked	41 (0;-3) dB
MTZ/F13038/P014	Tri-sound S3D by Sauerland 57mm S3D single glazed doorset	40 (0;-3) dB
MTZ/F13038/P015	Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset Frame perimeter caulked	40 (0;-2) dB
MTZ/F13038/P017	Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset	40 (-1;-3) dB
MTZ/F13038/P022	Tri-sound S3D by Sauerland 57mm S3D equal pairs flush doorset Frame perimeter caulked	42 (-1;-4) dB
MTZ/F13038/P023	Tri-sound S3D by Sauerland 57mm S3D equal pairs flush doorset	40 (-1;-3) dB
MTZ/F13038/P024	Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset	38 (0;-2) dB

The results only relate to the performance of the samples under the particular conditions of test.

Full test results for each test are presented in Appendix 1.

6 Limitations & Parameters

The test fulfilled all criteria required of ISO 10140-2, including:

- Sound level meter (microphone) was located as required
- Sound sources (loudspeakers) were located as required
- Reverberation Time readings were greater than 20dB but not so large that the observed decay cannot be represented by a straight line.
- Background noise measurements were 10dB below L2 measurements.
- Temperature was reported to within ± 0.1°C
- Barometric pressure was reported to within ± 0.01 Mbar (±1 Pa)
- Humidity was reported to within ± 1%
- Frequencies 50Hz, 63Hz and 80Hz are outside of our UKAS accreditation, and are for reference only. These frequencies do not affect the over R_W figure.
- R'_{max} of the test chambers was measured to be 65dB
- The test chambers are two cuboid rooms 5.49m wide and a ceiling height of 2.58m, volumes of chambers for testing are reported with the individual test data

7 Authorisation

	Issued by:	**Checked by:**
Signature:		
Name:	Martin Durham	Tom Gregory
Title:	Technical Officer	Operations Manager
Date of Issue	5 September 2013	5 September 2013

Revision 1 - Additional test (P015) and client drawing added to report.

Revision 2 - Correction of specification details for glazing, (page 7) and sealing details (pages 12, 14, 16,18, 20 and 21).

Revision 3 – Correction of specification details for test specimens, (page 4 and 5), perimeter sealing details, (page 6), results, (page 9) and appendix 1(page 11).

Appendix 1 - Test Data & Certificates

MTZ/F13038/P006	Tri-sound S3D by Sauerland 57mm S3D single flush doorset
MTZ/F13038/P007	Tri-sound S3D by Sauerland 57mm S3D single glazed doorset Frame perimeter caulked
MTZ/F13038/P009	Tri-sound S3D by Sauerland 57mm S3D single glazed doorset
MTZ/F13038/P011	Tri-sound S3D by Sauerland 57mm S3D single glazed doorset Frame perimeter caulked
MTZ/F13038/P014	Tri-sound S3D by Sauerland 57mm S3D single glazed doorset
MTZ/F13038/P015	Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset Frame perimeter caulked
MTZ/F13038/P017	Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset
MTZ/F13038/P022	Tri-sound S3D by Sauerland 57mm S3D equal pairs flush doorset Frame perimeter caulked
MTZ/F13038/P023	Tri-sound S3D by Sauerland 57mm S3D equal pairs flush doorset
MTZ/F13038/P024	Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed doorset

BM TRADA

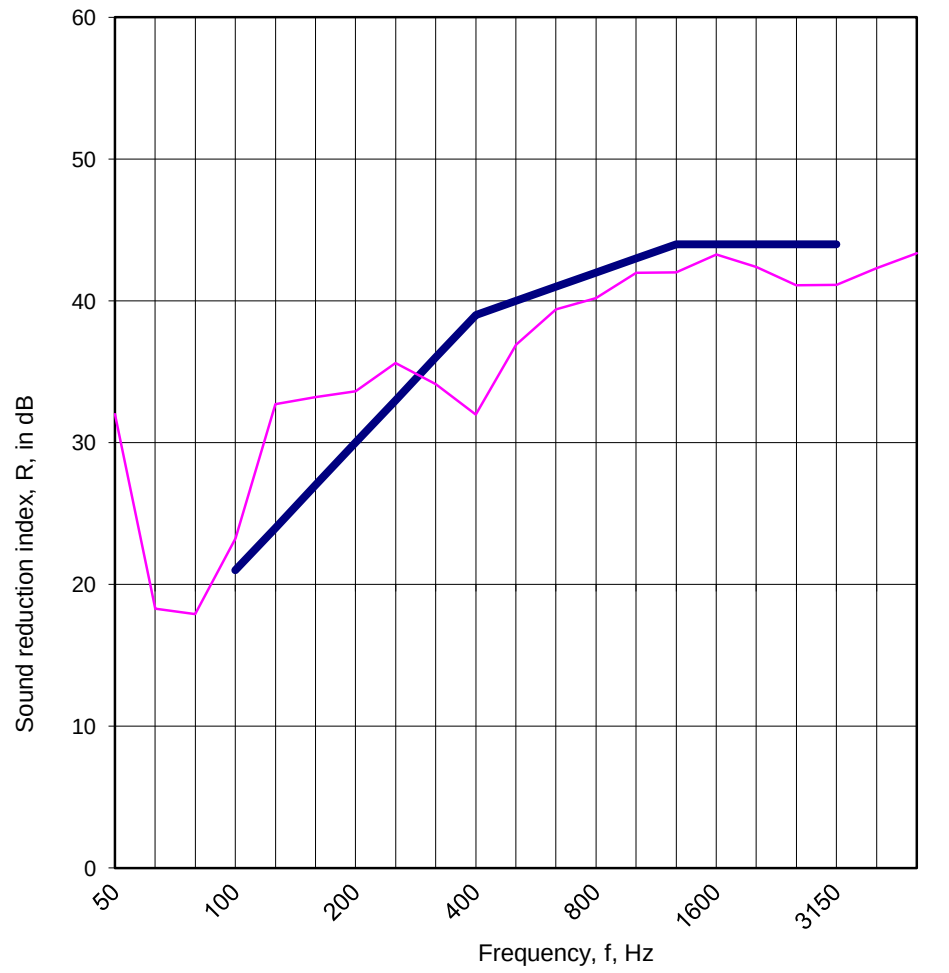
Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D single flush doorset
Reference Number: MTZ/F13038/P006
Client: Acoustic and Fire Door Solutions Ltd
Date of Test: 10/07/2013
Test Specimen Installed By: BM TRADA
Area of Specimen (S): 2.70 m^2
Source Room Volume: 82.00 m^3
Temperature in Test Rooms: 19.6 °C
Receive Room Volume: 63.00 m^3
Static Pressure: 99100.0 Pa
Humidity in Test Rooms: 54.6 %
Test Specimen Description: 57mm S3D single flush doorset. Frame Perimeter Seals 1No. NOR710, Leaf perimeter seals 1No. NOR720, Threshold NOR810db+

f, Hz	*R* ,dB
50+	32.0
63+	18.3
80+	17.9
100	23.2
125	32.7
160	33.2
200	33.6
250	35.6
315	34.1
400	32.0
500	36.9
600	39.4
800	40.2
1000	42.0
1250	42.0
1600	43.3
2000	42.4
2500	41.1
3150	41.1
4000	42.3
5000	43.4
AAD	-26.5

