



Technical Report

*Laboratory measurement of sound insulation of doorsets in accordance with
BS EN ISO 10140-2:2010*

Report:	SAUER-AFDSL2029100414112014
Prepared for:	Sauerland Spanplatte GmbH & Co. KG and Acoustic & Fire Door Solutions Ltd
Date:	20 th October 2014
Conducted by:	Dunstan Ferris <small>AMIOA</small> , Technical Consultant

CONFIDENTIAL

1.0 Testing & Technical Services centre

Our dedicated Testing and Technical Services Centre hosts an indicative fire test furnace, many cycling rigs, air and smoke leakage testing equipment, environmental chambers, as well as a state of the art, purpose-built acoustic transmission suite. The facilities are supported by experienced technicians and technical consultants who are equipped with extensive and diverse knowledge of regulations, products and processes related to acoustic, smoke and fire containment. The facilities are available for a range of activities including experimental work, testing prototypes, new development or redevelopment projects.

Our Technical and Testing Services team work closely with you throughout the whole process; from the construction of the test specimens to the submission of a final test report. And with well over 30 years' accumulated knowledge and industry experience; we're well equipped to guide you through the maze of current regulations to ensure that your products receive certification quickly and cost-effectively.

We are committed to offering a professional service that offers complete confidentiality so you can be confident that any testing will be treated with the utmost discretion.

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2.1 Purpose of test

To determine the sound reduction index of various doorsets in accordance with BS EN ISO 10140-2:2010. Laboratory measurement of sound insulation of building elements -- Part 2: Measurement of airborne sound insulation.

The results from these measurements are presented in tables and graphs within this document. The results are given in 1/3rd octave bands over the frequency range 50Hz to 5kHz.

Dunstan Ferris AMIOA, Technical Consultant
For and on behalf of Lorient Testing & Technical Services

2.2 Testing details

- < The doorsets were supplied by **Sauerland Spanplatte GmbH & Co. KG and Acoustic & Fire Door Solutions Ltd** and installed by **Lorient Testing & Technical Services**.
- < The measurements recorded were made between **20th October and 14th November 2014**.
- < Recorded by **Dunstan Ferris, Lorient Testing & Technical Services**, Unit 19, Wentworth Road, Newton Abbot, Devon, TQ12 6TL.

2.3 Instrumentation used

Instrument type	Make/model	Serial No.
Sound Level Meter	B&K Type 2270	2746609
Acoustic Calibrator	B&K Type 4231	2734238
Microphone (Source room)	B&K Type 4189	2748682
Microphone (Receiver room)	B&K Type 4189	2643376
Pre-amplifier (Source room)	B&K Type ZC0032	15937
Pre-amplifier (Receiver room)	B&K Type 2669	2709246
Omnipower Speaker	B&K Type 4292-L	007012
Power Amplifier	B&K Typer 2734	012010

2.4 Test specimen

Door type:	Single leaf door assembly
Frame dimensions:	1030mm wide x 2190mm high x 90mm
Leaf dimensions:	926mm wide x 2127mm high

2.5 Test procedure

Airborne sound insulation test

- < An OmniPower speaker was placed in the corner of the source room at speaker position one and speaker position two.
- < The sound level meter was calibrated prior to testing.
- < Five measurements were taken in the source room, at fixed positions at speaker position one and speaker position two.
- < Five measurements were taken in the receive room, at fixed positions at speaker position one and speaker position two.
- < Background measurements were taken 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 ISO717-1
- < The sound reduction index was calculated using the following formula from BS EN ISO 10140-2:2010:

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

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 $A = \frac{0.16V}{T}$

V = The volume of the receive room.

T = The reverberation time measured in seconds.

1. Logarithmic average of 5 Measurements at speaker position one and speaker position two. (L1 & L2)
2. L1 – L2 (L1 level minus L2 level).
3. Area of test specimen (S) divided by equivalent sound absorption area (A).
4. Weighted final result R_w dB

2.6 Limitations and parameters

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

- < Sound level meter (microphone) was located as required.
- < Sound source (loudspeaker) was located as required.
- < T20 Reverberation time measurements were used and could be represented by a straight line.
- < Background noise measurements were more than 10 dB below L2 measurements.
- < Temperature was reported within +/- 0.1deg C.
- < Barometric pressure was reported to within +/- 0.01 Mbar (+-1 Pa).
- < Humidity was reported to within +/- 1%.
- < Frequencies 50Hz, 63Hz, and 80 Hz are for reference only and do not affect the overall R_w figure.
- < R_{max} of the test chambers was measured to be R_w 80 dB
- < Source room volume : 68.40m³.
- < Receiving room volume : 50.00m³.

2.7 Personnel present

Chris Gough Door Consulting
Dunstan Ferris AMIOA Lorient Polyproducts
Martin Hooley Lorient Polyproducts

3.0 Results summary and Data

Test No.	Product Identification	Results R_w
141020 001	52mm S3K single flush door in a hardwood frame. Fully-caulked.	R_w 43 dB
141020 002	52mm S3K single flush door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate.	R_w 42 dB
141020 003	52mm S3K single glazed door in a hardwood frame. 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS. Fully-caulked.	R_w 41 dB
141020 005	52mm S3K single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS.	R_w 40 dB
141020 006	52mm S3K single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 23mm vision panel glazed with Pyrostop in System-36/23 PLUS.	R_w 40 dB
141029 002	52mm S3K single flush door in a hardwood frame. LAS1015 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4012 threshold plate.	R_w 40 dB
141104 002	52mm S3K single flush door in a hardwood frame. LAS6001 magnetic seal to jamb and head stops opposing LAS6011 magnet to face of door. LAS8001si automatic drop seal to bottom of door. LAS4012 threshold plate.	R_w 40 dB

Test No.	Product Identification	Results R_w
141104 005	52mm S3K single flush door in a hardwood frame. LAS6001 magnetic seal to jamb and head stops opposing LAS6011 magnet to face of door. LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate.	R_w 41 dB
141020 007	58mm S3D single flush door in a hardwood frame. Fully-caulked.	R_w 40 dB
141020 008	58mm S3D single flush door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate.	R_w 39 dB
141107 001	58mm S3D single glazed door in a hardwood frame. 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS. Fully-caulked.	R_w 41 dB
141110 003	58mm S3D single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS.	R_w 40 dB
141113 001	58mm S3D single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 23mm vision panel glazed with Pyrostop in System-36/23 PLUS.	R_w 41 dB
141113 002	51mm S4G single glazed door in a hardwood frame. 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS. Fully-caulked.	R_w 40 dB
141113 003	51mm S4G single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS.	R_w 40 dB
141114 002	51mm S4G single glazed door in a hardwood frame. 1230mm x 230mm x 23mm vision panel glazed with Pyrostop in System-36/23 PLUS. Fully-caulked.	R_w 40 dB
141114 001	51mm S4G single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 23mm vision panel glazed with Pyrostop in System-36/23 PLUS.	R_w 40 dB

Lorient Testing & Technical Services

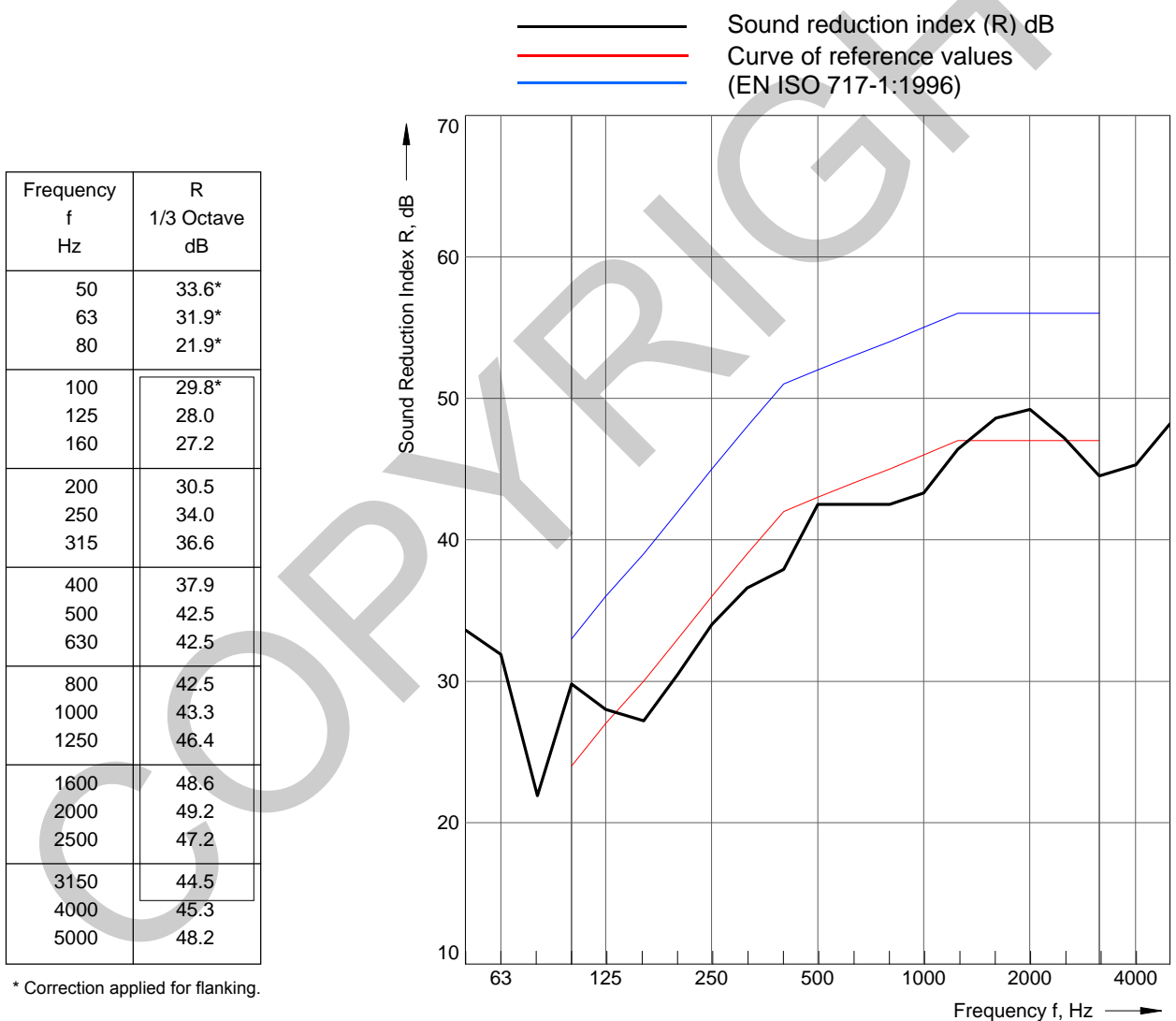
Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

52mm S3K single flush door in a hardwood frame.
Fully-caulked.

Test Date: 20/10/2014
Test Number: 141020 001

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 18.6°C
Test room static pressure: 1026hpa
Test room relative humidity: 65%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.28kg/m²



* Correction applied for flanking.

Rating according to ISO 717-1		
$R_w (C; C_{tr}) = 43 (-1; -4) \text{ dB}$	$C_{50-3150} = -1 \text{ dB};$	$C_{50-5000} = -1 \text{ dB};$
	$C_{100-5000} = 0 \text{ dB};$	
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method	$C_{tr,50-3150} = -6 \text{ dB};$	$C_{tr,50-5000} = -6 \text{ dB};$
	$C_{tr,100-5000} = -4 \text{ dB};$	



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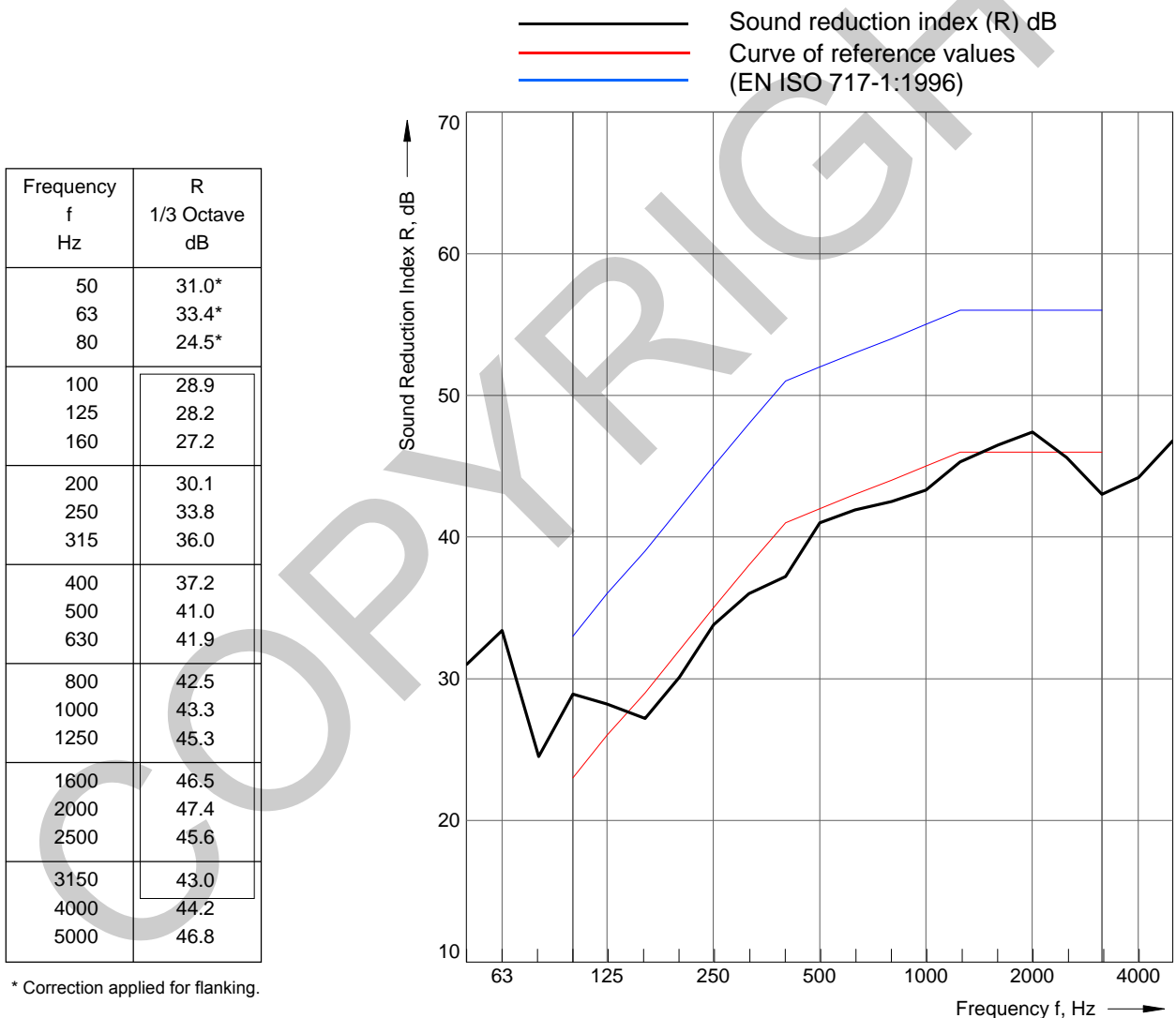
Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

