



Technical Report

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

Report:	SAUER/AFDSL04-061219
Prepared for:	Acoustic & Fire Door Solutions Ltd & Sauerland Spanplatte
Issue date:	12th March 2020
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.

Copyright © 2018
Lorient Polyproducts Ltd



Contents

1.0	Introduction	2
2.0	Purpose of test	4
2.1	Testing details	4
2.2	Instrumentation used	4
2.3	Test specimen	5
2.4	Test procedure	5
2.5	Limitations & parameters	6
2.6	Personnel Present	7
3.0	Results summary and Data	7 - 21
4.0	Photos of test samples	22 - 26
5.0	Drawings	27 - 32 (supplied by client)

2.0 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

2.1 Testing details

- < The glazed double leaf doors and frame was supplied by Acoustic & Fire Door Solutions Ltd and Sauerland Spanplatte. The installation was carried out by Lorient Polyproducts Ltd.
- < The measurements recorded were made on the 4th, 5th and 6th December 2019.
- < Recorded by **Dunstan Ferris, Lorient Testing & Technical Services**,
 Discovery House, Unit 3 Battle Road, Heathfield Industrial Estate, Newton Abbot, TQ12 6RY, UK

2.2 Instrumentation used

The acoustic equipment has been calibrated and verified under the following valid Certificate numbers: U28687, U28690 and U32469.
 Copies of these certificates can be made available upon request.

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

2.3 Test specimen (refer to drawing section 5.0)

Door type:	Glazed double leaf doorsets – S3K and S3D manufactured in accordance with the relevant AFDS Ltd Method Statements.
Frame dimensions:	1979mm wide x 2190mm high x 95mm.
Leaf dimensions:	953/953mm wide x 2145mm high.

2.4 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&Ctr, 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:

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

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

2.5 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 79 dB
- < Source room volume : 68.40m³.
- < Receiving room volume : 50.00m³.

2.6 Personnel present

Dunstan Ferris AMIOA
Chris Gough

Lorient Polyproducts Ltd
Door Consulting

3.0 Results Summary and Data

Test No.	Product Identification	Results R_w
191204 001	54mm S3K pair of doors with no Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 15mm Pyrostop. Perimeter and threshold gaps fully-caulked.	R_w 42dB
191204 003	54mm S3K pair of doors with no Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 15mm Pyrostop. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.	R_w 41dB
191204 004	54mm S3K pair of doors with Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 15mm Pyrostop. Perimeter and threshold gaps fully-caulked.	R_w 42dB

ACOUSTIC, SMOKE & FIRE
CONTAINMENT SYSTEMS

Test No.	Product Identification	Results R_w
191204 005	54mm S3K pair of doors with Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 15mm Pyrostop. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.	Rw 41dB
191205 001	54mm S3K pair of doors with no Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both glazed with 7mm Pyrobelite. Perimeter and threshold gaps fully-caulked.	Rw 41dB
191205 002	54mm S3K pair of doors with no Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both glazed with 7mm Pyrobelite. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.	Rw 40dB
191205 003	54mm S3K pair of doors with Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm vision panel to bottom of doors. Both doors glazed with 7mm Pyrobelite. Perimeter and threshold gaps fully-caulked.	Rw 40dB
191205 004	54mm S3K pair of doors with Therm-A-Line between core and perimeter. 950mm x 250mm vision panel to top of doors plus 550mm vision panel to bottom of doors. Both doors glazed with 7mm Pyrobelite. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.	Rw 40dB
191205 005	57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with 12mm Pyrobelite. Perimeter and threshold gaps fully-caulked.	Rw 41dB
191206 001	57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with 12mm Pyrobelite. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.	Rw 40dB
191206 002	57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with 23mm Pyrostop. Perimeter and threshold gaps fully-caulked.	Rw 41dB

ACOUSTIC, SMOKE & FIRE
CONTAINMENT SYSTEMS

191206 003	<p>57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with 23mm Pyrostop. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.</p> <p>Rw 40dB</p>
------------	---

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details:

54mm S3K pair of doors with no Therm-A-Line between core and perimeter.
945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 15mm Pyrostop.
Perimeter and threshold gaps fully-caulked.

Test Date: 04/12/2019

Test Number: 191204 001

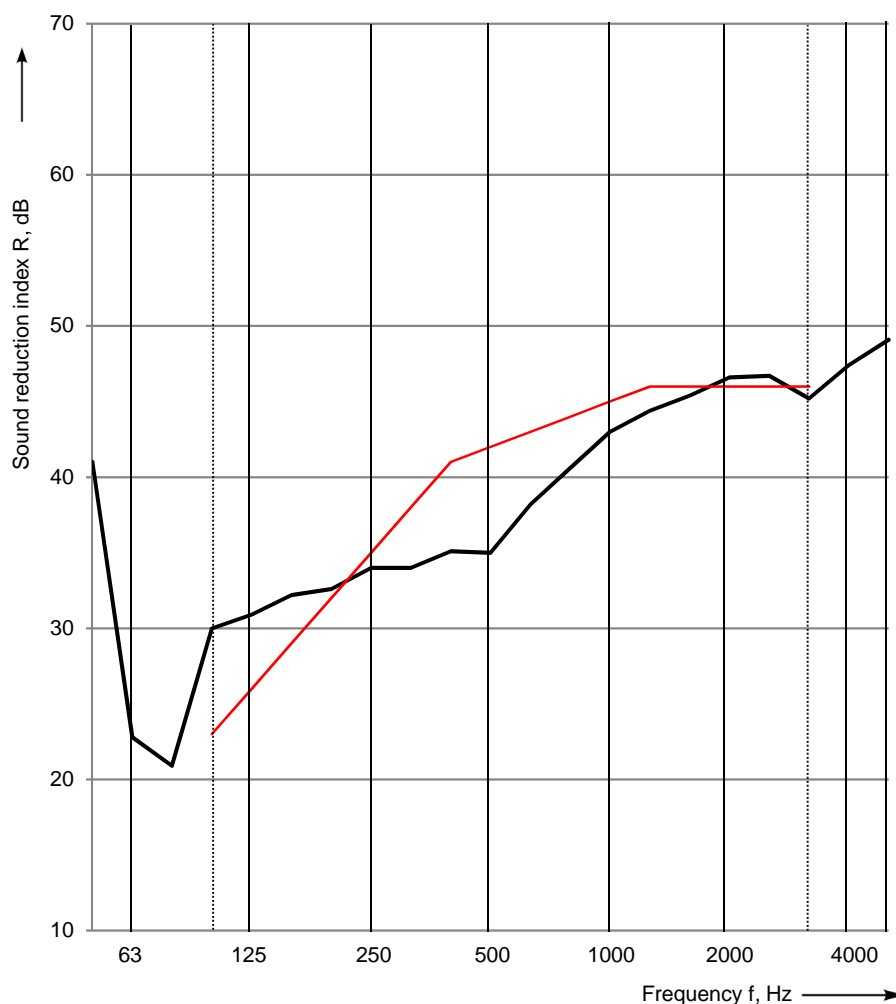
Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.6°C
Test room static pressure: 1018.1 hpa
Test room relative humidity: 36%

Area S of test element: 4.4m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 34.9 kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:2013)

Frequency f Hz	R 1/3 Octave dB
50	41 *
63	22.8
80	20.9
100	30
125	30.9
160	32.2
200	32.6
250	34
315	34
400	35.1
500	35
630	38.2
800	40.6
1000	43
1250	44.4
1600	45.4
2000	46.6
2500	46.7
3150	45.2
4000	47.4
5000	49.1



* Correction applied for flanking

Rating according to ISO 717-1	$C_{50-3150} =$	-2 dB;	$C_{50-5000} =$	-1 dB;	$C_{100-5000} =$	-1 dB;
$R_w (C; C_{tr}) =$	42	(-1; -4) dB	$C_{tr, 50-3150} =$	-6 dB;	$C_{tr, 50-5000} =$	-6 dB;
					$C_{tr, 100-5000} =$	-4 dB;

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details: 54mm S3K pair of doors with no Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 15mm Pyrostop. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.