Frequency range for rating in accordance with ISO 717-1



R_w =	**40 dB**	$C_{(50-3150)}$ =	-1 dB	$C_{tr\ (50-3150)}$ =	-6 dB
R_w+C =	**40 dB**	$C_{(50-5000)}$ =	0 dB	$C_{tr\ (50-5000)}$ =	-6 dB
R_w+C_{tr} =	**37 dB**	$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-3 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

Parellel frequencies in the range 100Hz to 3150Hz were not always within 6dB

BM TRADA

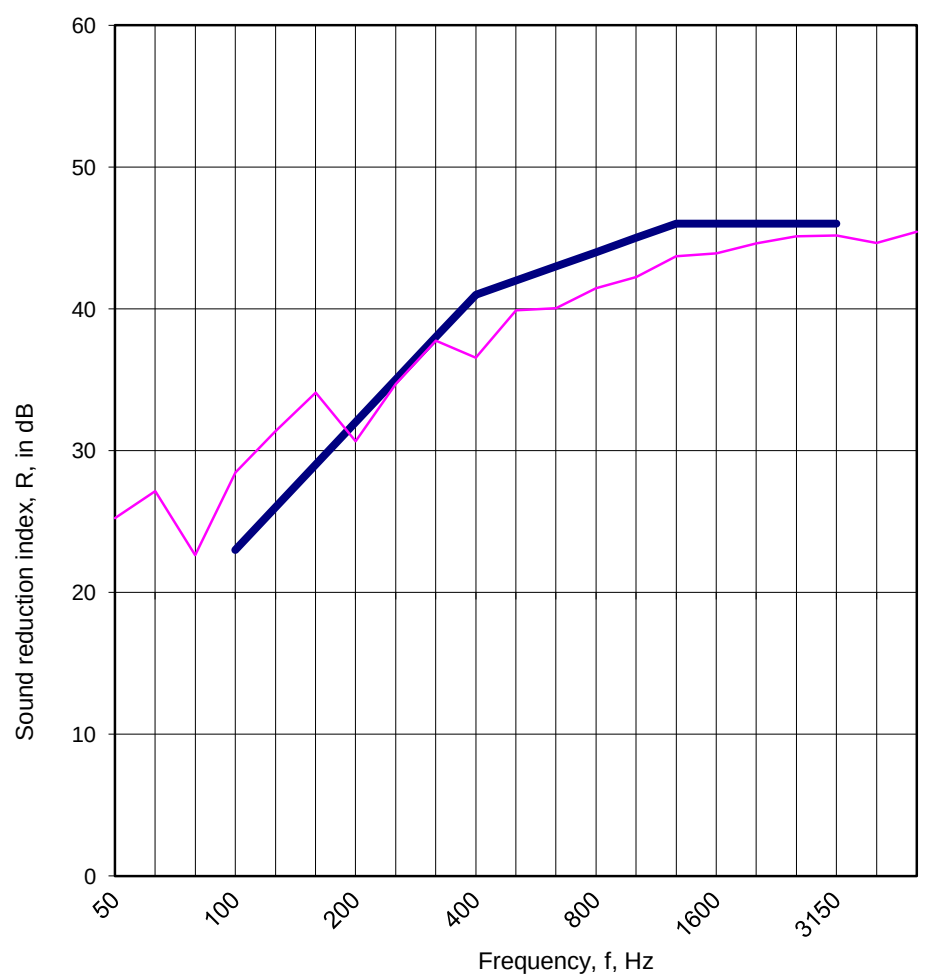
Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D single glazed doorset
Reference Number: MTZ/F13038/P007
Client: Acoustic and Fire Door Solutions Ltd
Date of Test: 10/07/2013
Test Specimen Installed By: BM TRADA
Area of Specimen (S): 2.70 m^2
Source Room Volume: 82.00 m^3
Temperature in Test Rooms: 19.6 °C
Receive Room Volume: 63.00 m^3
Static Pressure: 99100.0 Pa
Humidity in Test Rooms: 54.6 %
Test Specimen Description: 57mm S3D single doorset with 23mm Pyrostop glazing. Perimeter and threshold seals caulked

f, Hz		*R* ,dB
50+		25.2
63+		27.1
80+		22.6
100	≥	28.4
125		31.4
160		34.1
200		30.7
250		34.7
315		37.8
400		36.6
500		39.9
600		40.0
800		41.5
1000		42.2
1250		43.7
1600		43.9
2000		44.6
2500		45.1
3150		45.2
4000		44.6
5000		45.4
AAD		-24.1

Frequency range for rating in accordance with ISO 717-1



R_w =	42 dB
R_w+C =	42 dB
R_w+C_{tr} =	39 dB

$C_{(50-3150)}$ =	0 dB	$C_{tr\ (50-3150)}$ =	-5 dB
$C_{(50-5000)}$ =	0 dB	$C_{tr\ (50-5000)}$ =	-5 dB
$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-3 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