52mm S3K single flush door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate

Test Date: 20/10/2014
Test Number: 141020 002

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 18.7°C
Test room static pressure: 1026hpa
Test room relative humidity: 65%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.28kg/m²



* Correction applied for flanking.

Rating according to ISO 717-1		
$R_w (C; C_{tr}) = 42 (-1; -4) \text{ dB}$	$C_{50-3150} = -1 \text{ dB};$	$C_{50-5000} = 0 \text{ dB};$
	$C_{100-5000} = 0 \text{ dB};$	
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method	$C_{tr,50-3150} = -5 \text{ dB};$	$C_{tr,50-5000} = -5 \text{ dB};$
	$C_{tr,100-5000} = -4 \text{ dB};$	



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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

52mm S3K single glazed door in a hardwood frame.
1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS.
Fully-caulked.

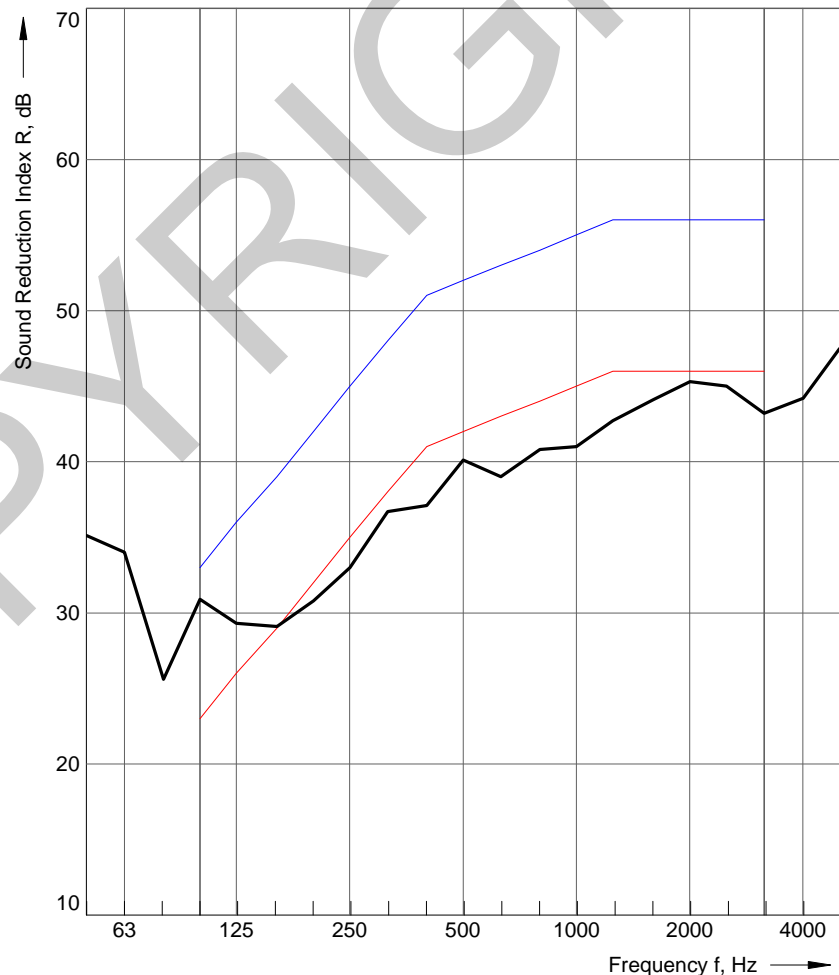
Test Date: 20/10/2014
Test Number: 141020 003

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.2°C
Test room static pressure: 1026hpa
Test room relative humidity: 62%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.78kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:1996)

Frequency f Hz	R 1/3 Octave dB
50	35.1*
63	34.0*
80	25.6*
100	30.9*
125	29.3
160	29.1
200	30.8
250	33.0
315	36.7
400	37.1
500	40.1
630	39.0
800	40.8
1000	41.0
1250	42.7
1600	44.1
2000	45.3
2500	45.0
3150	43.2
4000	44.2
5000	47.5



* Correction applied for flanking.

Rating according to ISO 717-1

$R_w (C; C_{tr}) = 42 (-1; -4)$ dB

$C_{50-3150} = -1$ dB; $C_{50-5000} = -1$ dB; $C_{100-5000} = -1$ dB;

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$C_{tr,50-3150} = -4$ dB; $C_{tr,50-5000} = -4$ dB; $C_{tr,100-5000} = -4$ dB;



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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

52mm S3K single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS.

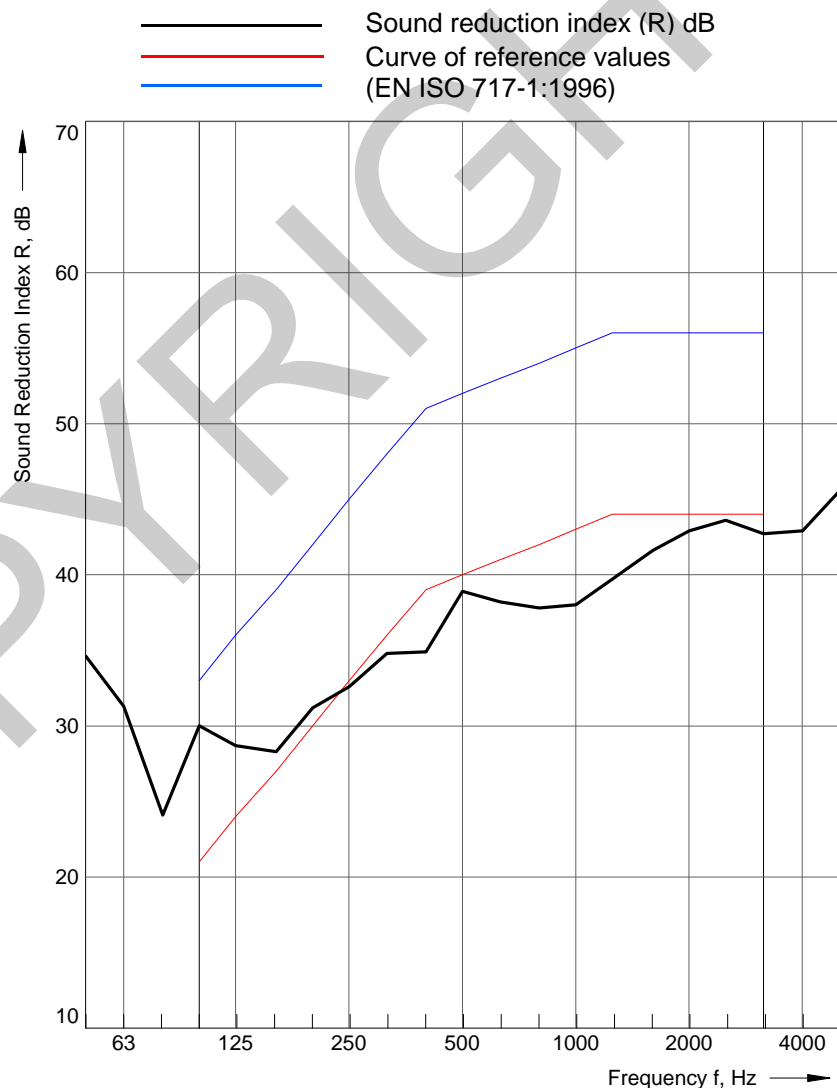
Test Date: 20/10/2014
Test Number: 141020 005

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.3°C
Test room static pressure: 1026hpa
Test room relative humidity: 62%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.78kg/m²

Frequency f Hz	R 1/3 Octave dB
50	34.6*
63	31.3*
80	24.1*
100	30.0*
125	28.7
160	28.3
200	31.2
250	32.6
315	34.8
400	34.9
500	38.9
630	38.2
800	37.8
1000	38.0
1250	39.7
1600	41.6
2000	42.9
2500	43.6
3150	42.7
4000	42.9
5000	45.5

* Correction applied for flanking.



Rating according to ISO 717-1

$$R_w (C; C_{tr}) = 40 (-1; -3) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = 0 \text{ dB}; C_{100-5000} = 0 \text{ dB};$
 $C_{tr,50-3150} = -4 \text{ dB}; C_{tr,50-5000} = -4 \text{ dB}; C_{tr,100-5000} = -3 \text{ dB};$



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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

52mm S3K single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate 1230mm x 230mm x 23mm vision panel glazed with Pyrostop in System-36/23 PLUS.

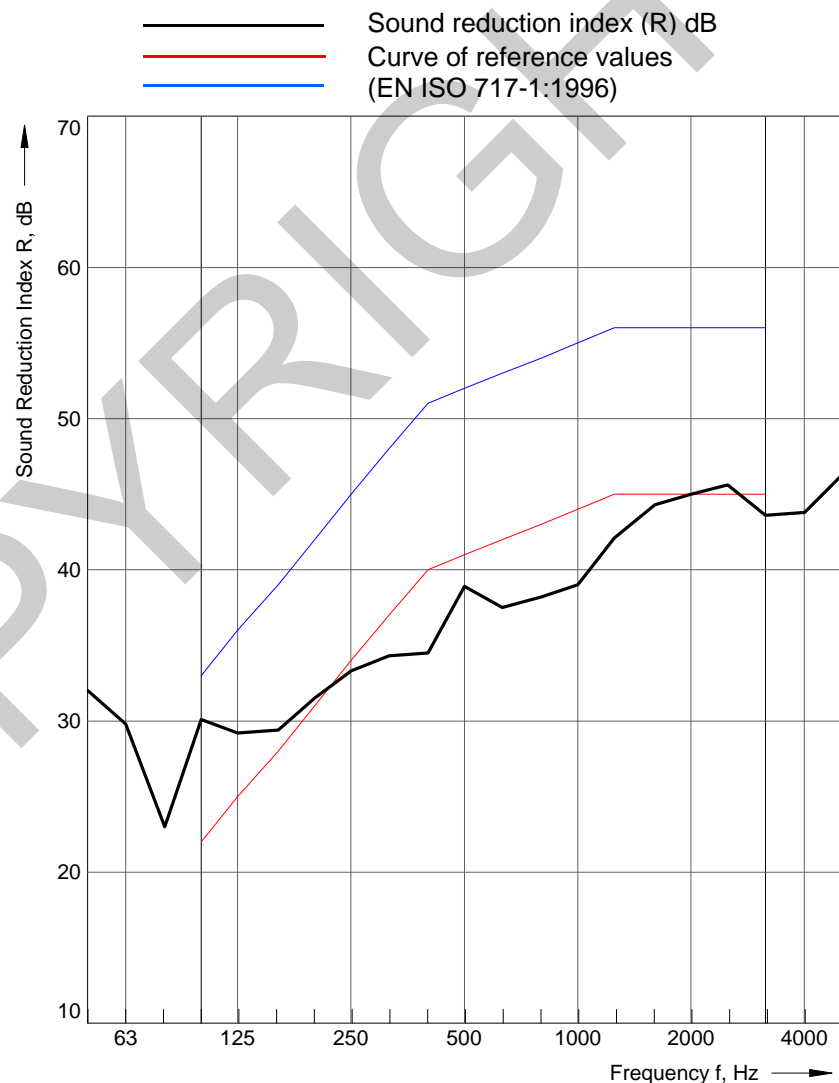
Test Date: 20/10/2014
Test Number: 141020 006

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.7°C
Test room static pressure: 1026hpa
Test room relative humidity: 61%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.78kg/m²

Frequency f Hz	R 1/3 Octave dB
50	32.0*
63	29.8*
80	23.0*
100	30.1*
125	29.2
160	29.4
200	31.5
250	33.3
315	34.3
400	34.5
500	38.9
630	37.5
800	38.2
1000	39.0
1250	42.1
1600	44.3
2000	45.0
2500	45.6
3150	43.6
4000	43.8
5000	46.2

* Correction applied for flanking.