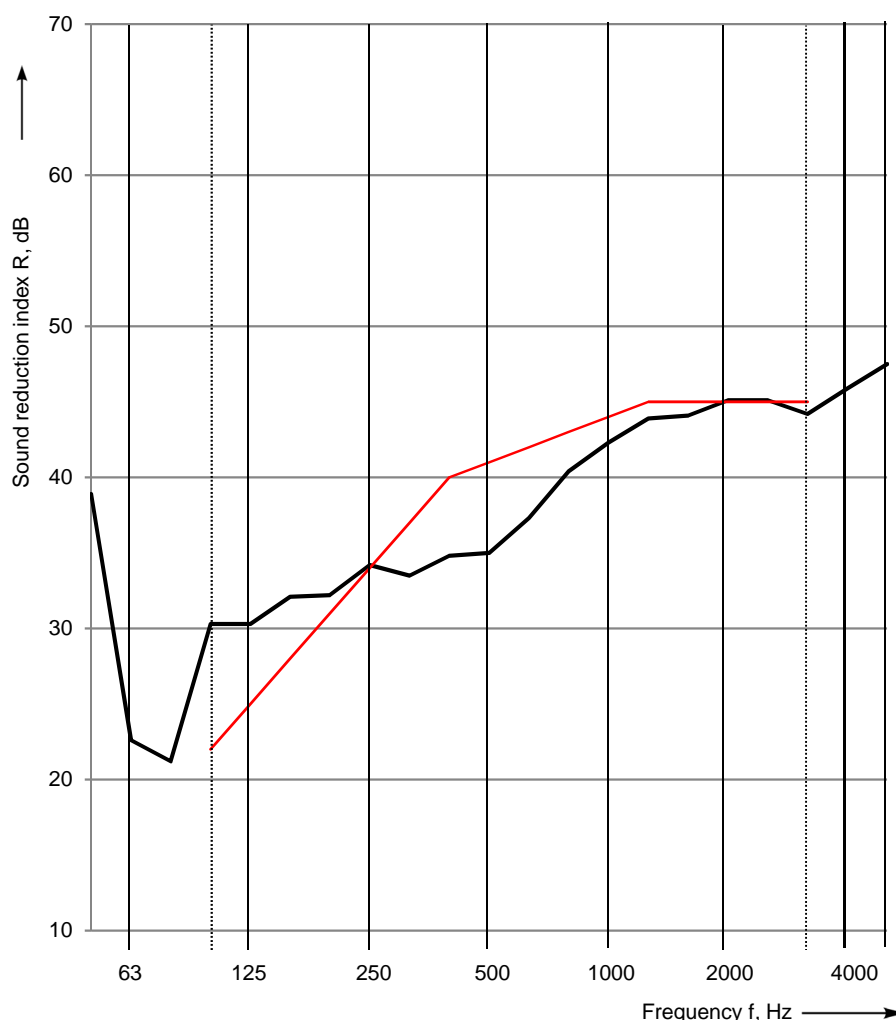
Test Date: 04/12/2019
Test Number: 191204 003
Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.5°C
Test room static pressure: 1017.9 hpa
Test room relative humidity: 38%

Area S of test element: 4.4m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 34.9 kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:2013)

Frequency f Hz	R 1/3 Octave dB
50	38.9 *
63	22.6
80	21.2
100	30.3
125	30.3
160	32.1
200	32.2
250	34.2
315	33.5
400	34.8
500	35
630	37.3
800	40.4
1000	42.3
1250	43.9
1600	44.1
2000	45.1
2500	45.1
3150	44.2
4000	45.9
5000	47.5



* Correction applied for flanking

Rating according to ISO 717-1
 $R_w (C; C_{tr}) = 41 \quad (-1; -3) \text{ dB}$
 $C_{50-3150} = -1 \text{ dB}; C_{50-5000} = 0 \text{ dB}; C_{100-5000} = 0 \text{ dB};$
 $C_{tr,50-3150} = -5 \text{ dB}; C_{tr,50-5000} = -5 \text{ dB}; C_{tr,100-5000} = -3 \text{ dB};$
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details: 54mm S3K pair of doors with Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 15mm Pyrostop. Perimeter and threshold gaps fully-caulked.

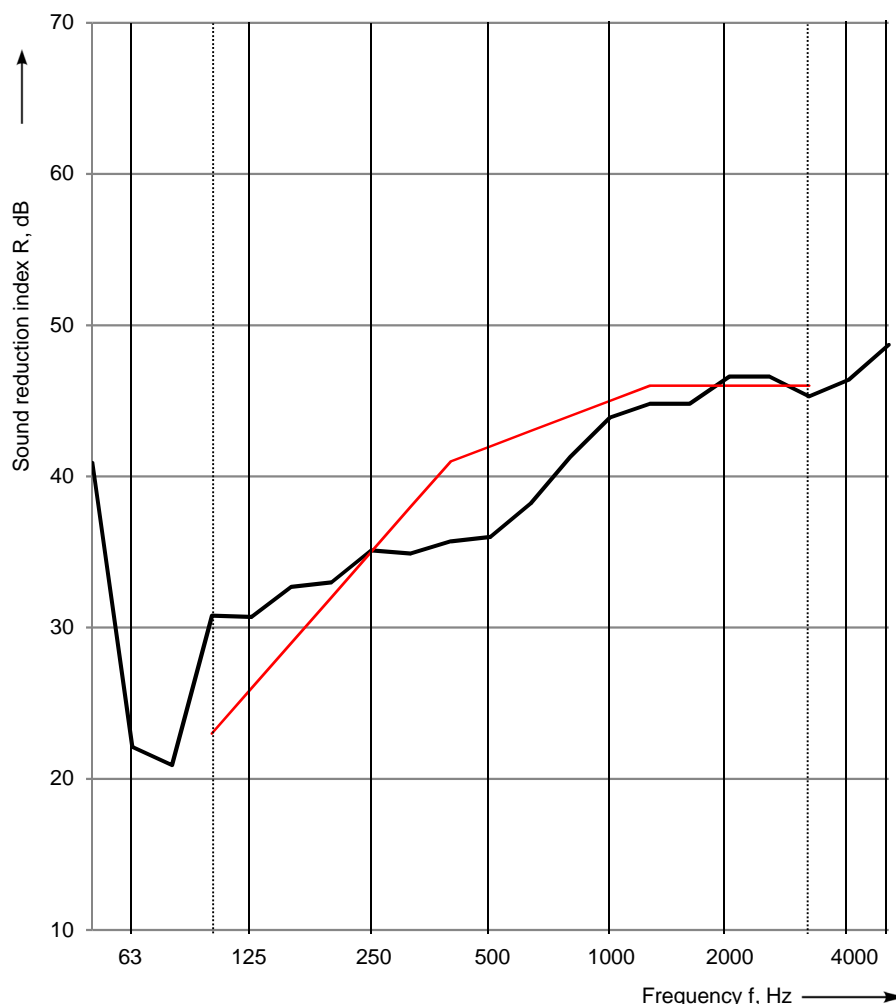
Test Date: 04/12/2019
Test Number: 191204 004
Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.4°C
Test room static pressure: 1017.7 hpa
Test room relative humidity: 39%