BMTRADA

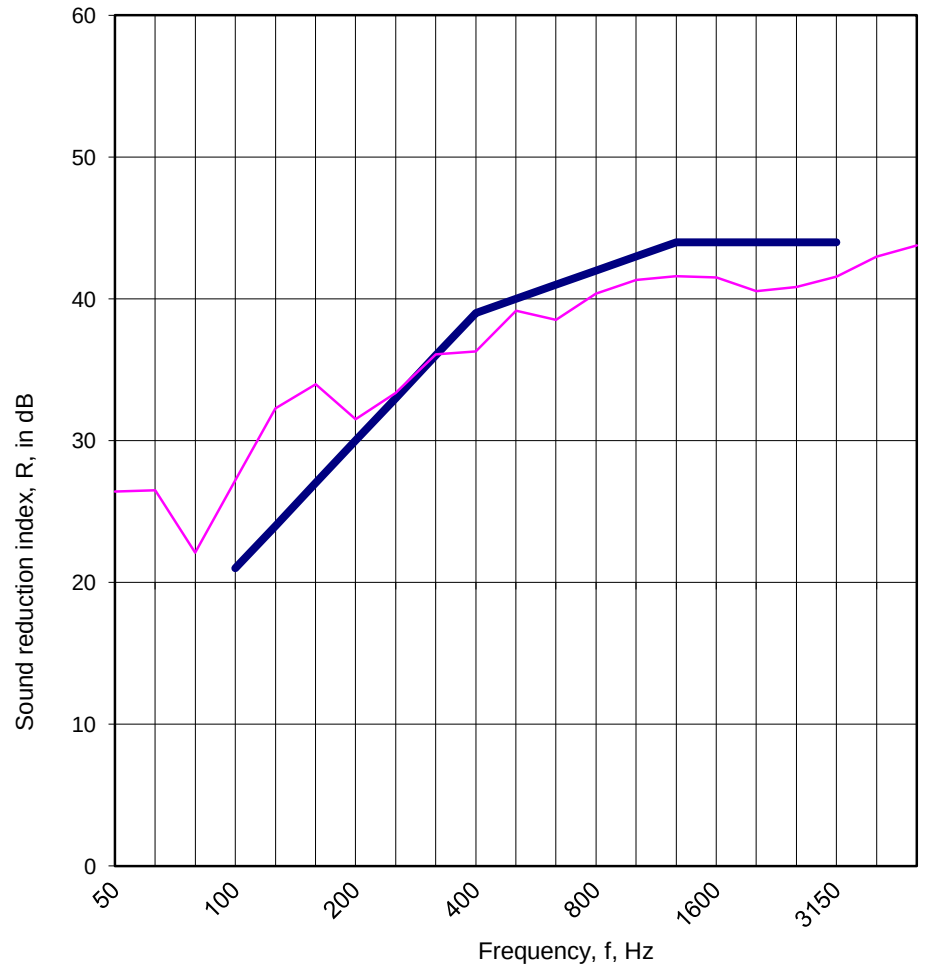
Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D single glazed doorset
Reference Number: MTZ/F13038/P009
Client: Acoustic and Fire Door Solutions Ltd
Date of Test: 10/07/2013
Test Specimen Installed By: Chiltern Dynamics
Area of Specimen (S): 2.70 m^2
Source Room Volume: 82.00 m^3
Temperature in Test Rooms: 19.6 °C
Receive Room Volume: 63.00 m^3
Static Pressure: 99100.0 Pa
Humidity in Test Rooms: 54.6 %
Test Specimen Description: 57mm S3D single doorset with 23mm Pyrostop glazing. Frame Perimeter Seals 1No. NOR710, Leaf perimeter seals 1No. NOR720, Threshold NOR810db+

f, Hz		*R* ,dB
50+		26.4
63+		26.5
80+		22.1
100	≥	27.2
125		32.3
160		34.0
200		31.5
250		33.4
315		36.1
400		36.3
500		39.2
600		38.5
800		40.4
1000		41.3
1250		41.6
1600		41.5
2000		40.5
2500		40.8
3150		41.6
4000		43.0
5000		43.8
AAD		-23.3

Frequency range for rating in accordance with ISO 717-1



R_w =	**40 dB**	$C_{(50-3150)}$ =	0 dB	$C_{tr\ (50-3150)}$ =	-4 dB
R_w+C =	**40 dB**	$C_{(50-5000)}$ =	0 dB	$C_{tr\ (50-5000)}$ =	-4 dB
R_w+C_{tr} =	**38 dB**	$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-2 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

BM TRADA

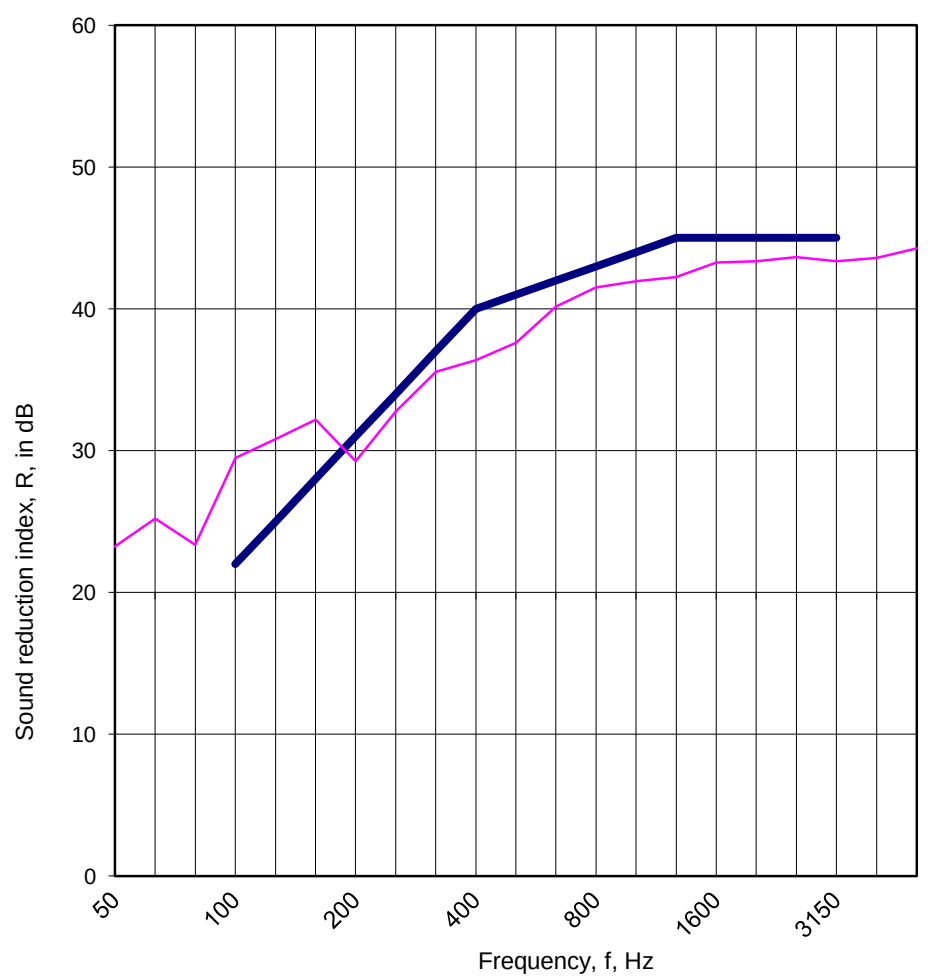
Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D single glazed doorset
Reference Number: MTZ/F13038/P011
Client: Acoustic and Fire Door Solutions Ltd
Date of Test: 10/07/2013
Test Specimen Installed By: BM TRADA
Area of Specimen (S): 2.70 m^2
Source Room Volume: 82.00 m^3
Temperature in Test Rooms: 19.6 °C
Receive Room Volume: 63.00 m^3
Static Pressure: 99100.0 Pa
Humidity in Test Rooms: 54.6 %
Test Specimen Description: 57mm S3D single doorset with 12mm Pyrobelite glazing. Perimeter and threshold seals caulked

f, Hz		*R* ,dB
50+		23.2
63+		25.2
80+		23.4
100	≥	29.5
125		30.8
160		32.2
200		29.2
250		32.7
315		35.6
400		36.4
500		37.6
600		40.2
800		41.5
1000		41.9
1250		42.2
1600		43.3
2000		43.4
2500		43.6
3150		43.4
4000		43.6
5000		44.3
AAD		-26.0