Rating according to ISO 717-1

$R_w (C; C_{tr}) = 41 (-1; -4) \text{ dB}$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = -1 \text{ dB}; C_{100-5000} = -1 \text{ dB};$
 $C_{tr,50-3150} = -5 \text{ dB}; C_{tr,50-5000} = -5 \text{ dB}; C_{tr,100-5000} = -4 \text{ dB};$



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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

52mm S3K single flush door in a hardwood frame. LAS1015 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4012 threshold plate.

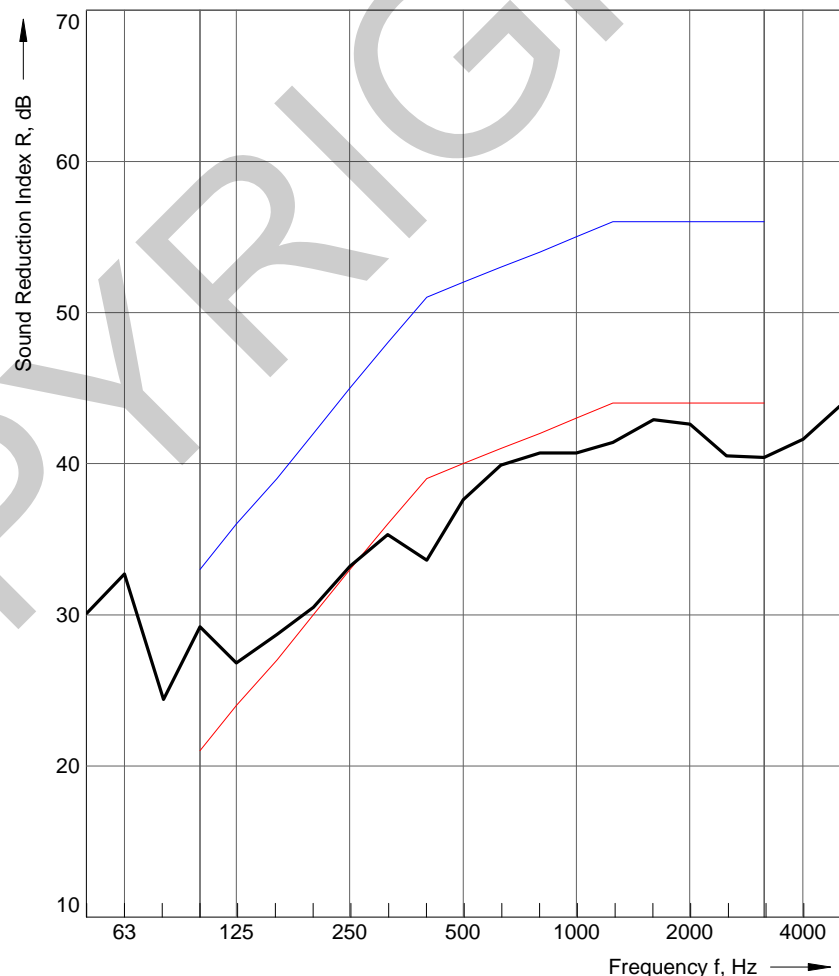
Test Date: 29/10/2014
Test Number: 141029 002

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 21.0°C
Test room static pressure: 1023hpa
Test room relative humidity: 70%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.28kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:1996)

Frequency f Hz	R 1/3 Octave dB
50	30.1*
63	32.7*
80	24.4*
100	29.2*
125	26.8
160	28.7
200	30.5
250	33.2
315	35.3
400	33.6
500	37.6
630	39.9
800	40.7
1000	40.7
1250	41.4
1600	42.9
2000	42.6
2500	40.5
3150	40.4
4000	41.6
5000	43.8



* Correction applied for flanking.

Rating according to ISO 717-1

$R_w (C; C_{tr}) = 40 (-1; -3) \text{ dB}$

$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = 0 \text{ dB}; C_{100-5000} = 0 \text{ dB};$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$C_{tr,50-3150} = -4 \text{ dB}; C_{tr,50-5000} = -4 \text{ dB}; C_{tr,100-5000} = -3 \text{ dB};$

Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

52mm S3K single flush door in a hardwood frame.
 LAS6001 magnetic seal to jamb and head stops opposing LAS6011 magnet to face of door. LAS8001si automatic drop seal to bottom of door.
 LAS4012 threshold plate.

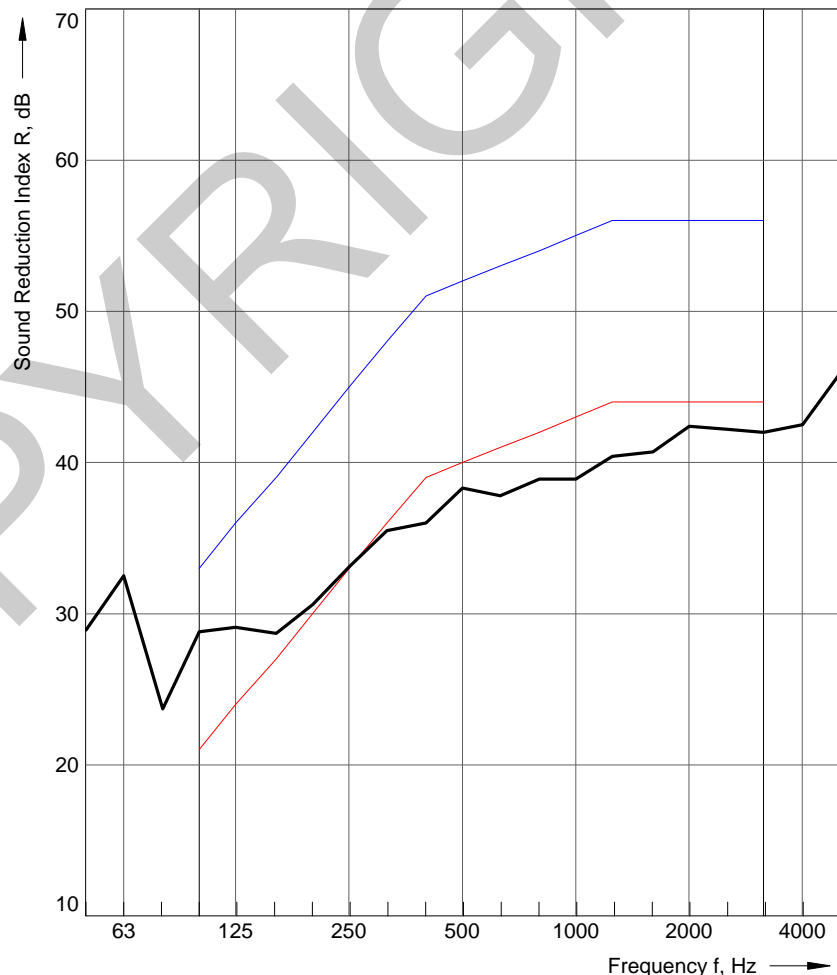
Test Date: 04/11/2014
Test Number: 141104 002

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.2°C
Test room static pressure: 1002hpa
Test room relative humidity: 51%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.28kg/m²

— Sound reduction index (R) dB
 — Curve of reference values (EN ISO 717-1:1996)

Frequency f Hz	R 1/3 Octave dB
50	28.9*
63	32.5*
80	23.7*
100	28.8
125	29.1
160	28.7
200	30.6
250	33.1
315	35.5
400	36.0
500	38.3
630	37.8
800	38.9
1000	38.9
1250	40.4
1600	40.7
2000	42.4
2500	42.2
3150	42.0
4000	42.5
5000	45.8



* Correction applied for flanking.

Rating according to ISO 717-1			
$R_w (C; C_{tr}) = 40 (-1; -3) \text{ dB}$	$C_{50-3150} = -1 \text{ dB}$	$C_{50-5000} = 0 \text{ dB}$	$C_{100-5000} = 0 \text{ dB}$
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method	$C_{tr,50-3150} = -4 \text{ dB}$	$C_{tr,50-5000} = -4 \text{ dB}$	$C_{tr,100-5000} = -3 \text{ dB}$



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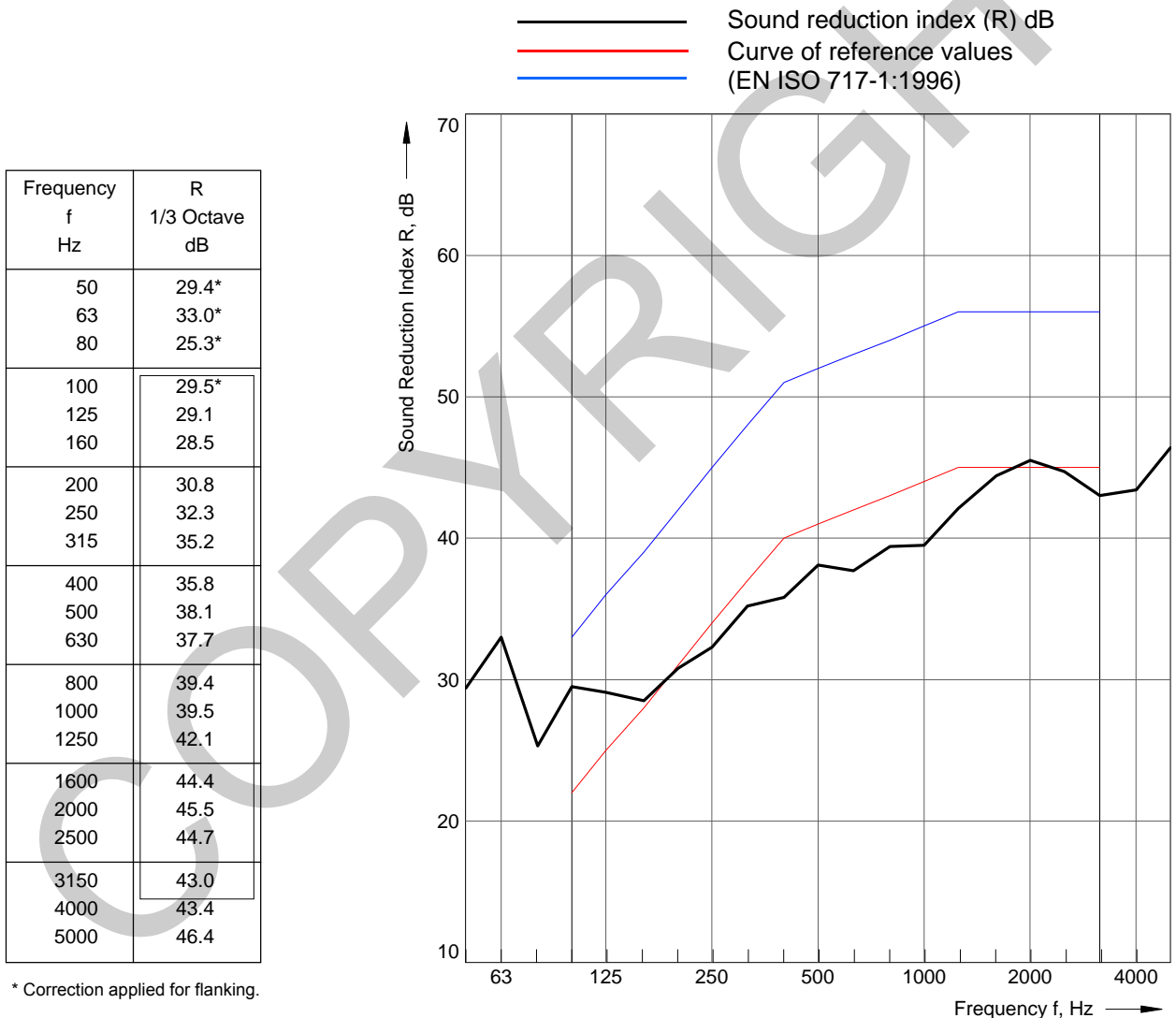
Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

52mm S3K single flush door in a hardwood frame. LAS6001 magnetic seal to jamb and head stops opposing LAS6011 magnet to face of door. LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate.

Test Date: 04/11/2014
Test Number: 141104 005

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.9°C
Test room static pressure: 1002hpa
Test room relative humidity: 51%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.28kg/m²



* Correction applied for flanking.

Rating according to ISO 717-1		
$R_w (C; C_{tr}) = 41 (-1; -4) \text{ dB}$	$C_{50-3150} = -1 \text{ dB};$	$C_{50-5000} = -1 \text{ dB};$
	$C_{100-5000} = -1 \text{ dB};$	
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method	$C_{tr,50-3150} = -4 \text{ dB};$	$C_{tr,50-5000} = -4 \text{ dB};$
	$C_{tr,100-5000} = -4 \text{ dB};$	



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Registered Office: Fairfax Road, Heathfield,
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Testing &
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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

58mm S3D single flush door in a hardwood frame.
Fully-caulked.