Area S of test element: 4.4m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 34.8 kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:2013)

Frequency f Hz	R 1/3 Octave dB
50	40.9 *
63	22.1
80	20.9
100	30.8
125	30.7
160	32.7
200	33
250	35.1
315	34.9
400	35.7
500	36
630	38.2
800	41.3
1000	43.9
1250	44.8
1600	44.8
2000	46.6
2500	46.6
3150	45.3
4000	46.4
5000	48.7



* Correction applied for flanking

Rating according to ISO 717-1	$C_{50-3150} =$	-1 dB;	$C_{50-5000} =$	0 dB;	$C_{100-5000} =$	0 dB;
$R_w (C; C_{tr}) =$	42	(-1; -3) dB	$C_{tr,50-3150} =$	-6 dB;	$C_{tr,50-5000} =$	-6 dB;
					$C_{tr,100-5000} =$	-3 dB;

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details: 54mm S3K pair of doors with Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 15mm Pyrostop. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.

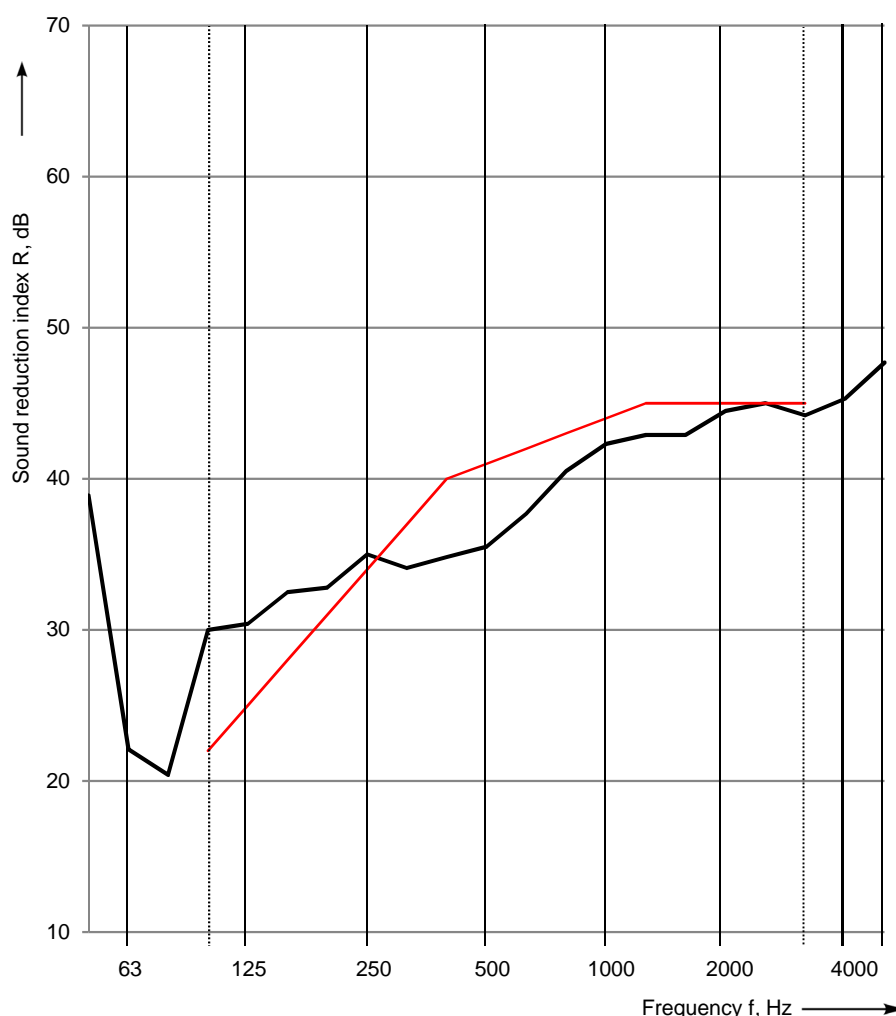
Test Date: 04/12/2019
Test Number: 191204 005
Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.1°C
Test room static pressure: 1017.6 hpa
Test room relative humidity: 39%

Area S of test element: 4.4m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 34.8 kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:2013)

Frequency f Hz	R 1/3 Octave dB
50	38.9 *
63	22.1
80	20.4
100	30
125	30.4
160	32.5
200	32.8
250	35
315	34.1
400	34.8
500	35.5
630	37.7
800	40.5
1000	42.3
1250	42.9
1600	42.9
2000	44.5
2500	45
3150	44.2
4000	45.3
5000	47.7



* Correction applied for flanking

Rating according to ISO 717-1	C ₅₀₋₃₁₅₀ =	-1 dB; C ₅₀₋₅₀₀₀	0 dB; C ₁₀₀₋₅₀₀₀ =	0 dB;		
R _w (C;C _{tr}) =	41	(-1; -3) dB	C _{tr,50-3150} =	-5 dB; C _{tr,50-5000}	-5 dB; C _{tr,100-5000} =	-3 dB;
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method						

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details:

54mm S3K pair of doors with no Therm-A-Line between core and perimeter.
945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 7mm Pyrobelite.
Perimeter and threshold gaps fully-caulked.