Frequency range for rating in accordance with ISO 717-1



R_w =	41 dB				
R_w+C =	41 dB	$C_{(50-3150)}$ =	0 dB	$C_{tr\ (50-3150)}$ =	-5 dB
R_w+C_{tr} =	38 dB	$C_{(50-5000)}$ =	0 dB	$C_{tr\ (50-5000)}$ =	-5 dB
		$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-3 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

BM TRADA

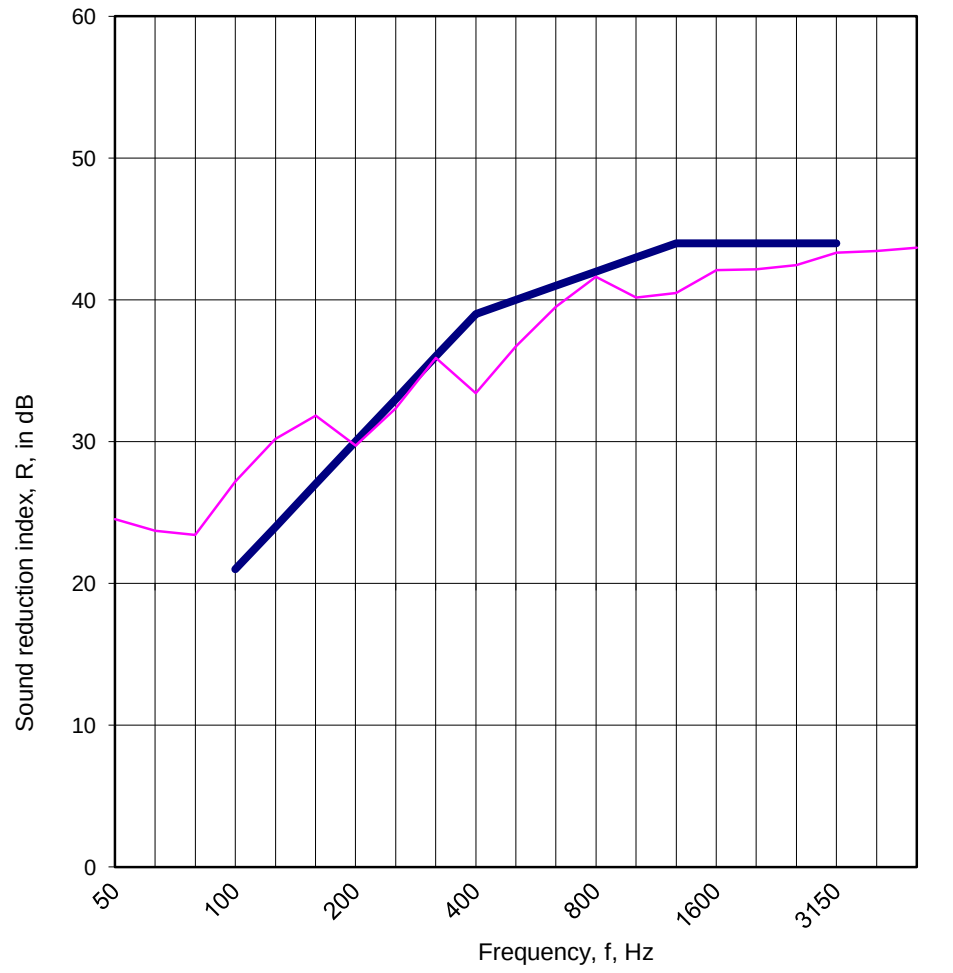
Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D single glazed doorset
Reference Number: MTZ/F13038/P014
Client: Acoustic and Fire Door Solutions Ltd
Date of Test: 10/07/2013
Test Specimen Installed By: BM TRADA
Area of Specimen (S): 2.70 m^2
Source Room Volume: 82.00 m^3
Temperature in Test Rooms: 19.6 °C
Receive Room Volume: 63.00 m^3
Static Pressure: 99100.0 Pa
Humidity in Test Rooms: 54.6 %
Test Specimen Description: 57mm S3D single doorset with 12mm Pyrobelite glazing. Frame Perimeter Seals 1No. NOR710, Leaf perimeter seals 1No. NOR720, Threshold NOR810db+

f, Hz		*R* ,dB
50+		24.5
63+		23.7
80+		23.4
100	≥	27.2
125		30.2
160		31.8
200		29.7
250		32.3
315		35.9
400		33.4
500		36.7
600		39.5
800		41.6
1000		40.2
1250		40.5
1600		42.1
2000		42.1
2500		42.5
3150		43.3
4000		43.4
5000		43.7
AAD		-24.1

Frequency range for rating in accordance with ISO 717-1



R_w =	40 dB
R_w+C =	40 dB
R_w+C_{tr} =	37 dB

$C_{(50-3150)}$ =	0 dB	$C_{tr\ (50-3150)}$ =	-4 dB
$C_{(50-5000)}$ =	0 dB	$C_{tr\ (50-5000)}$ =	-4 dB
$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-3 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

BM TRADA

Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed door **Reference Number: MTZ/F13038/P015**