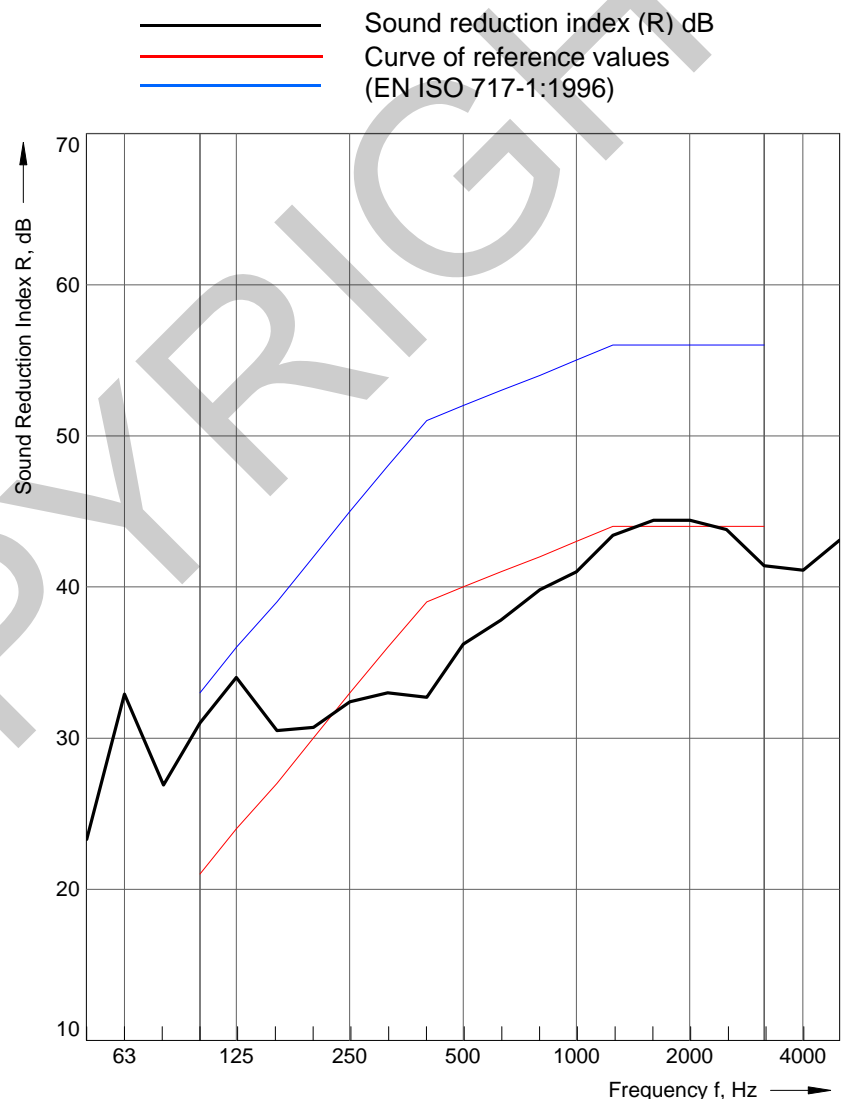
Test Date: 20/10/2014
Test Number: 141020 007

Test specimen installed by: Lorient Testing & Technical Services
 Test room temperature: 20.3°C
 Test room static pressure: 1026hpa
 Test room relative humidity: 59%

Area S of test element: 2.30m²
 Source room volume: 68.40m³
 Receiving room volume: 50.00m³
 Sample mass per unit area: 35.59kg/m²

Frequency f Hz	R 1/3 Octave dB
50	23.3*
63	32.9*
80	26.9*
100	31.0*
125	34.0
160	30.5
200	30.7
250	32.4
315	33.0
400	32.7
500	36.2
630	37.8
800	39.8
1000	41.0
1250	43.4
1600	44.4
2000	44.4
2500	43.8
3150	41.4
4000	41.1
5000	43.1

* Correction applied for flanking.



Rating according to ISO 717-1

$R_w (C; C_{tr}) = 40 (-1; -3)$ dB

$C_{50-3150} = -1$ dB; $C_{50-5000} = 0$ dB; $C_{100-5000} = 0$ dB;

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$C_{tr,50-3150} = -3$ dB; $C_{tr,50-5000} = -3$ dB; $C_{tr,100-5000} = -3$ dB;



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Certificate No. 09/104



BS EN ISO 14001:2004
Certificate No. 03/3 01590

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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

58mm S3D single flush door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate.

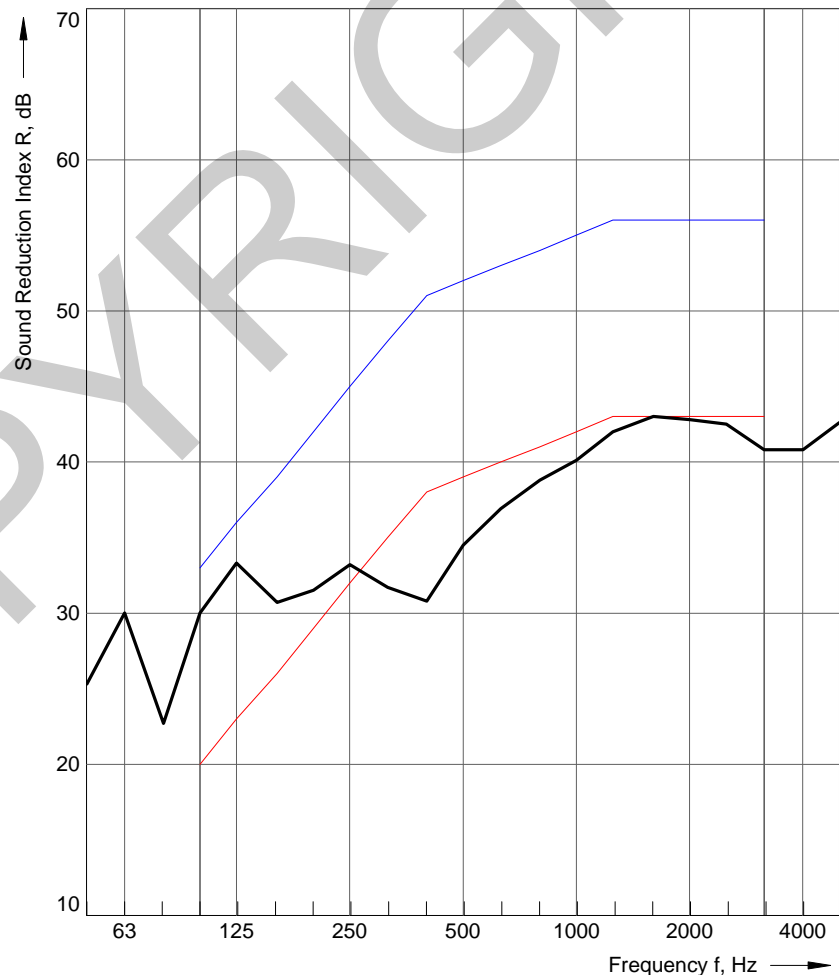
Test Date: 20/10/2014
Test Number: 141020 008

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 20.2°C
Test room static pressure: 1026hpa
Test room relative humidity: 58%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 35.59kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:1996)

Frequency f Hz	R 1/3 Octave dB
50	25.3*
63	30.0*
80	22.7*
100	30.0*
125	33.3
160	30.7
200	31.5
250	33.2
315	31.7
400	30.8
500	34.5
630	36.9
800	38.8
1000	40.1
1250	42.0
1600	43.0
2000	42.8
2500	42.5
3150	40.8
4000	40.8
5000	42.6



* Correction applied for flanking.

Rating according to ISO 717-1

$R_w (C; C_{tr}) = 39 (-1; -2) \text{ dB}$

$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = 0 \text{ dB}; C_{100-5000} = 0 \text{ dB};$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$C_{tr,50-3150} = -3 \text{ dB}; C_{tr,50-5000} = -3 \text{ dB}; C_{tr,100-5000} = -2 \text{ dB};$



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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

58mm S3D single glazed door in a hardwood frame.
 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS.
 Fully-caulked.

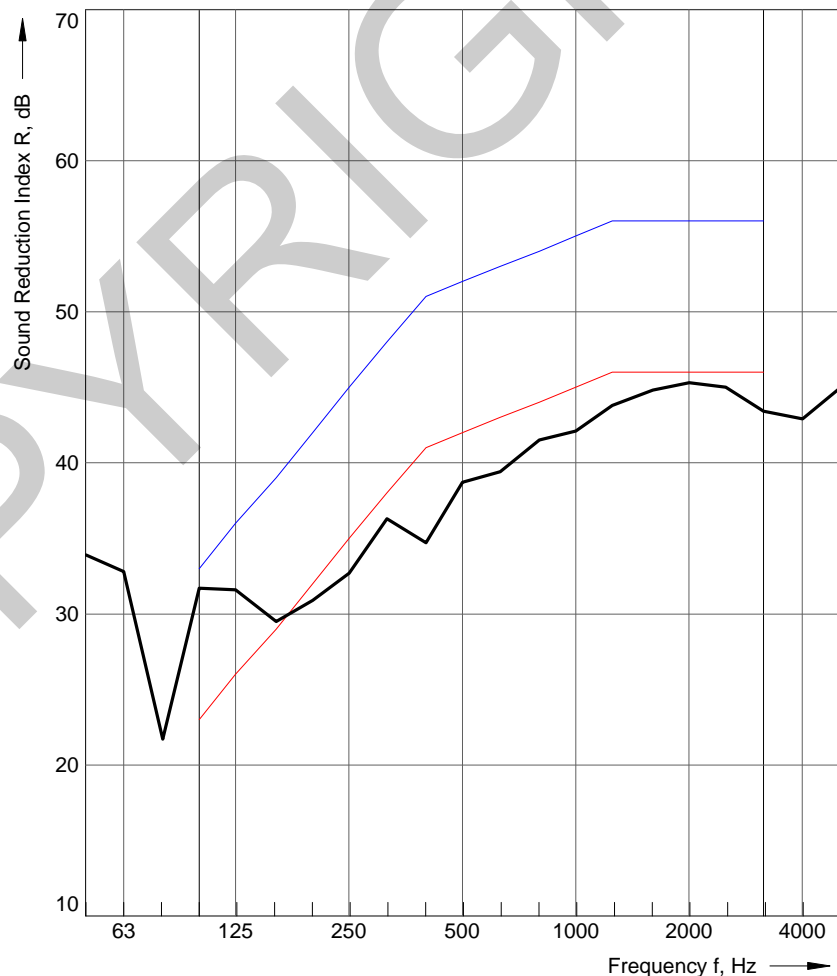
Test Date: 07/11/2014
Test Number: 141107 001

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.5°C
Test room static pressure: 1005hpa
Test room relative humidity: 56%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 39.34kg/m²

— Sound reduction index (R) dB
 — Curve of reference values (EN ISO 717-1:1996)

Frequency f Hz	R 1/3 Octave dB
50	33.9*
63	32.8*
80	21.7*
100	31.7*
125	31.6
160	29.5
200	30.9
250	32.7
315	36.3
400	34.7
500	38.7
630	39.4
800	41.5
1000	42.1
1250	43.8
1600	44.8
2000	45.3
2500	45.0
3150	43.4
4000	42.9
5000	44.9



* Correction applied for flanking.

Rating according to ISO 717-1

$$R_w (C; C_{tr}) = 42 (-1; -4) \text{ dB}$$

$$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = -1 \text{ dB}; C_{100-5000} = -1 \text{ dB};$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$$C_{tr,50-3150} = -5 \text{ dB}; C_{tr,50-5000} = -5 \text{ dB}; C_{tr,100-5000} = -4 \text{ dB};$$



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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

58mm S3D single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS.

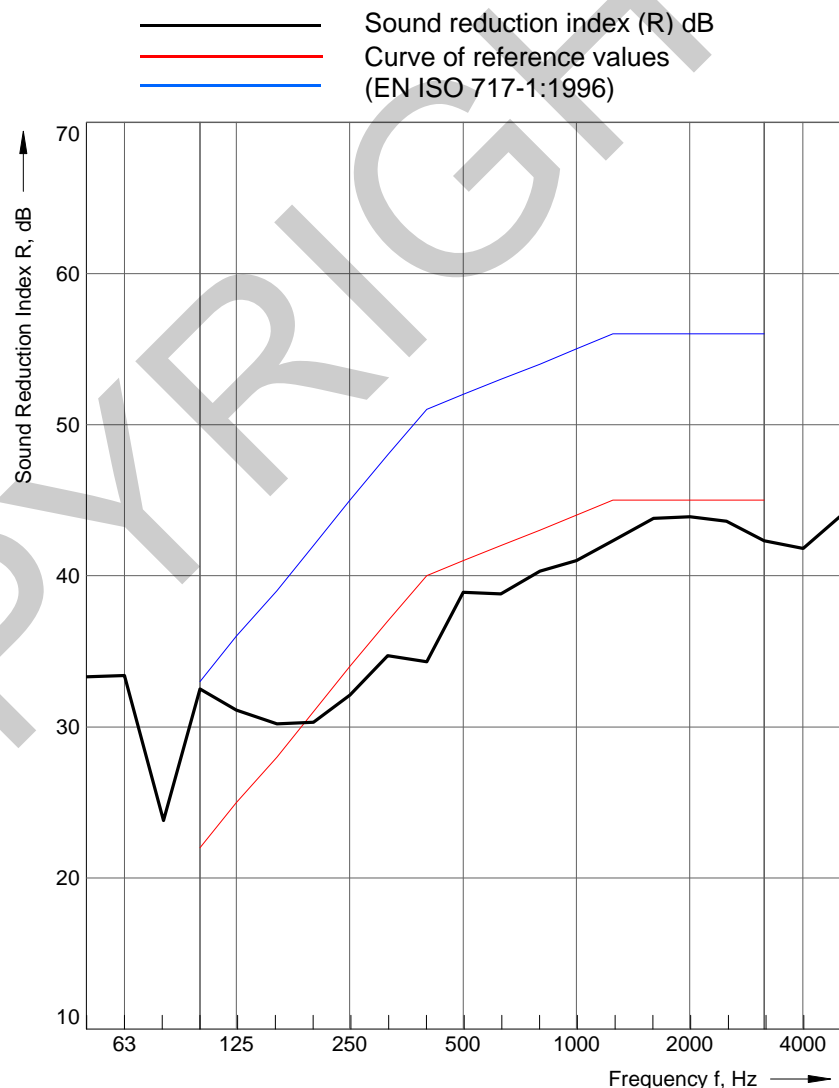
Test Date: 10/11/2014
Test Number: 141110 003

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 17.6°C
Test room static pressure: 1010hpa
Test room relative humidity: 57%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 39.34kg/m²

Frequency f Hz	R 1/3 Octave dB
50	33.3*
63	33.4*
80	23.8*
100	32.5*
125	31.1
160	30.2
200	30.3
250	32.1
315	34.7
400	34.3
500	38.9
630	38.8
800	40.3
1000	41.0
1250	42.3
1600	43.8
2000	43.9
2500	43.6
3150	42.3
4000	41.8
5000	43.9

* Correction applied for flanking.