Test Date: 05/12/2019

Test Number: 191205 001

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services

Test room temperature: 20.1°C

Test room static pressure: 1020.8 hpa

Test room relative humidity: 33%

Area S of test element: 4.4m²

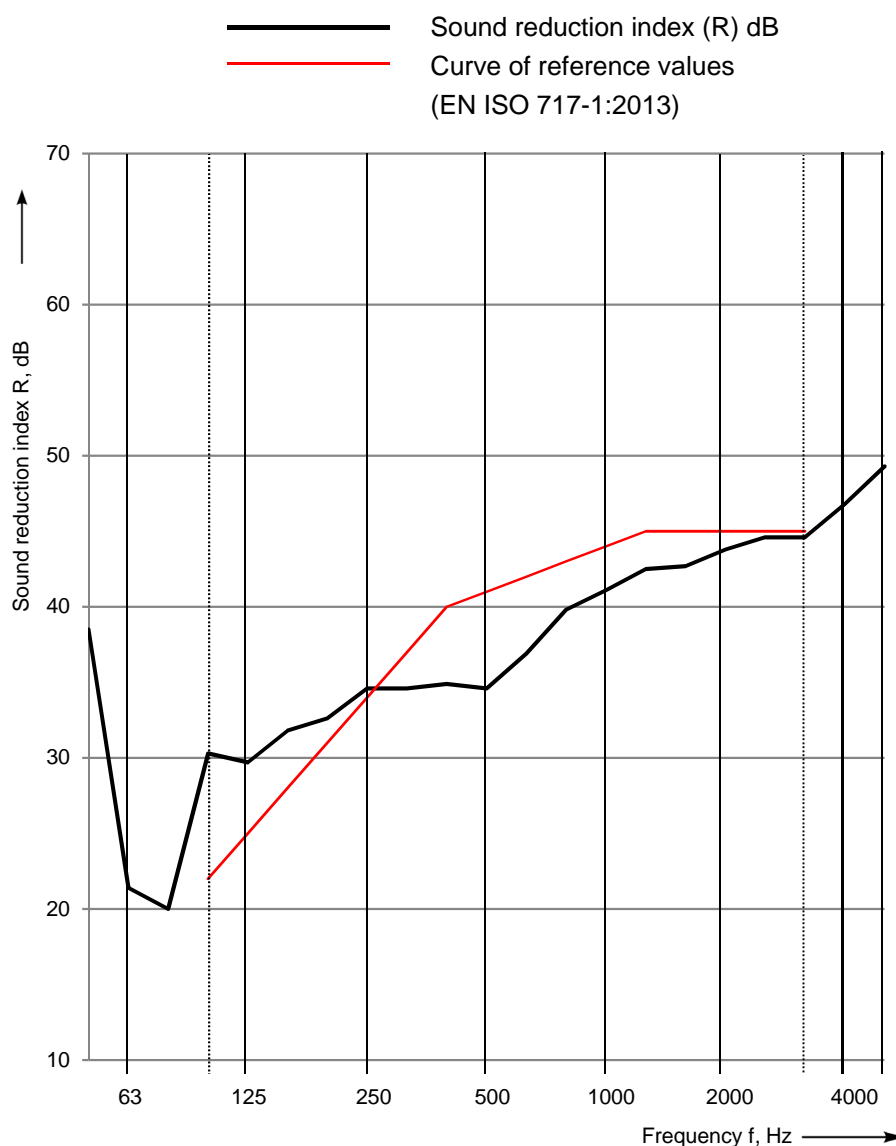
Source room volume: 68.40m³

Receiving room volume: 50.00m³

Sample mass per unit area: 32.3 kg/m²

Frequency f Hz	R 1/3 Octave dB
50	38.5 *
63	21.4
80	20
100	30.3
125	29.7
160	31.8
200	32.6
250	34.6
315	34.6
400	34.9
500	34.6
630	36.9
800	39.8
1000	41.1
1250	42.5
1600	42.7
2000	43.8
2500	44.6
3150	44.6
4000	46.8
5000	49.3

* Correction applied for flanking



Rating according to ISO 717-1	$C_{50-3150} =$	-2 dB;	$C_{50-5000} =$	-1 dB;	$C_{100-5000} =$	0 dB;
$R_w (C; C_{tr}) =$	41	(-1; -3) dB	$C_{tr,50-3150} =$	-6 dB;	$C_{tr,50-5000} =$	-6 dB;
					$C_{tr,100-5000} =$	-3 dB;

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

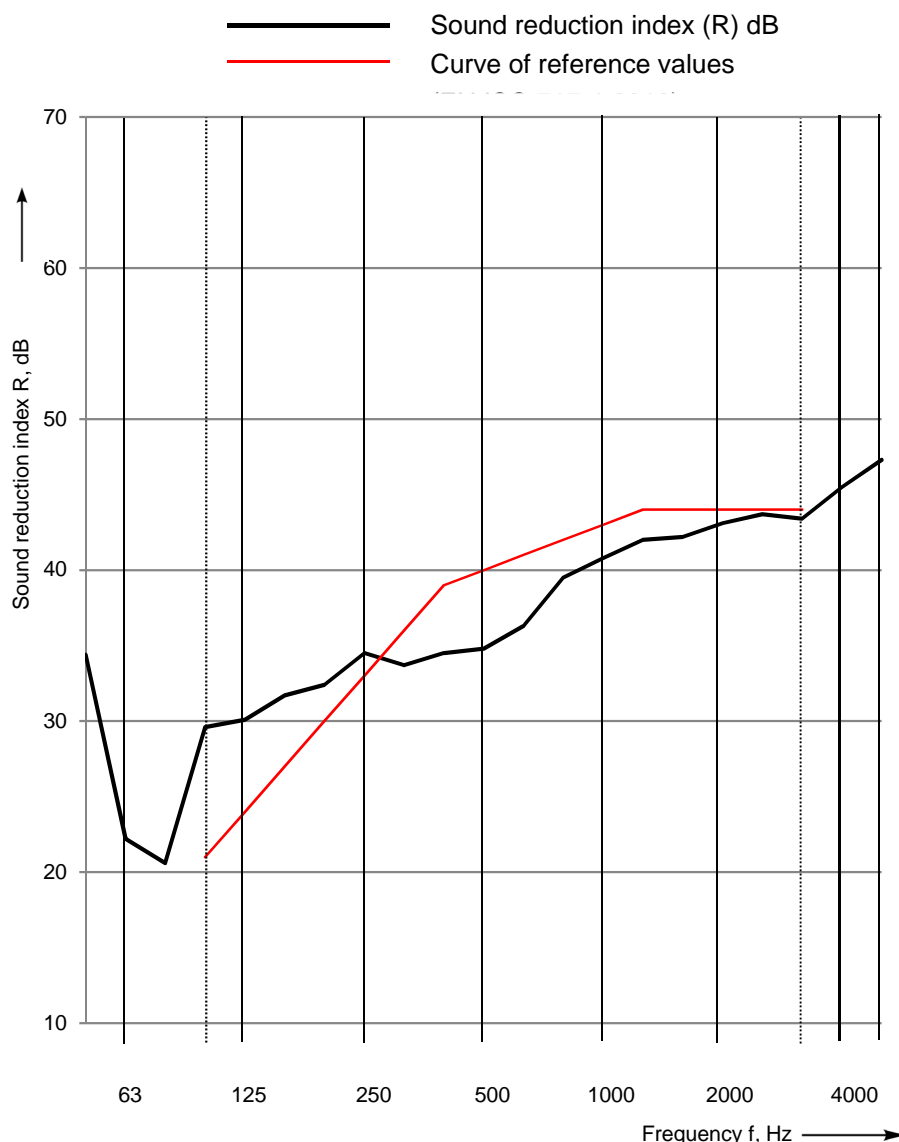
Test sample details: 54mm S3K pair of doors with Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 7mm Pyrobelite. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.