Client: Acoustic and Fire Door Solutions Ltd **Date of Test: 10/07/2013**

Test Specimen Installed By: BM TRADA

Area of Specimen (S): 2.70 m^2 **Source Room Volume:** 82.00 m^3

Temperature in Test Rooms: 19.6 °C **Receive Room Volume:** 63.00 m^3

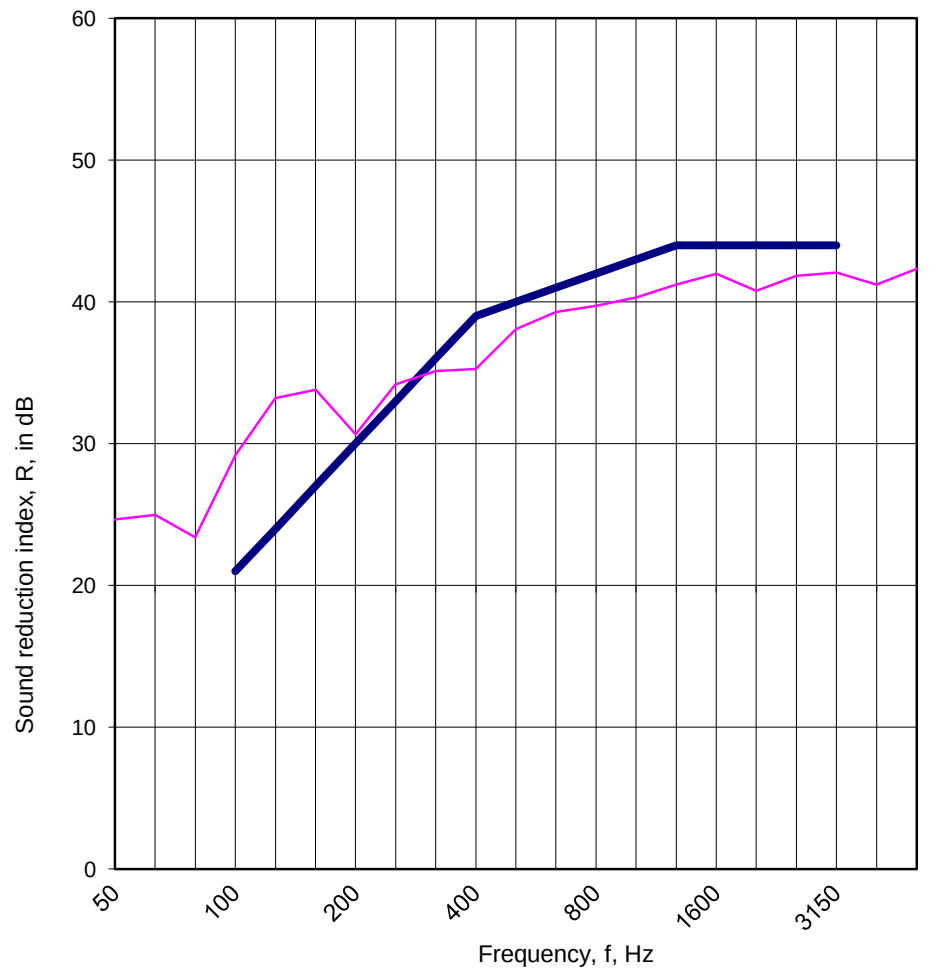
Static Pressure: 99100.0 Pa

Humidity in Test Rooms: 54.6 %

Test Specimen Description: 57mm S3D equal pairs doorset with 23mm Pyrostop glazing. Perimeter and threshold seals caulked

f, Hz		*R* ,dB
50+		24.6
63+		25.0
80+		23.4
100	≥	29.2
125		33.2
160		33.8
200		30.7
250		34.2
315		35.1
400		35.3
500		38.1
600		39.3
800		39.7
1000		40.3
1250		41.2
1600		42.0
2000		40.8
2500		41.8
3150		42.1
4000		41.2
5000		42.3
AAD		-25.3

Frequency range for rating in accordance with ISO 717-1



R_w =	**40 dB**
R_w+C =	**40 dB**
R_w+C_{tr} =	**38 dB**

$C_{(50-3150)}$ =	0 dB	$C_{tr\ (50-3150)}$ =	-4 dB
$C_{(50-5000)}$ =	0 dB	$C_{tr\ (50-5000)}$ =	-4 dB
$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-2 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

Parellel frequencies in the range 100Hz to 3150Hz were not always within 6dB

The legal validity of this report can only be claimed on presentation of the complete report

BM TRADA

Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed door **Reference Number: MTZ/F13038/P017**

Client: Acoustic and Fire Door Solutions Ltd **Date of Test: 10/07/2013**

Test Specimen Installed By: BM TRADA

Area of Specimen (S): 2.70 m^2 **Source Room Volume:** 82.00 m^3

Temperature in Test Rooms: 19.6 °C **Receive Room Volume:** 63.00 m^3

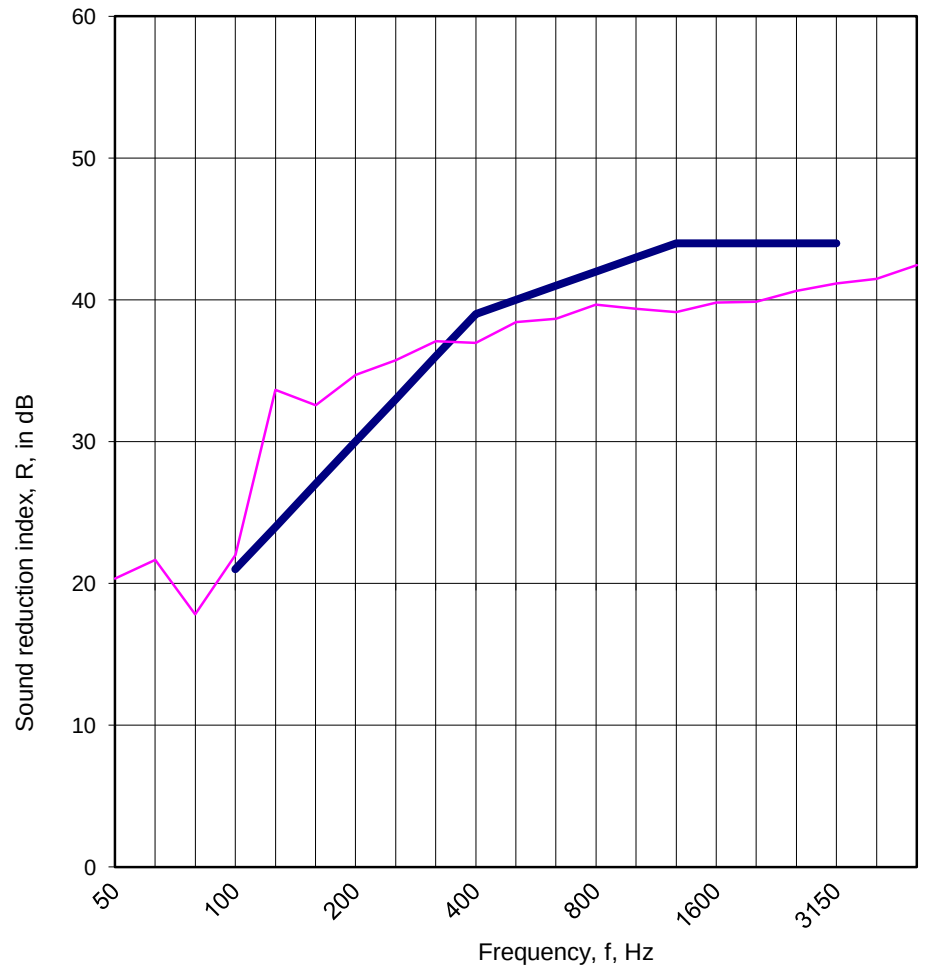
Static Pressure: 99100.0 Pa

Humidity in Test Rooms: 54.6 %

Test Specimen Description: 57mm S3D equal pair doorset with 23mm Pyrostop glazing. Frame Perimeter Seals 1No. NOR710
Leaf perimeter seals 1No. NOR720 and 2No. NOR720 at meeting style on one leaf, Thresholds NOR810db+

f, Hz	*R* ,dB
50+	20.3
63+	21.7
80+	17.8
100	22.0
125	33.7
160	32.6
200	34.7
250	35.7
315	37.1
400	37.0
500	38.4
600	38.7
800	39.7
1000	39.4
1250	39.1
1600	39.8
2000	39.9
2500	40.6
3150	41.2
4000	41.5
5000	42.4
AAD	-31.3