Rating according to ISO 717-1

$$R_w (C; C_{tr}) = 41 (-1; -3) \text{ dB}$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = -1 \text{ dB}; C_{100-5000} = -1 \text{ dB};$$

$$C_{tr,50-3150} = -4 \text{ dB}; C_{tr,50-5000} = -4 \text{ dB}; C_{tr,100-5000} = -3 \text{ dB};$$

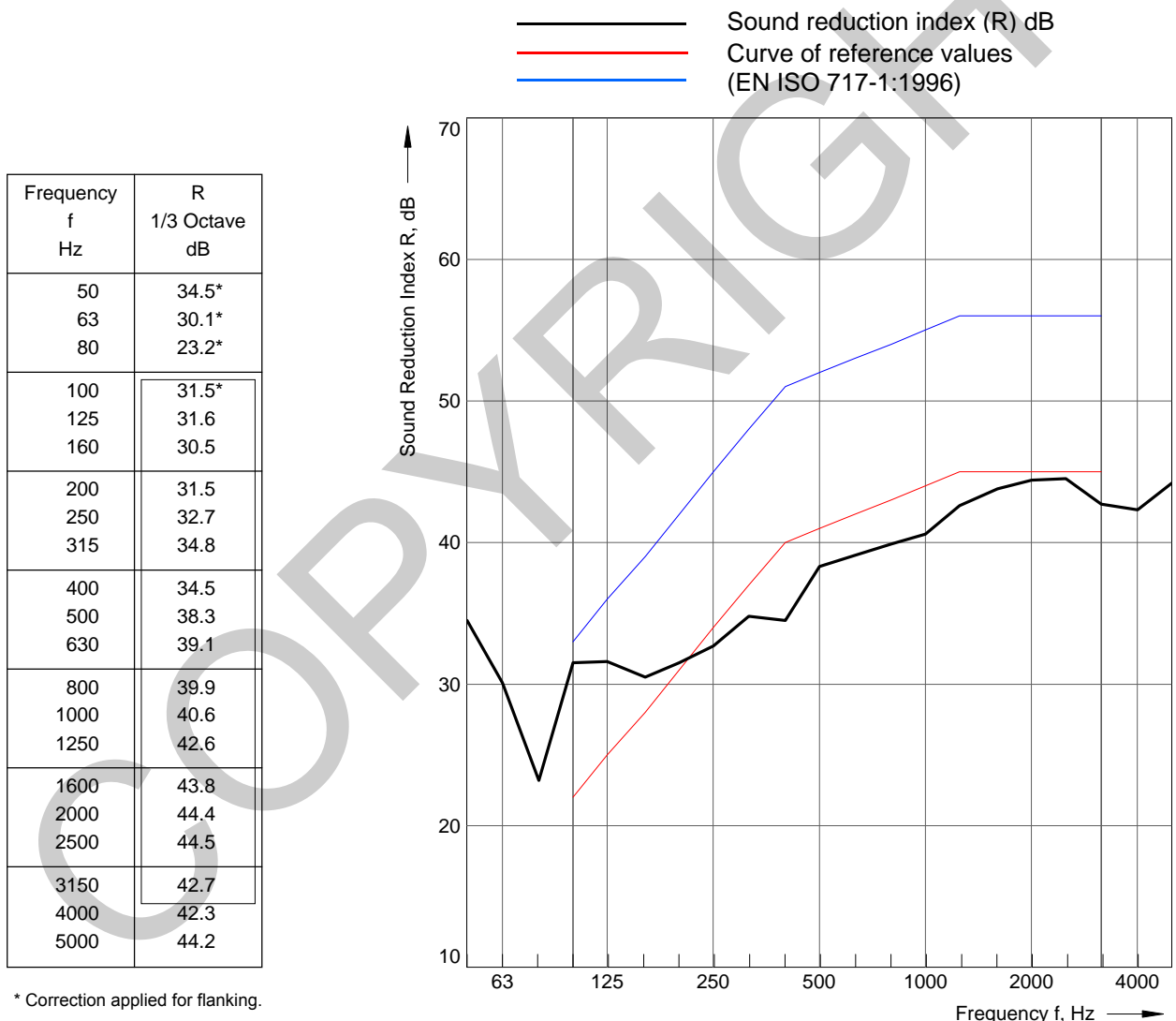
Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

58mm S3D single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 23mm vision panel glazed with Pyrostop in System-36/23 PLUS.

Test Date: 13/11/2014
Test Number: 141113 001

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.1°C
Test room static pressure: 1004hpa
Test room relative humidity: 63%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 39.34kg/m²



* Correction applied for flanking.

Rating according to ISO 717-1			
$R_w (C; C_{tr}) = 41 (-1; -3) \text{ dB}$	$C_{50-3150} = -1 \text{ dB}$	$C_{50-5000} = 0 \text{ dB}$	$C_{100-5000} = 0 \text{ dB}$
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method	$C_{tr,50-3150} = -4 \text{ dB}$	$C_{tr,50-5000} = -4 \text{ dB}$	$C_{tr,100-5000} = -3 \text{ dB}$

Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

51mm S4G single glazed door in a hardwood frame.
1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS. Fully-caulked.

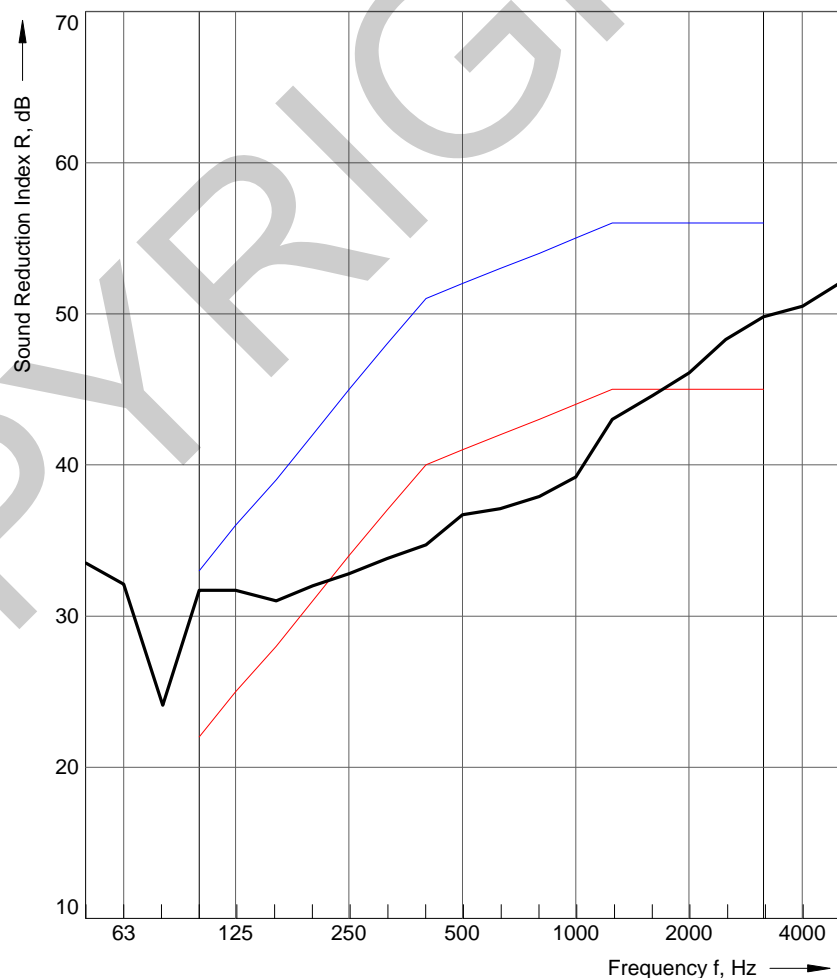
Test Date: 13/11/2014
Test Number: 141113 002

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.3°C
Test room static pressure: 1004hpa
Test room relative humidity: 63%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.78kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:1996)

Frequency f Hz	R 1/3 Octave dB
50	33.5*
63	32.1*
80	24.1*
100	31.7*
125	31.7
160	31.0
200	32.0
250	32.8
315	33.8
400	34.7
500	36.7
630	37.1
800	37.9
1000	39.2
1250	43.0
1600	44.6
2000	46.1
2500	48.3
3150	49.8
4000	50.5
5000	52.0



* Correction applied for flanking.

Rating according to ISO 717-1

$$R_w (C; C_{tr}) = 41 (-1; -3) \text{ dB}$$

$$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = 0 \text{ dB}; C_{100-5000} = 0 \text{ dB};$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$$C_{tr,50-3150} = -4 \text{ dB}; C_{tr,50-5000} = -4 \text{ dB}; C_{tr,100-5000} = -3 \text{ dB};$$



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BS EN ISO 14001:2004
Certificate No. 03/3 241500

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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

51mm S4G single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 15mm vision panel glazed with Pyrostop in System-36/15 PLUS.

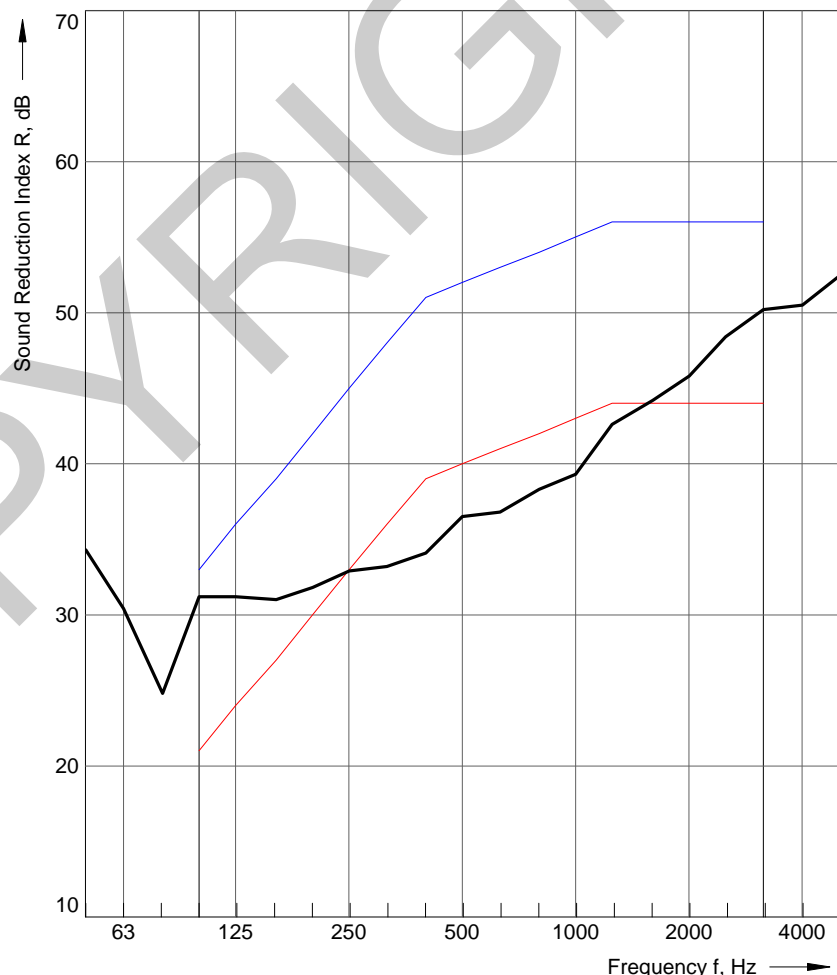
Test Date: 13/11/2014
Test Number: 141113 003

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.7°C
Test room static pressure: 1004hpa
Test room relative humidity: 63%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.78kg/m²

— Sound reduction index (R) dB
 — Curve of reference values (EN ISO 717-1:1996)

Frequency f Hz	R 1/3 Octave dB
50	34.3*
63	30.4*
80	24.8*
100	31.2*
125	31.2
160	31.0
200	31.8
250	32.9
315	33.2
400	34.1
500	36.5
630	36.8
800	38.3
1000	39.3
1250	42.6
1600	44.2
2000	45.8
2500	48.4
3150	50.2
4000	50.5
5000	52.4



* Correction applied for flanking.

Rating according to ISO 717-1

$$R_w (C; C_{tr}) = 40 (0; -3) \text{ dB}$$

$$C_{50-3150} = 0 \text{ dB}; C_{50-5000} = 1 \text{ dB}; C_{100-5000} = 1 \text{ dB};$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$$C_{tr,50-3150} = -3 \text{ dB}; C_{tr,50-5000} = -3 \text{ dB}; C_{tr,100-5000} = -3 \text{ dB};$$



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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

51mm S4G single glazed door in a hardwood frame.
 1230mm x 230mm x 23mm vision panel glazed with Pyrostop in System-36/23 PLUS.
 Fully-caulked.