Test Date: 05/12/2019
Test Number: 191205 002
Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.4°C
Test room static pressure: 1020.8 hpa
Test room relative humidity: 33%

Area S of test element: 4.4m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 32.3 kg/m²

Frequency f Hz	R 1/3 Octave dB
50	34.4 *
63	22.2
80	20.6
100	29.6
125	30.1
160	31.7
200	32.4
250	34.5
315	33.7
400	34.5
500	34.8
630	36.3
800	39.5
1000	40.8
1250	42
1600	42.2
2000	43.1
2500	43.7
3150	43.4
4000	45.5
5000	47.3



* Correction applied for flanking

Rating according to ISO 717-1	$C_{50-3150} =$	-1 dB;	$C_{50-5000} =$	0 dB;	$C_{100-5000} =$	0 dB;
$R_w (C; C_{tr}) =$	40	(-1; -3) dB	$C_{tr, 50-3150} =$	-4 dB;	$C_{tr, 50-5000} =$	-4 dB;
					$C_{tr, 100-5000} =$	-3 dB;

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details:

54mm S3K pair of doors with Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 7mm Pyrobelite. Perimeter and threshold gaps fully-caulked.

Test Date: 05/12/2019

Test Number: 191205 003

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:

Lorient Testing & Technical Services

Area S of test element:

4.4m²

Test room temperature:

18.7°C

Source room volume:

68.40m³

Test room static pressure

1019.6 hpa

Receiving room volume:

50.00m³

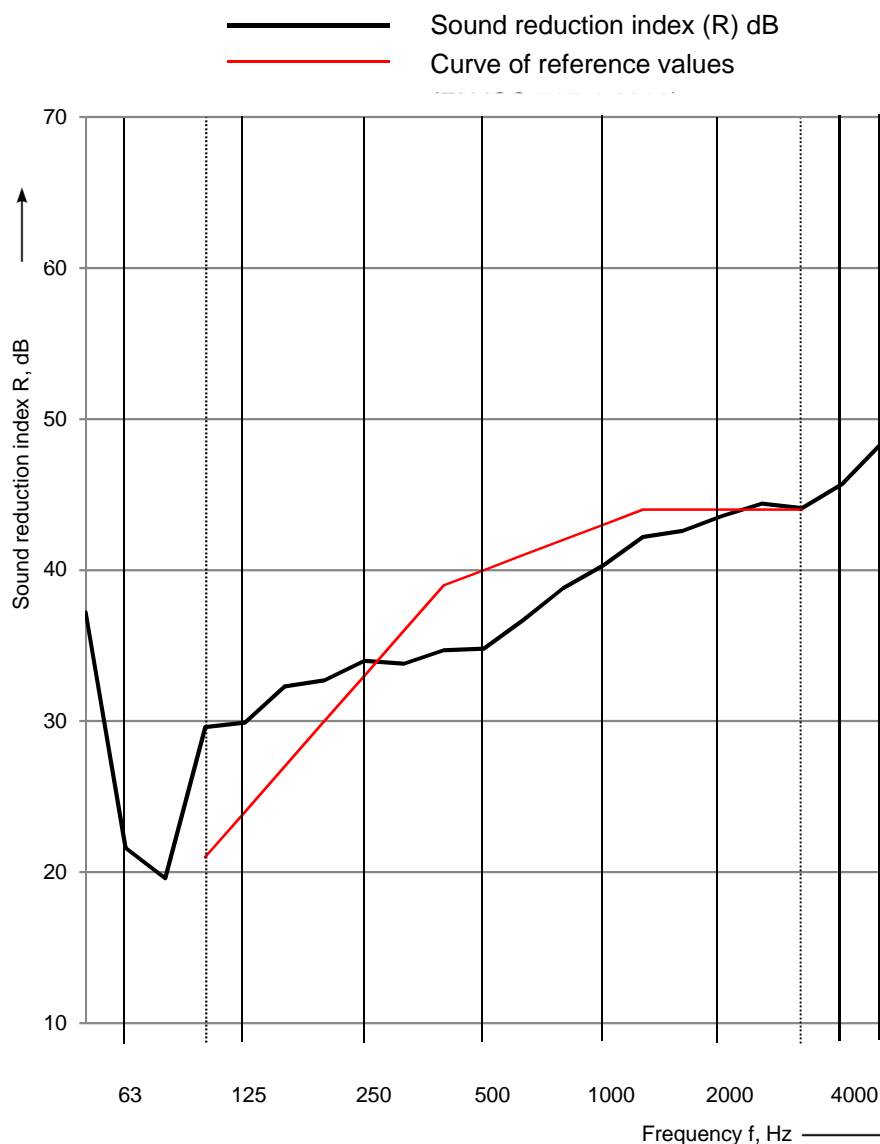
Test room relative humidity:

36%

Sample mass per unit area:

32.1 kg/m²

Frequency f Hz	R 1/3 Octave dB
50	37.2 *
63	21.6
80	19.6
100	29.6
125	29.9
160	32.3
200	32.7
250	34
315	33.8
400	34.7
500	34.8
630	36.7
800	38.8
1000	40.3
1250	42.2
1600	42.6
2000	43.6
2500	44.4
3150	44.1
4000	45.7
5000	48.4



* Correction applied for flanking

Rating according to ISO 717-1	$C_{50-3150} =$	-1 dB;	$C_{50-5000} =$	0 dB;	$C_{100-5000} =$	0 dB;
$R_w (C; C_{tr}) =$	40	(-1; -3) dB	$C_{tr,50-3150} =$	-5 dB;	$C_{tr,50-5000} =$	-5 dB;
					$C_{tr,100-5000} =$	-3 dB;