Frequency range for rating in accordance with ISO 717-1



R_w =	40 dB	$C_{(50-3150)}$ =	-1 dB	$C_{tr\ (50-3150)}$ =	-6 dB
R_w+C =	40 dB	$C_{(50-5000)}$ =	0 dB	$C_{tr\ (50-5000)}$ =	-6 dB
R_w+C_{tr} =	37 dB	$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-3 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

BM TRADA

Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D equal pairs flush doorse **Reference Number: MTZ/F13038/P022**

Client: Acoustic and Fire Door Solutions Ltd **Date of Test: 10/07/2013**

Test Specimen Installed By: BM TRADA

Area of Specimen (S): 2.70 m^2 **Source Room Volume:** 82.00 m^3

Temperature in Test Rooms: 19.6 °C **Receive Room Volume:** 63.00 m^3

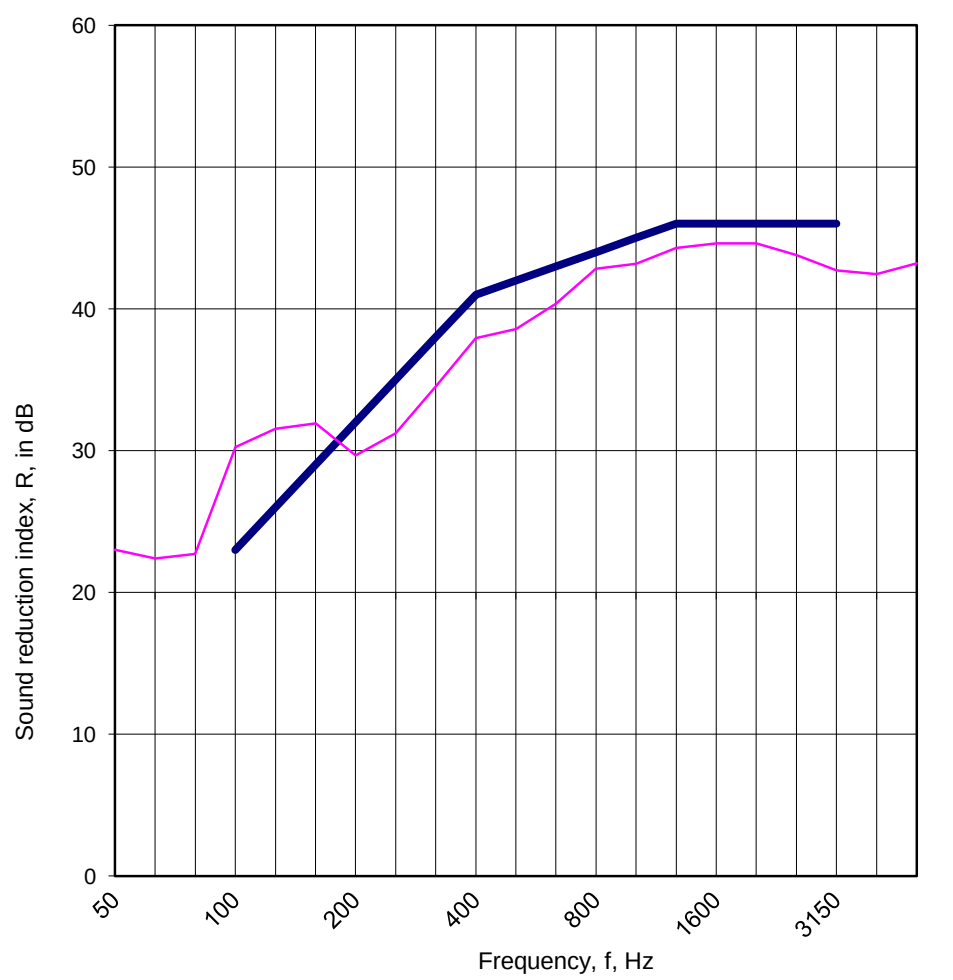
Static Pressure: 99100.0 Pa

Humidity in Test Rooms: 54.6 %

Test Specimen Description: 57mm S3D equal pairs flush doorset. Perimeter and threshold seals caulked

f, Hz		*R* ,dB
50+		23.0
63+		22.4
80+		22.7
100	≥	30.2
125		31.5
160		31.9
200		29.7
250		31.2
315		34.5
400		37.9
500		38.6
600		40.4
800		42.8
1000		43.2
1250		44.3
1600		44.6
2000		44.6
2500		43.8
3150		42.7
4000		42.5
5000		43.2
AAD		-31.6

Frequency range for rating in accordance with ISO 717-1



R_w =	**42 dB**	$C_{(50-3150)}$ =	-1 dB	$C_{tr\ (50-3150)}$ =	-6 dB
R_w+C =	**41 dB**	$C_{(50-5000)}$ =	-1 dB	$C_{tr\ (50-5000)}$ =	-6 dB
R_w+C_{tr} =	**38 dB**	$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-4 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

BM TRADA

Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D equal pairs flush doorse **Reference Number: MTZ/F13038/P023**