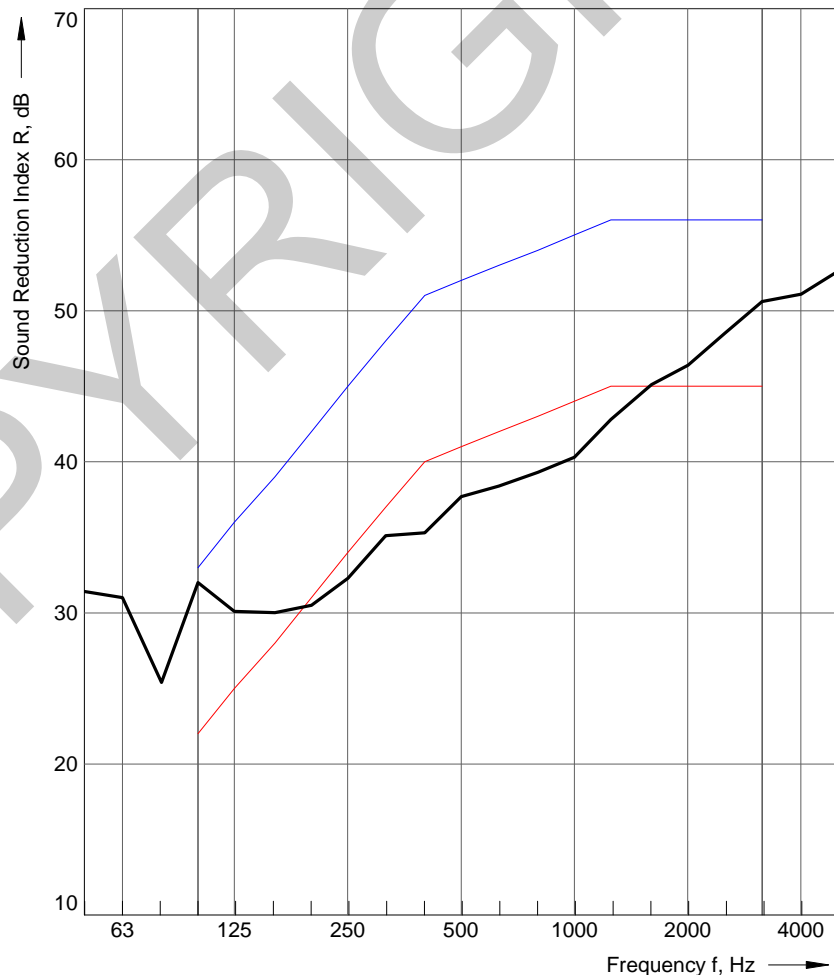
Test Date: 14/11/2014
Test Number: 141114 002

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.5°C
Test room static pressure: 1005hpa
Test room relative humidity: 55%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 31.78kg/m²

— Sound reduction index (R) dB
 — Curve of reference values (EN ISO 717-1:1996)

Frequency f Hz	R 1/3 Octave dB
50	31.4*
63	31.0*
80	25.4*
100	32.0*
125	30.1
160	30.0
200	30.5
250	32.3
315	35.1
400	35.3
500	37.7
630	38.4
800	39.3
1000	40.3
1250	42.8
1600	45.1
2000	46.4
2500	48.5
3150	50.6
4000	51.1
5000	52.6



* Correction applied for flanking.

Rating according to ISO 717-1

$$R_w (C; C_{tr}) = 41 (-1; -3) \text{ dB}$$

$$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = 0 \text{ dB}; C_{100-5000} = 0 \text{ dB};$$

Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$$C_{tr,50-3150} = -4 \text{ dB}; C_{tr,50-5000} = -4 \text{ dB}; C_{tr,100-5000} = -3 \text{ dB};$$



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Acoustic performance of doorsets – tested in accordance with BS EN ISO 10140-2: 2010

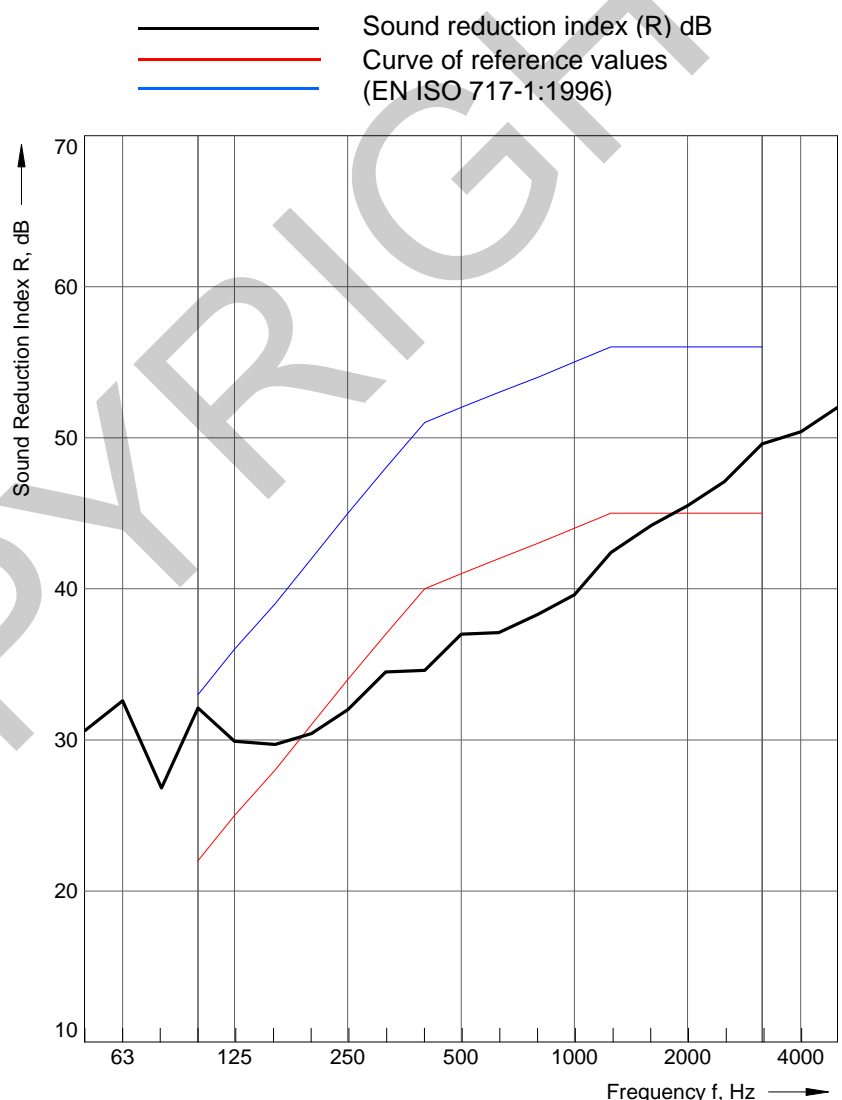
51mm S4G single glazed door in a hardwood frame. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). LAS8001si automatic drop seal to bottom of door. LAS4014si threshold plate. 1230mm x 230mm x 23mm vision panel glazed with Pyrostop in System-36/23 PLUS.

Test Date: 14/11/2014
Test Number: 141114 001

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.3°C
Test room static pressure: 1005hpa
Test room relative humidity: 55%

Area S of test element: 2.30m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 35.59kg/m²

Frequency f Hz	R 1/3 Octave dB
50	30.6*
63	32.6*
80	26.8*
100	32.1*
125	29.9
160	29.7
200	30.4
250	32.0
315	34.5
400	34.6
500	37.0
630	37.1
800	38.3
1000	39.6
1250	42.4
1600	44.2
2000	45.5
2500	47.1
3150	49.6
4000	50.4
5000	52.0



* Correction applied for flanking.

Rating according to ISO 717-1			
$R_w (C; C_{tr}) = 41 (-1; -4) \text{ dB}$	$C_{50-3150} = -1 \text{ dB}$	$C_{50-5000} = 0 \text{ dB}$	$C_{100-5000} = 0 \text{ dB}$
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method	$C_{tr,50-3150} = -4 \text{ dB}$	$C_{tr,50-5000} = -4 \text{ dB}$	$C_{tr,100-5000} = -4 \text{ dB}$



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4.0 Photos of test samples





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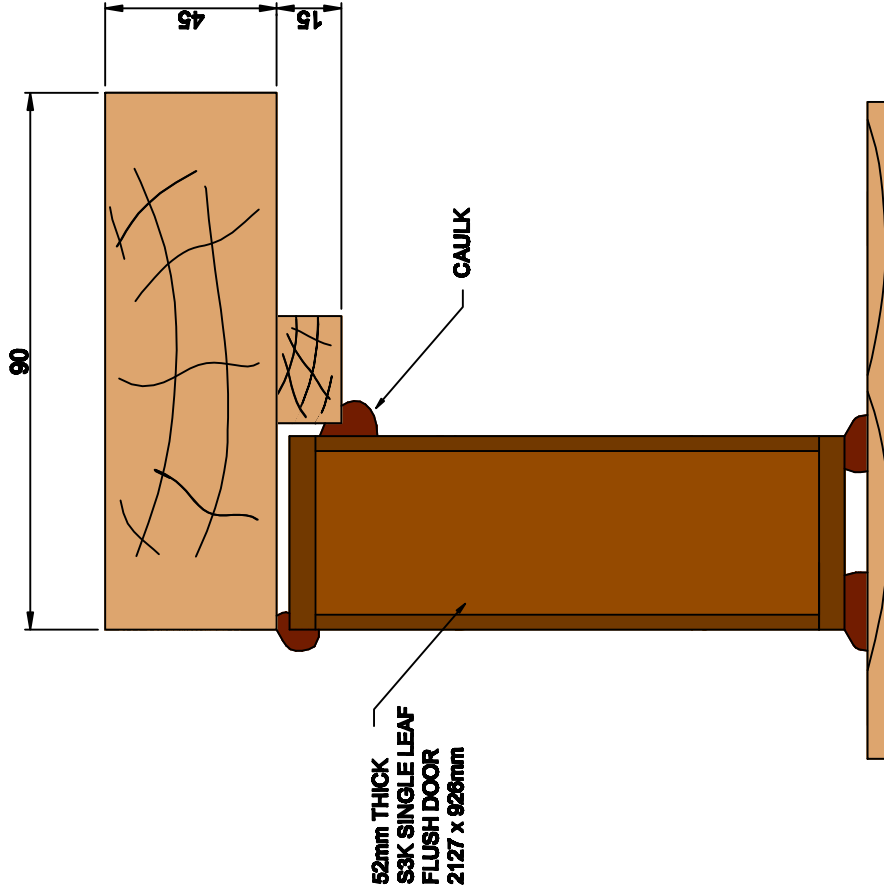
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Certificate No. DM/3 541909

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**TEST : 141020 001
FULLY CAULKED**

**52mm S3K Flush Door - Hardwood Frame, Planted Stop
2127 x 926mm**

01	FIRST ISSUE	xx/xx/xxxx
REV	DESCRIPTION	DATE

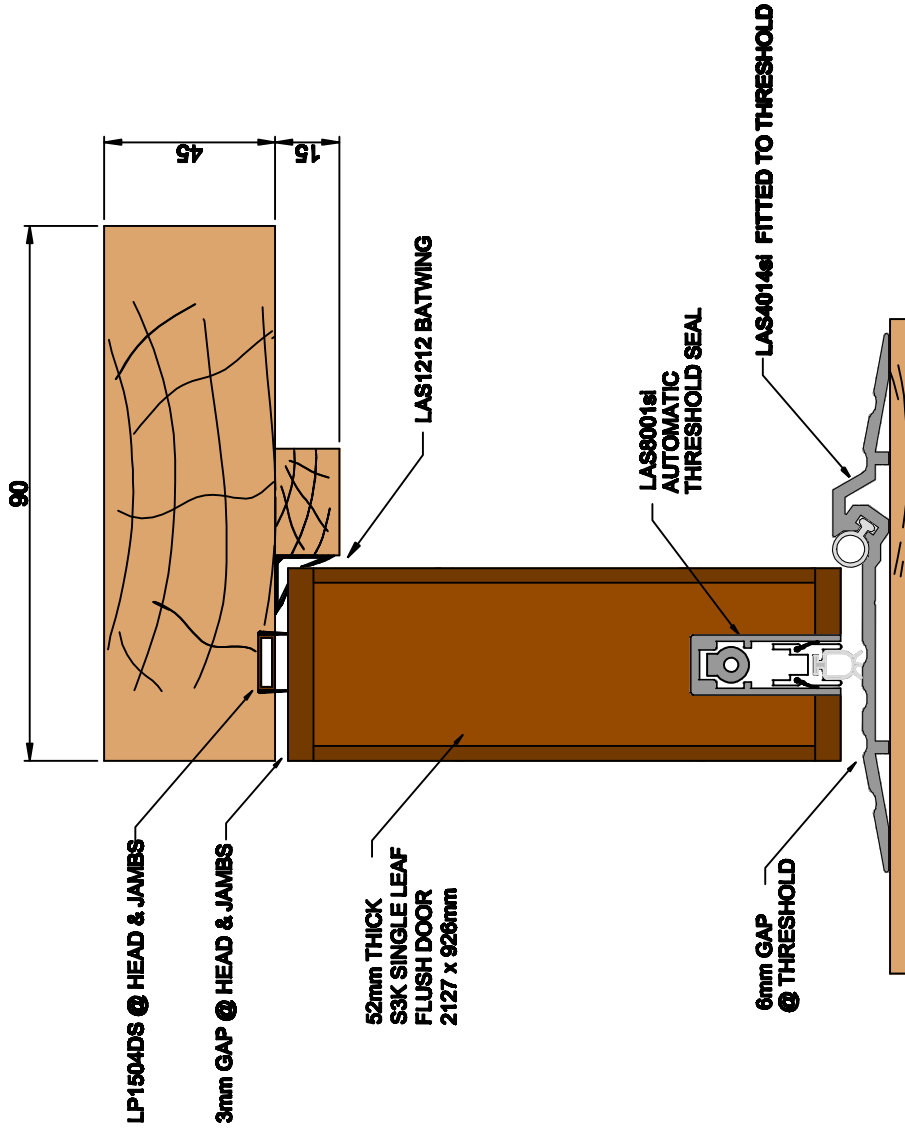


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SCALE	NTS	TITLE:
DRAWN	MH	SAUERLAND AND ACOUSTIC & FIREDOOR SOLUTIONS LTD
DATE	20/10/14	DRAWING NO:
CHECKED	DF	141020 001
APPROVED	DF	



TEST : 141020 002
 52mm S3K Flush Door- Hardwood Frame, Planted Stop
 2127 x 926mm

LP1504DS fitted to jambs and head (interrupted at hinge) .
 LAS1212 to jamb and head stops.
 LAS8001si drop seal to bottom of door.
 LAS4014si threshold plate.