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

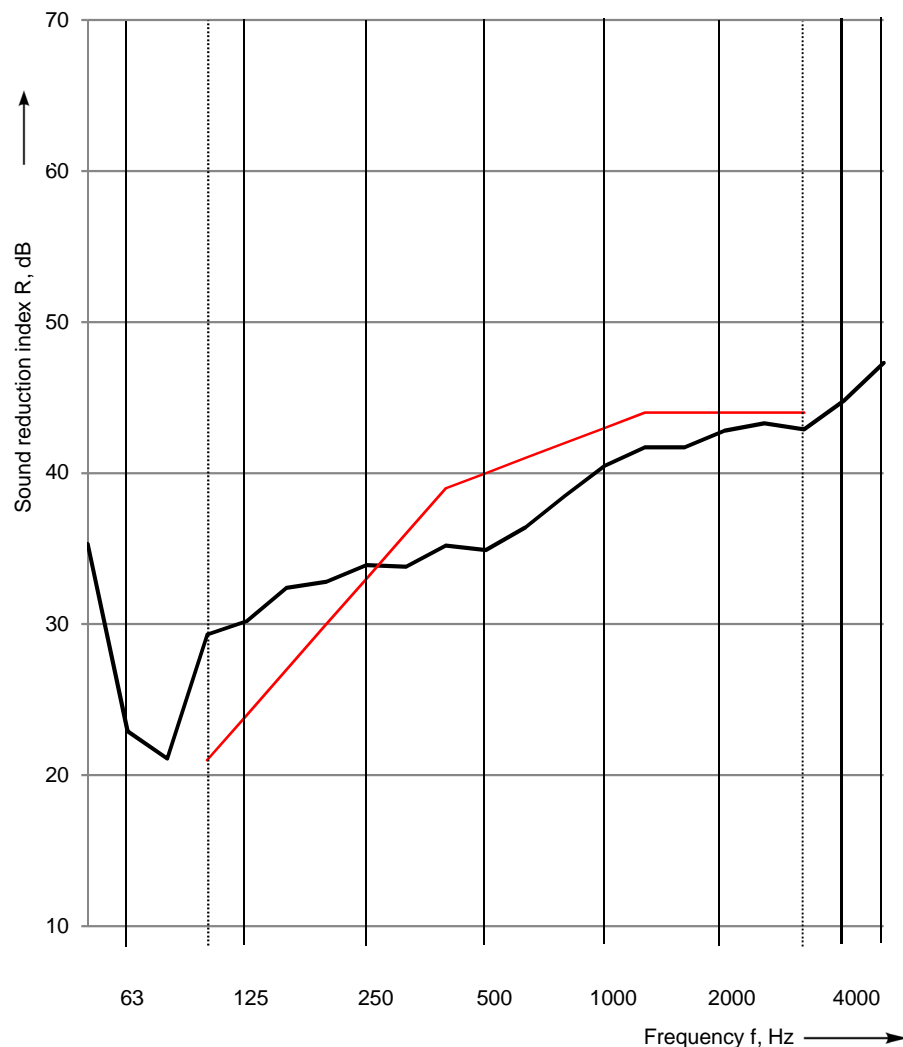
Test sample details: 54mm S3K pair of doors with Therm-A-Line between core and perimeter. 945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to bottom of doors. Both doors glazed with 7mm Pyrobelite. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.

Test Date: 05/12/2019
Test Number: 191205 004
Client: AFDSL & Sauerland Spanplatte
Area S of test element: 4.4m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 32.1 kg/m²

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.0°C
Test room static pressure: 1018.6 hpa
Test room relative humidity: 38%

— Sound reduction index (R) dB
— Curve of reference values

Frequency f Hz	R 1/3 Octave dB
50	35.3 *
63	22.9
80	21.1
100	29.3
125	30.2
160	32.4
200	32.8
250	33.9
315	33.8
400	35.2
500	34.9
630	36.4
800	38.5
1000	40.5
1250	41.7
1600	41.7
2000	42.8
2500	43.3
3150	42.9
4000	44.8
5000	47.3



* Correction applied for flanking

Rating according to ISO 717-1	$C_{50-3150} =$	-1 dB;	$C_{50-5000} =$	0 dB;	$C_{100-5000} =$	0 dB;
$R_w (C; C_{tr}) =$	40	(-1; -3) dB	$C_{tr, 50-3150} =$	-4 dB;	$C_{tr, 50-5000} =$	-4 dB;
					$C_{tr, 100-5000} =$	-3 dB;

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details:

57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with with 12mm Pyrobelite.
Perimeter and threshold gaps fully-caulked.

Test Date: 05/12/2019

Test Number: 191205 005

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:

Lorient Testing & Technical Services

Test room temperature:

19.2°C

Test room static pressure

1005.0 hpa

Test room relative humidity:

55%

Area S of test element:

4.4m²

Source room volume:

68.40m³

Receiving room volume:

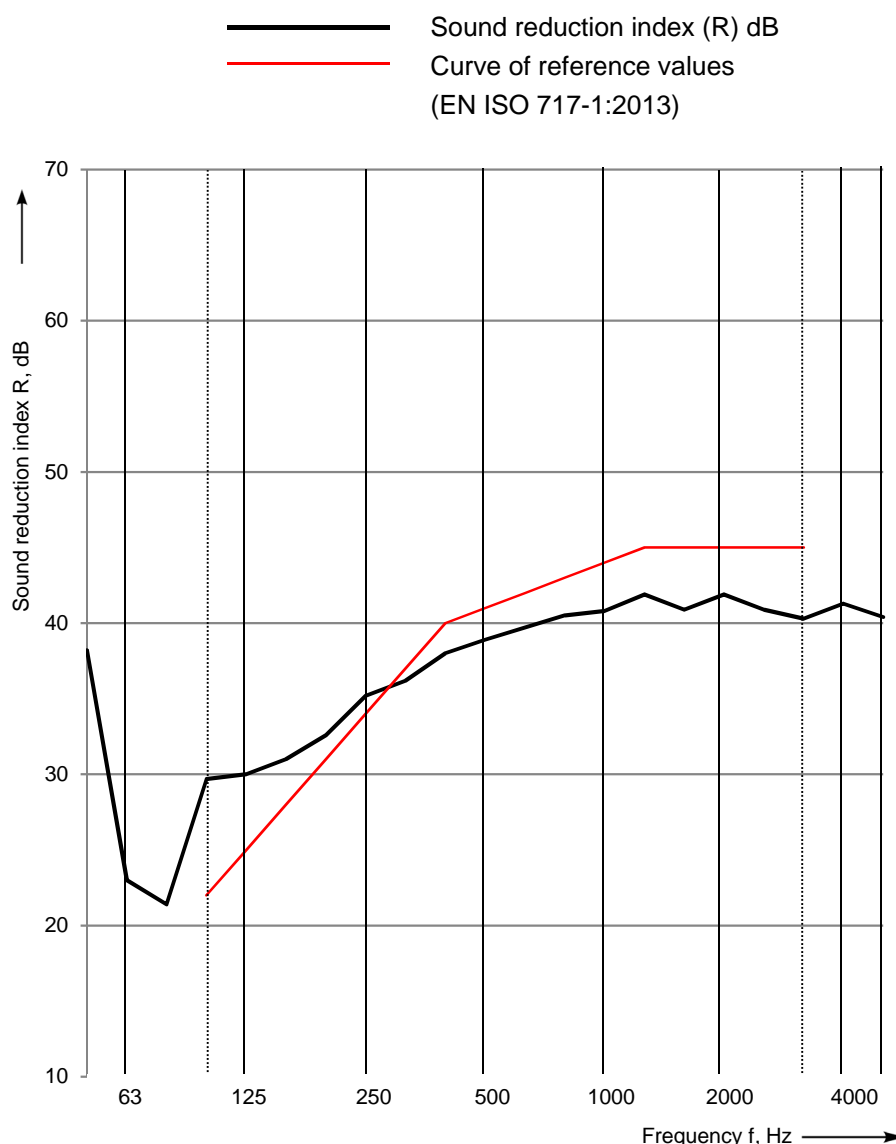
50.00m³

Sample mass per unit area:

36.29 kg/m²

Frequency f Hz	R 1/3 Octave dB
50	38.2 *
63	23
80	21.4
100	29.7
125	30
160	31
200	32.6
250	35.2
315	36.2
400	38
500	38.9
630	39.7
800	40.5
1000	40.8
1250	41.9
1600	40.9
2000	41.9
2500	40.9
3150	40.3
4000	41.3
5000	40.4