Client: Acoustic and Fire Door Solutions Ltd **Date of Test: 10/07/2013**

Test Specimen Installed By: BM TRADA

Area of Specimen (S): 2.70 m^2 **Source Room Volume:** 82.00 m^3

Temperature in Test Rooms: 19.6 °C **Receive Room Volume:** 63.00 m^3

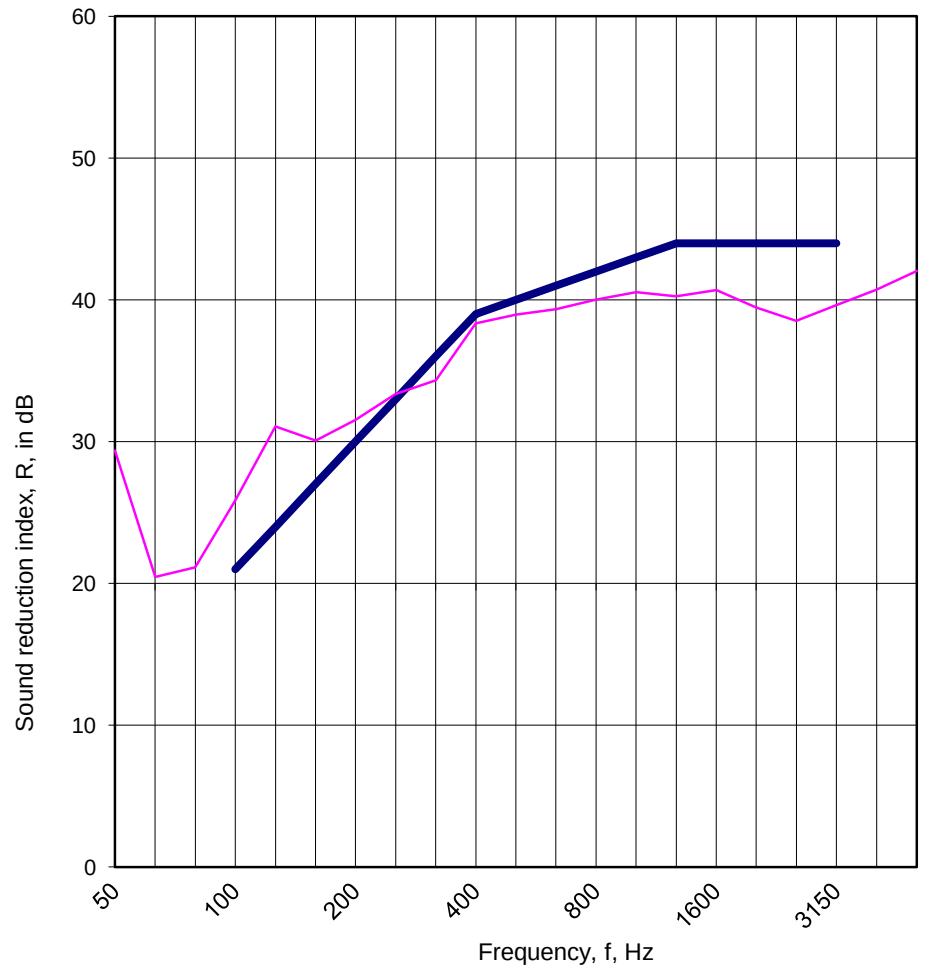
Static Pressure: 99100.0 Pa

Humidity in Test Rooms: 54.6 %

Test Specimen Description: 57mm S3D equal pair flush doorset. Frame Perimeter Seals 1No. NOR710
Leaf perimeter seals 1No. NOR720 and 2No. NOR720 at meeting style on one leaf, Threshold NOR810db+

f, Hz		*R* ,dB
50+		29.4
63+		20.5
80+		21.1
100	≥	25.9
125		31.1
160		30.1
200		31.6
250		33.4
315		34.3
400		38.3
500		39.0
600		39.3
800		40.0
1000		40.5
1250		40.2
1600		40.7
2000		39.5
2500		38.5
3150		39.6
4000		40.7
5000		42.0
AAD		-30.9

Frequency range for rating in accordance with ISO 717-1



R_w =	**40 dB**	$C_{(50-3150)}$ =	-1 dB	$C_{tr\ (50-3150)}$ =	-5 dB
R_w+C =	**39 dB**	$C_{(50-5000)}$ =	-1 dB	$C_{tr\ (50-5000)}$ =	-5 dB
R_w+C_{tr} =	**37 dB**	$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-3 dB

Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

BM TRADA

Laboratory measurement to BS EN ISO 10140-2 - Airborne Sound Insulation of Building Elements

UKAS TESTING No. 1762

Test Specimen Name: Tri-sound S3D by Sauerland 57mm S3D equal pairs glazed door **Reference Number: MTZ/F13038/P024**

Client: Acoustic and Fire Door Solutions Ltd **Date of Test: 10/07/2013**

Test Specimen Installed By: BM TRADA

Area of Specimen (S): 2.70 m^2 **Source Room Volume:** 82.00 m^3

Temperature in Test Rooms: 19.6 °C **Receive Room Volume:** 63.00 m^3

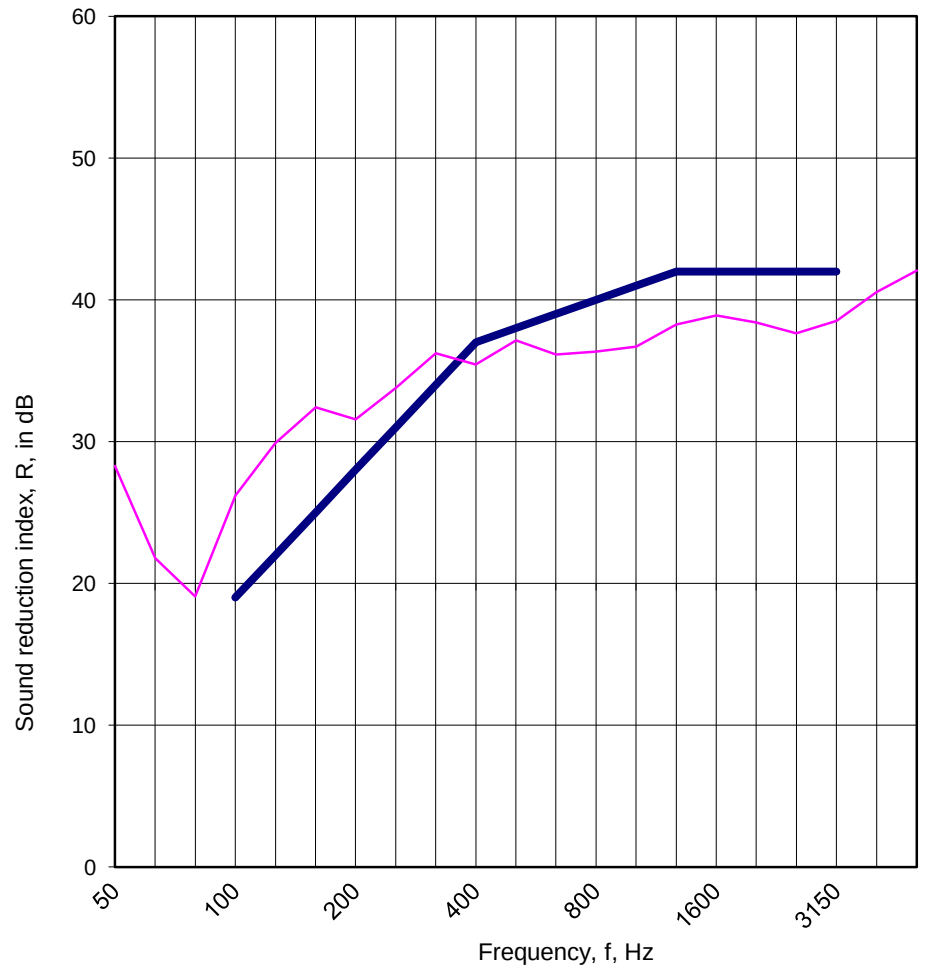
Static Pressure: 99100.0 Pa

Humidity in Test Rooms: 54.6 %

Test Specimen Description: 57mm S3D equal pair doorset with 12mm Pyrobelite glazing. Frame Perimeter Seals 1No. NOR710
Leaf perimeter seals 1No. NOR720 and 2No. NOR720 at meeting style on one leaf, Threshold NOR810db+