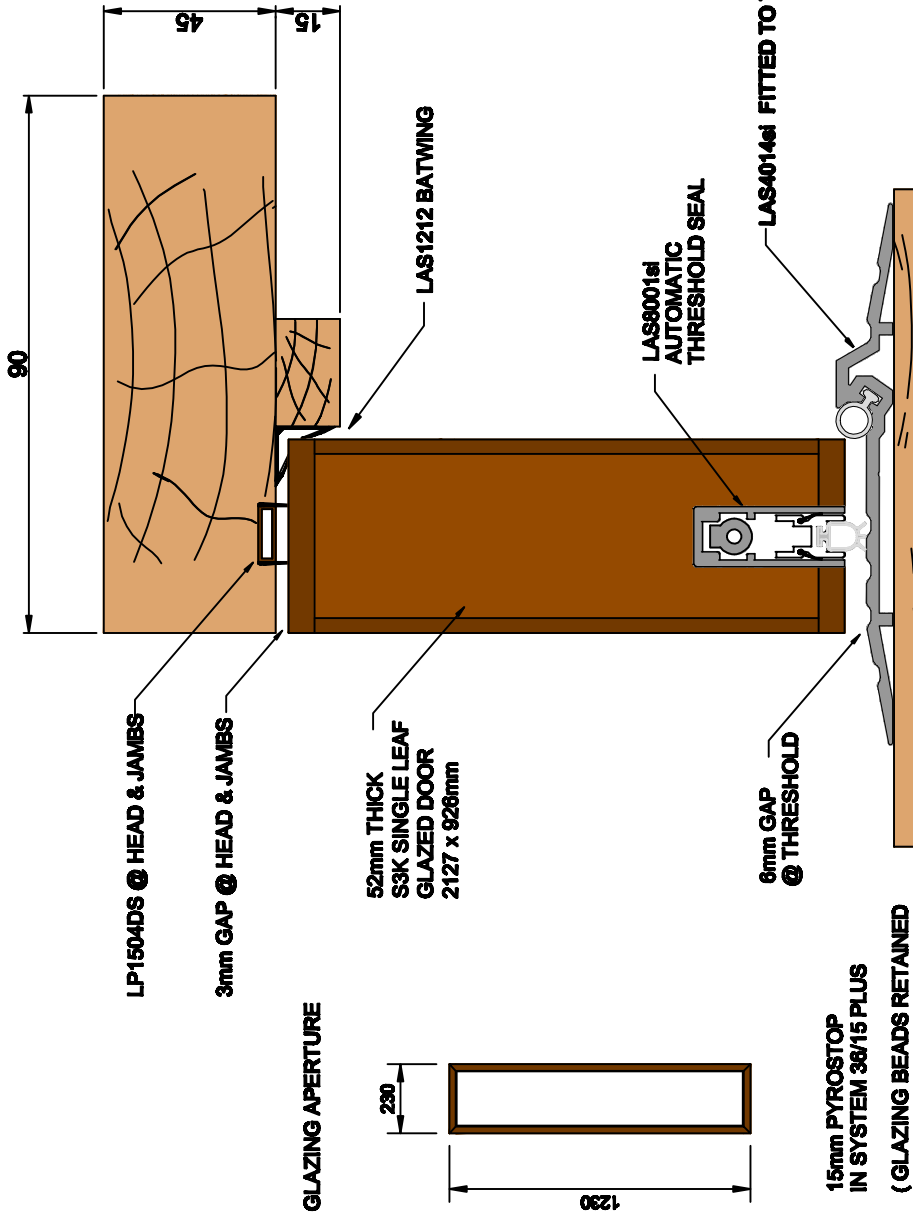
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 E:testing@lorientuk.com
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Testing & Technical Services

			SCALE	NTS	TITLE:
			DRAWN	MH	SAUERLAND AND ACOUSTIC & FIREDOOR SOLUTIONS LTD
			DATE	20/10/14	DRAWING NO: 141020 002
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LP1504DS @ HEAD & JAMBS

3mm GAP @ HEAD & JAMBS

GLAZING APERTURE

52mm THICK
S3K SINGLE LEAF
GLAZED DOOR
2127 x 926mm

230

1230

LAS1212 BATWING

LAS8001si
AUTOMATIC
THRESHOLD SEAL

6mm GAP
@ THRESHOLD

LAS4014si FITTED TO THRESHOLD

15mm PYROSTOP
IN SYSTEM 38/15 PLUS
(GLAZING BEADS RETAINED
WITH 70mm SCREWS AT
200mm CENTRES)

TEST : 141020 005

52mm S3K Glazed Door- Hardwood Frame, Planted Stop
2127 x 926mm

LP1504DS fitted to jambs and head (interrupted at hinges) .
LAS1212 to jamb and head stops.

LAS8001si drop seal to bottom of door.

LAS4014si threshold plate.

Vision Panel 1230mm x 230mm x 15mm glazed with
Pyrostop in System - 38/15 Plus.

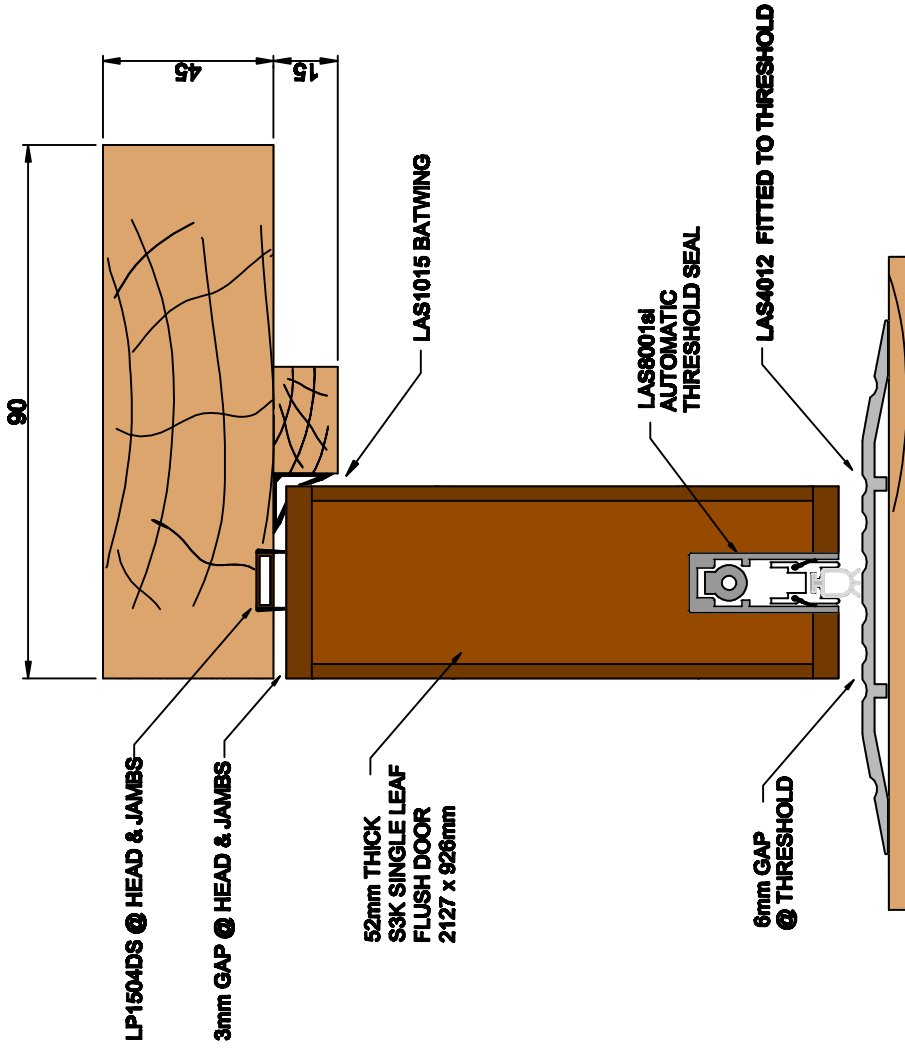


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TEST : 141029 002
 52mm S3K Flush Door- Hardwood Frame, Planted Stop
 2127 x 926mm

LP1504DS fitted to jambs and head (interrupted at hinges) .
 LAS1015 to jamb and head stops.
 LAS8001si drop seal to bottom of door.
 LAS4012 threshold plate.