f, Hz		*R* ,dB
50+		28.3
63+		21.8
80+		19.1
100	≥	26.2
125		29.9
160		32.4
200		31.6
250		33.8
315		36.2
400		35.4
500		37.1
600		36.1
800		36.3
1000		36.7
1250		38.3
1600		38.9
2000		38.4
2500		37.6
3150		38.5
4000		40.5
5000		42.1
AAD		-31.5

Frequency range for rating in accordance with ISO 717-1



R_w =	38 dB	$C_{(50-3150)}$ =	-1 dB	$C_{tr\ (50-3150)}$ =	-4 dB
R_w+C =	38 dB	$C_{(50-5000)}$ =	0 dB	$C_{tr\ (50-5000)}$ =	-4 dB
R_w+C_{tr} =	36 dB	$C_{(100-5000)}$ =	0 dB	$C_{tr\ (100-5000)}$ =	-2 dB

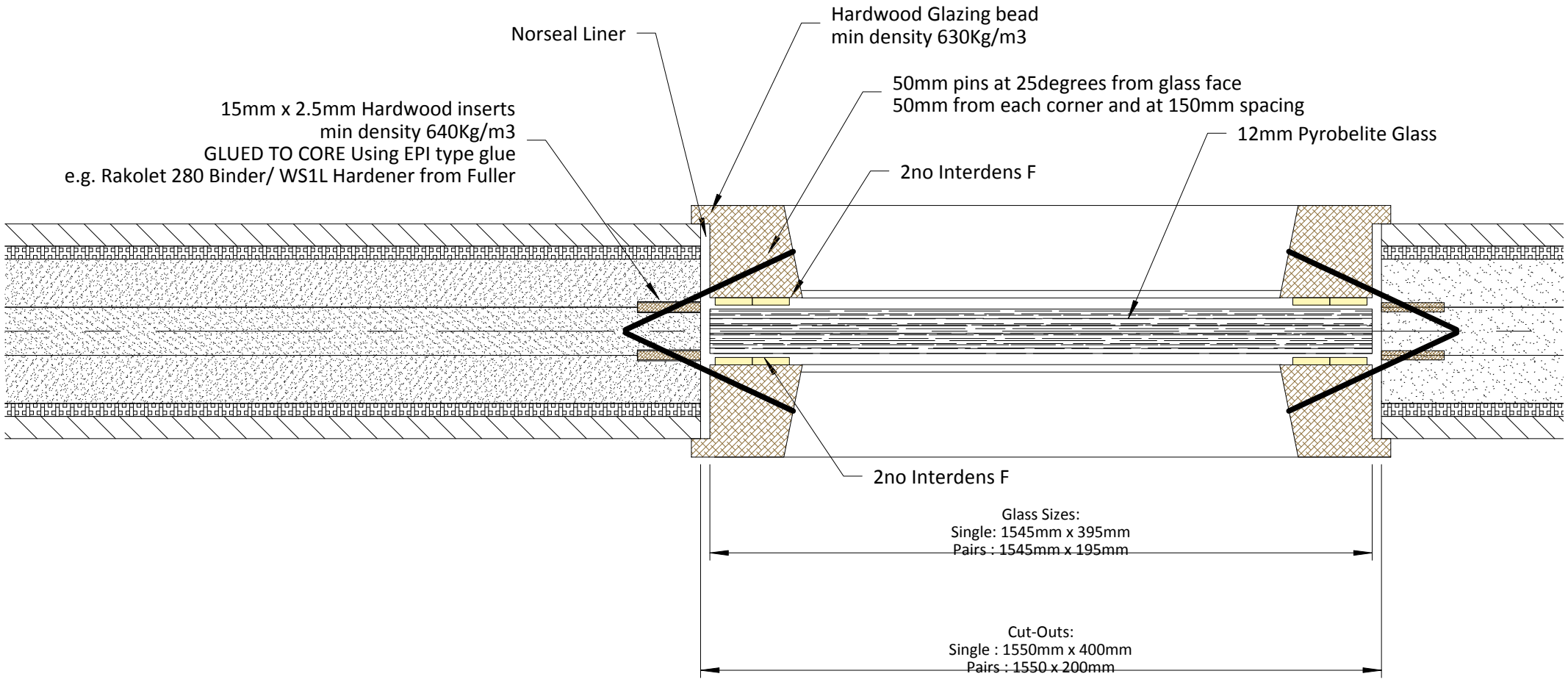
Martin Durham
Technical Officer

+ indicates that the frequency is outside of our UKAS accreditation and is for information only

Parellel frequencies in the range 100Hz to 3150Hz were not always within 6dB

Appendix 2 – Client Drawing (1 Page)

CDG/2013/C001 SK080413-03



Revisions	Title					Project	
	S3D Glazing Details Acoustic Test Spec					S3D Acoustic Testing	
	Drawing No	Rev	Scale	Date	Drawn By	Client	
	CDG/2013/C001 SK080413-03	Rev A	Scale 1:1.5	08/04/13	CDG	AFDS Ltd Norsound Ltd	

Chris Gough
Door Consulting
T: +44(0)1337 830007
T: +44(0)7976 217624
E: chris@doorconsult.co.uk
www.doorconsult.co.uk

BMTRADA

BM TRADA provides independent certification, testing, inspection, training and technical services around the world. We help customers large and small to prove their business and product credentials and to improve performance and compliance. With an international presence across many industry sectors, we offer a special focus and long history of technical excellence in supply chain certification, product certification and testing, and technical services to the timber, building, fire and furniture industries.

testing@bmtrada.com

bmtradagroup.com

+44 (0) 1494 569800

CHILTERN INTERNATIONAL FIRE LTD CHILTERN HOUSE, STOCKING LANE, HUGHENDEN VALLEY, HIGH WYCOMBE, BUCKS, HP14 4ND, UK

REGISTERED IN ENGLAND NO. 3125010