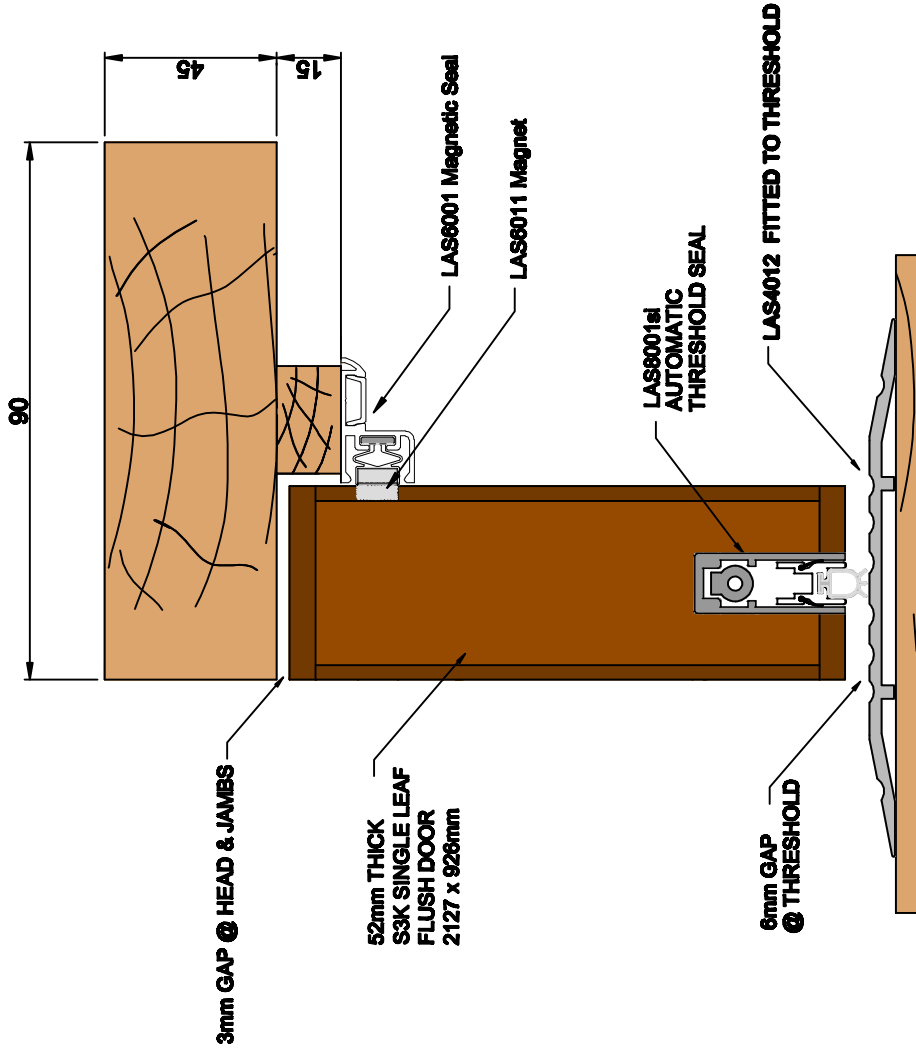


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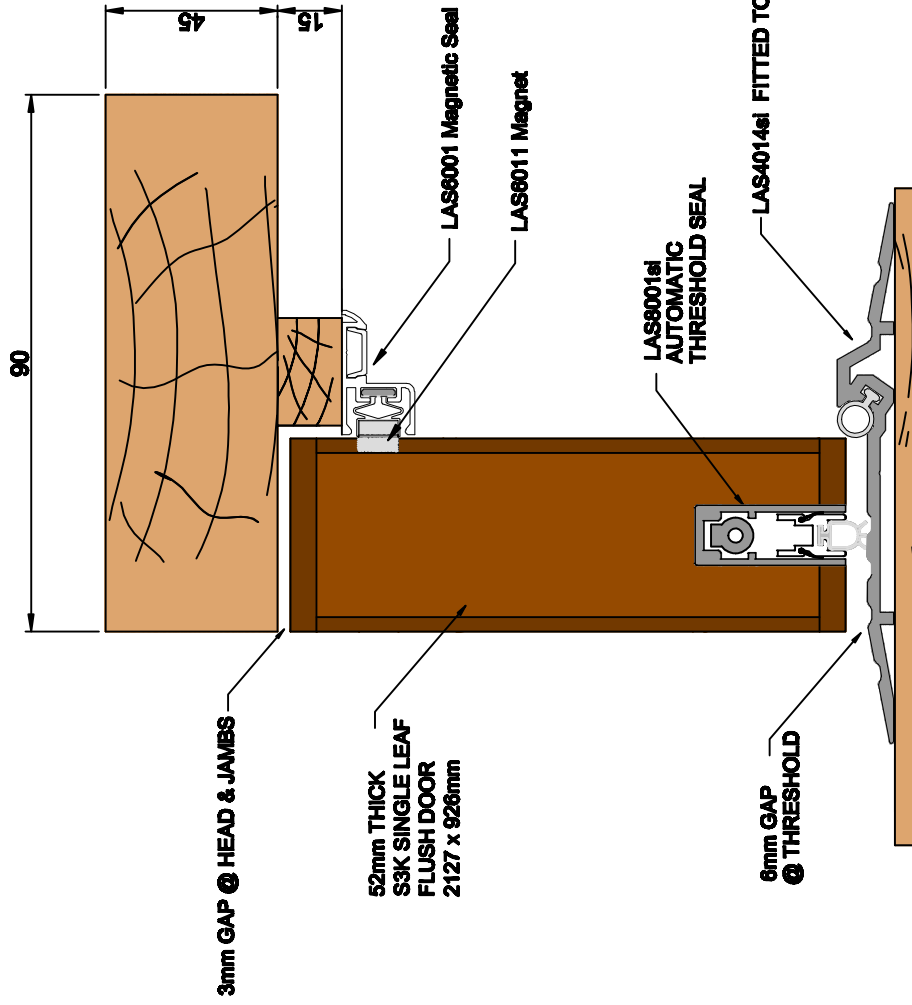
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TEST : 141104 002
 52mm S3K Flush Door- Hardwood Frame, Planted Stop
 2127 x 926mm

LAS6001 magnetic seal to jamb and head stops opposing
 LAS6011 magnet to face of door.
 LAS6001sl drop seal to bottom of door.
 LAS4012 threshold plate.

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TEST : 141104 005
 52mm S3K Flush Door- Hardwood Frame, Planted Stop
 2127 x 926mm

LAS6001 magnetic seal to jamb and head stops opposing
 LAS6011 magnet to face of door.
 LAS8001ai drop seal to bottom of door.
 LAS4014ei threshold plate.

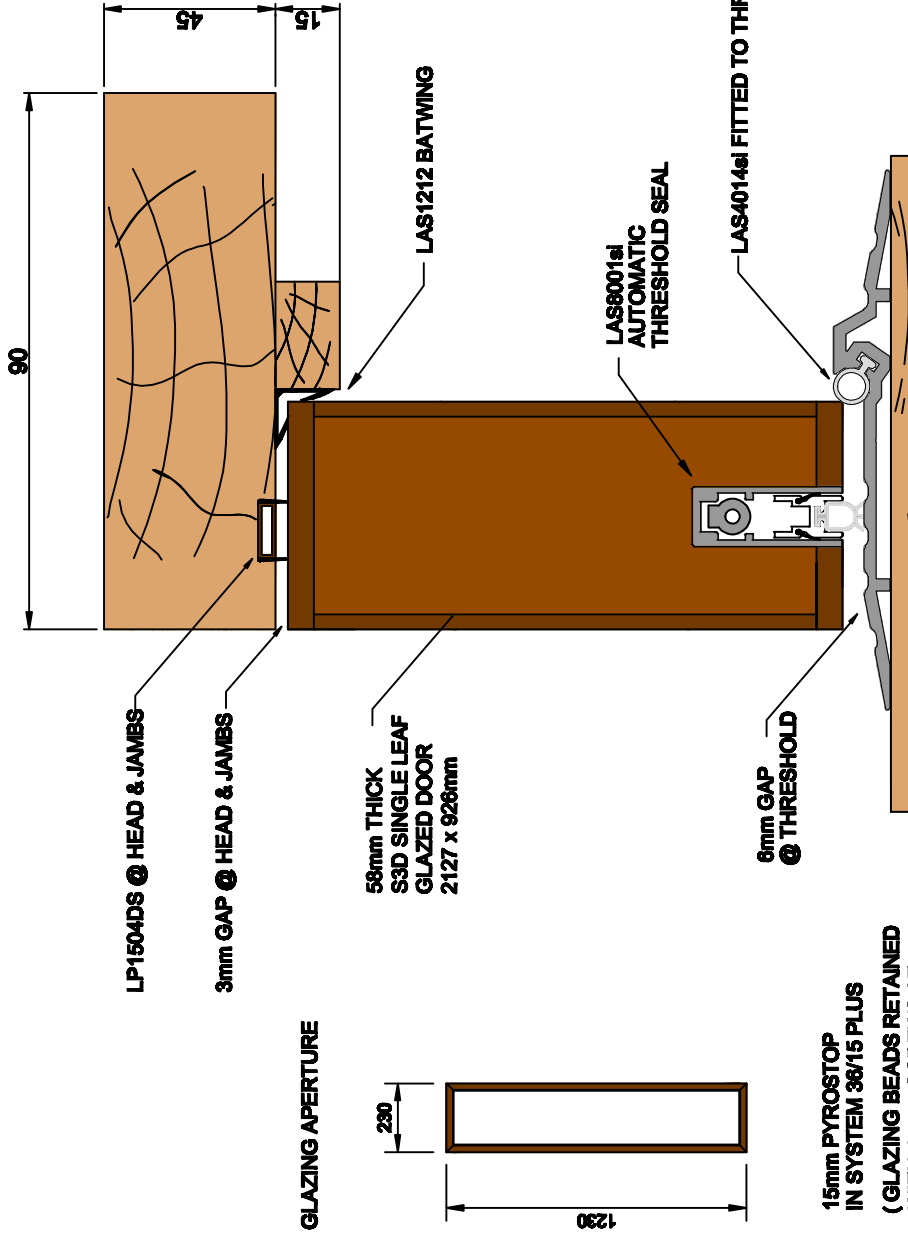
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15mm PYROSTOP
IN SYSTEM 36/15 PLUS
(GLAZING BEADS RETAINED
WITH 45mm SCREWS AT
200mm CENTRES)

TEST : 141110 003
58mm S3D Glazed Door - Hardwood Frame, Planted Stop
2127 x 928mm

LP1504DS fitted to jambs and head (interrupted at hinges)
LAS1212 to jamb and head stops.
LAS8001sl drop seal to bottom of door.
LAS4014sl threshold plate.
Vision Panel 1230mm x 230mm x 15mm glazed with
Pyrostop in System - 36/15 Plus.



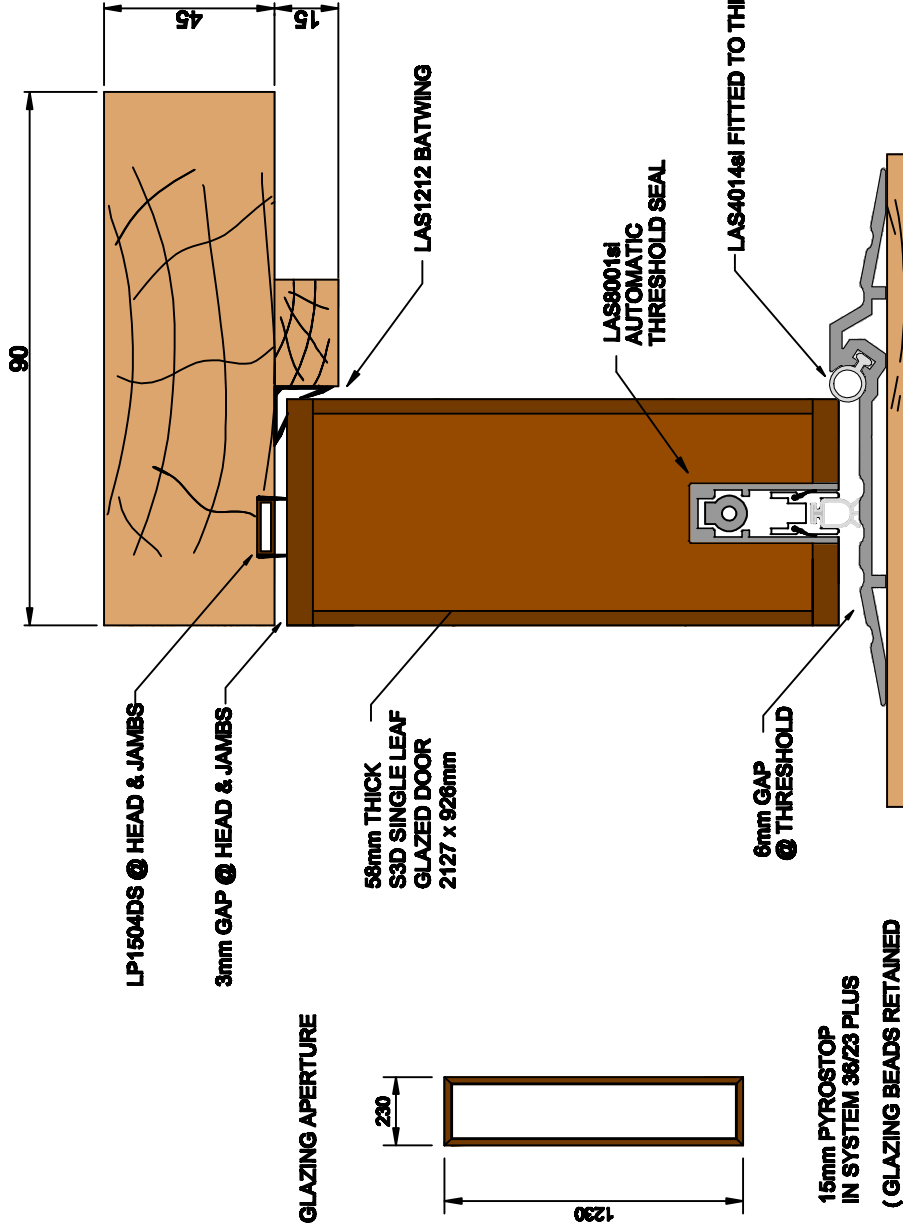
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TEST : 141113 001
58mm S3D Glazed Door - Hardwood Frame, Planted Stop
2127 x 928mm

LP1504DS fitted to jambs and head (interrupted at hinges)
 LAS1212 to jamb and head stops.
 LAS8001st drop seal to bottom of door.
 LAS4014st threshold plate.
 Vision Panel 1230mm x 230mm x 23mm glazed with
 Pyrostop in System - 36/23 Plus.



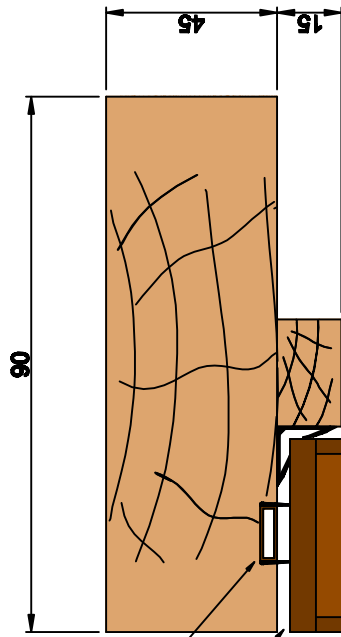
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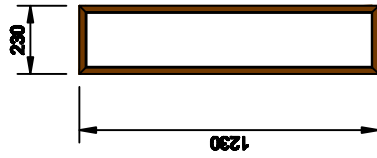
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GLAZING APERTURE



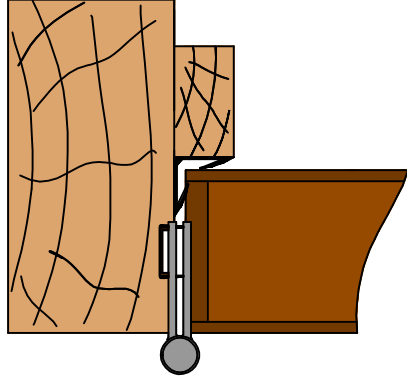
**23mm PYROSTOP
IN SYSTEM 36/23 PLUS
(GLAZING BEADS RETAINED
WITH 46mm SCREWS AT
200mm CENTRES)**

LAS1212 BATWING

LAS8001si
AUTOMATIC
THRESHOLD SEAL

6mm GAP
@ THRESHOLD

LAS4014si FITTED TO THRESHOLD



TEST : 141114 001

52mm S4G Glazed Door- Hardwood Frame, Planted Stop
2127 x 928mm

LP1504DS fitted to jambs and head (interrupted at hinges) .

LAS1212 to jamb and head stops.

LAS8001si drop seal to bottom of door.

LAS4014si threshold plate.

Vision Panel 1230mm x 230mm x 23mm glazed with

Pyrostop In System - 36/23 Plus.



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