* Correction applied for flanking



Rating according to ISO 717-1

$R_w (C; C_{tr}) = 41 \quad (-1; -2) \text{ dB}$

$C_{50-3150} =$

-1 dB; $C_{50-5000}$

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

$C_{tr,50-3150} =$

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

-5 dB; $C_{tr,100-5000} = -3 \text{ dB};$

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

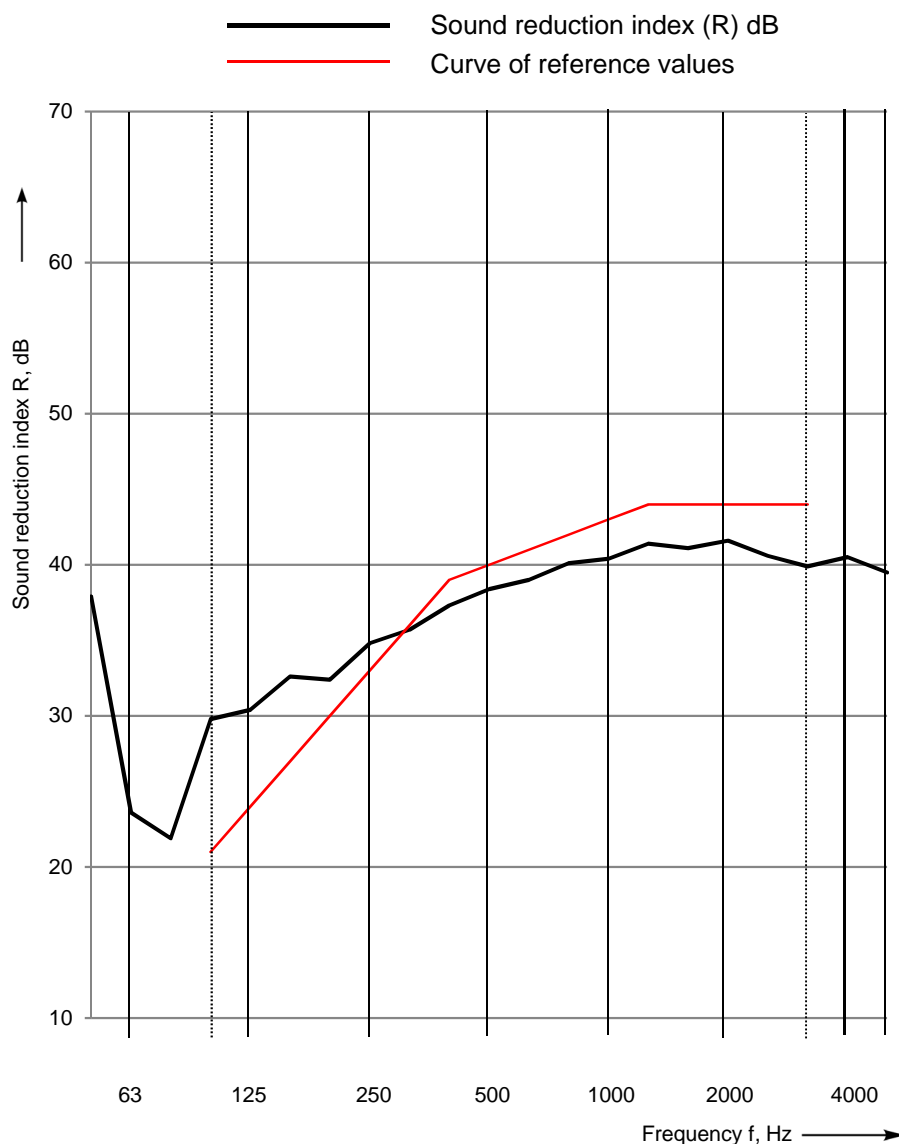
Test sample details: 57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with with 12mm Pyrobelite. LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.

Test Date: 06/12/2019
Test Number: 191206 001
Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 20.5°C
Test room static pressure: 1004.1 hpa
Test room relative humidity: 50%

Area S of test element: 4.4m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 36.29 kg/m²

Frequency f Hz	R 1/3 Octave dB
50	37.9 *
63	23.6
80	21.9
100	29.8
125	30.4
160	32.6
200	32.4
250	34.8
315	35.7
400	37.3
500	38.4
630	39
800	40.1
1000	40.4
1250	41.4
1600	41.1
2000	41.6
2500	40.6
3150	39.9
4000	40.5
5000	39.5



* Correction applied for flanking

Rating according to ISO 717-1	$C_{50-3150} =$	-1 dB;	$C_{50-5000} =$	0 dB;	$C_{100-5000} =$	0 dB;
$R_w (C; C_{tr}) =$	40	(0; -2) dB	$C_{tr,50-3150} =$	-3 dB;	$C_{tr,50-5000} =$	-4 dB;
					$C_{tr,100-5000} =$	-2 dB;

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details:

57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with 23mm Pyrostop.
Perimeter and threshold gaps fully-caulked.

Test Date: 06/12/2019

Test Number: 191206 002

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:

Lorient Testing & Technical Services

Test room temperature:

19.3°C

Test room static pressure

1005.6 hpa

Test room relative humidity:

49%

Area S of test element:

4.4m²

Source room volume:

68.40m³

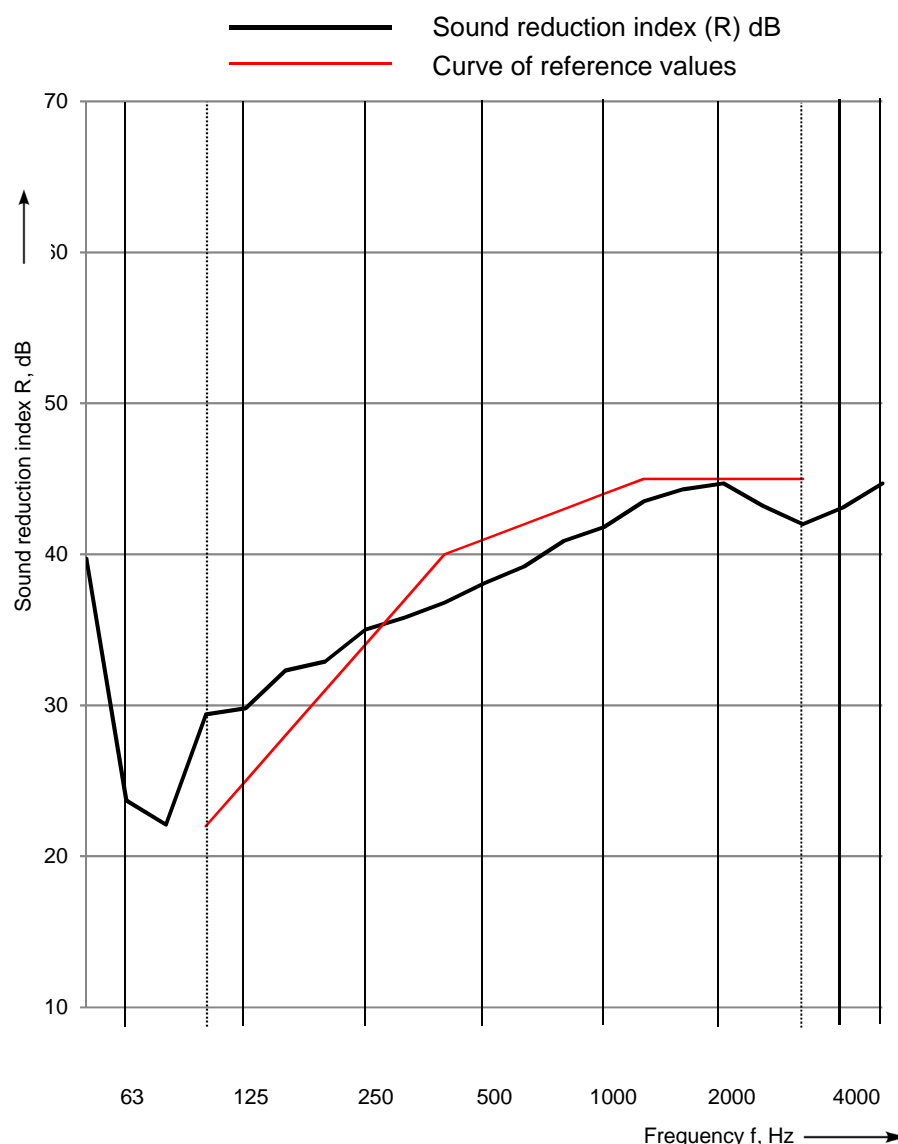
Receiving room volume:

50.00m³

Sample mass per unit area:

38.85kg/m²

Frequency f Hz	R 1/3 Octave dB
50	39.7 *
63	23.7
80	22.1
100	29.4
125	29.8
160	32.3
200	32.9
250	35
315	35.8
400	36.8
500	38.1
630	39.2
800	40.9
1000	41.8
1250	43.5
1600	44.3
2000	44.7
2500	43.2
3150	42
4000	43.1
5000	44.7



* Correction applied for flanking

Rating according to ISO 717-1	$C_{50-3150} =$	0 dB;	$C_{50-5000} =$	0 dB;	$C_{100-5000} =$	0 dB;
$R_w (C; C_{tr}) =$	41	(0; -2) dB	$C_{tr, 50-3150} =$	-4 dB;	$C_{tr, 50-5000} =$	-4 dB;
					$C_{tr, 100-5000} =$	-2 dB;

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

Sound reduction index, R, in accordance with BS EN ISO 10140-2: 2010

Test sample details: 57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with with 23mm Pyrostop.
LAS1212 to jamb and head stops. LP1504DS to jambs and head (interrupted at hinges). Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals). LAS8001si to bottom of doors. LAS4014si threshold plate.

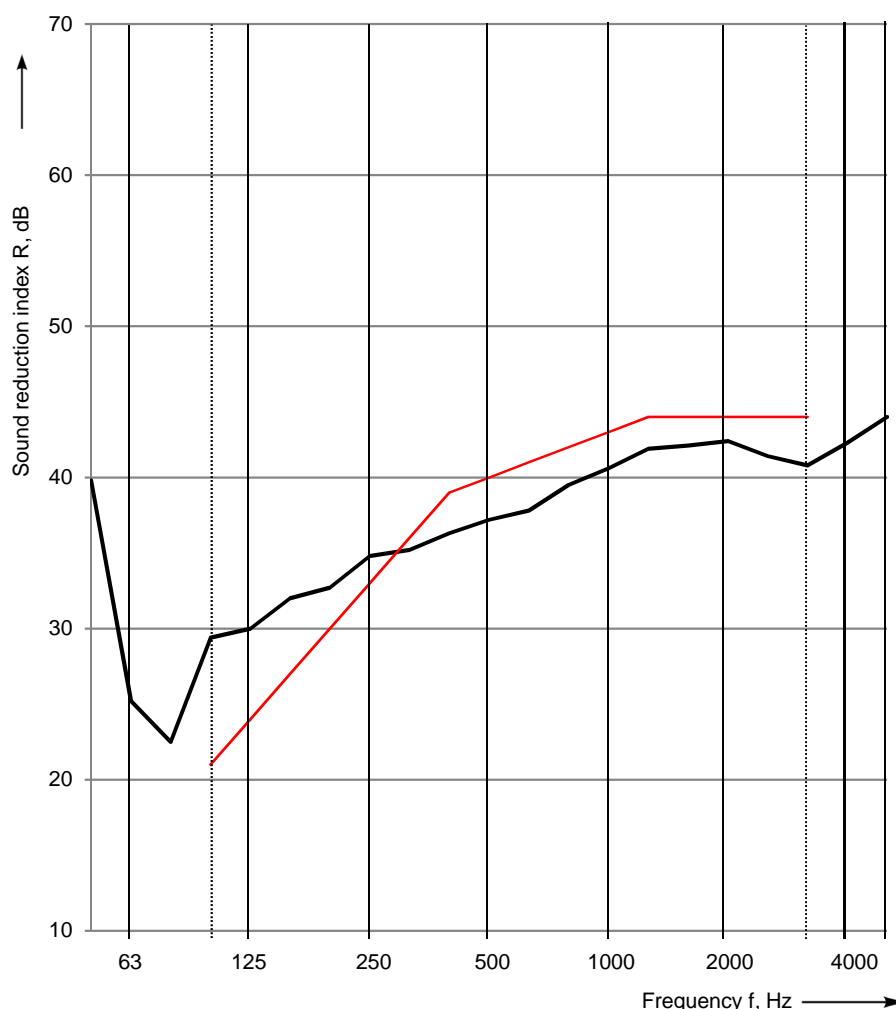
Test Date: 06/12/2019
Test Number: 191206 003
Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.2°C
Test room static pressure: 1005.6 hpa
Test room relative humidity: 49%

Area S of test element: 4.4m²
Source room volume: 68.40m³
Receiving room volume: 50.00m³
Sample mass per unit area: 38.85kg/m²

— Sound reduction index (R) dB
— Curve of reference values (EN ISO 717-1:2013)

Frequency f Hz	R 1/3 Octave dB
50	39.8 *
63	25.2 *
80	22.5
100	29.4
125	30
160	32
200	32.7
250	34.8
315	35.2
400	36.3
500	37.2
630	37.8
800	39.5
1000	40.6
1250	41.9
1600	42.1
2000	42.4
2500	41.4
3150	40.8
4000	42.3
5000	44



* Correction applied for flanking

Rating according to ISO 717-1
 $R_w (C; C_{tr}) = 40 \quad (0; -2) \text{ dB}$
 Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method

$C_{50-3150} = -1 \text{ dB}; C_{50-5000} = 0 \text{ dB}; C_{100-5000} = 0 \text{ dB};$
 $C_{tr,50-3150} = -3 \text{ dB}; C_{tr,50-5000} = -3 \text{ dB}; C_{tr,100-5000} = -2 \text{ dB};$

4.0 Photos of test samples

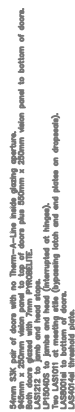











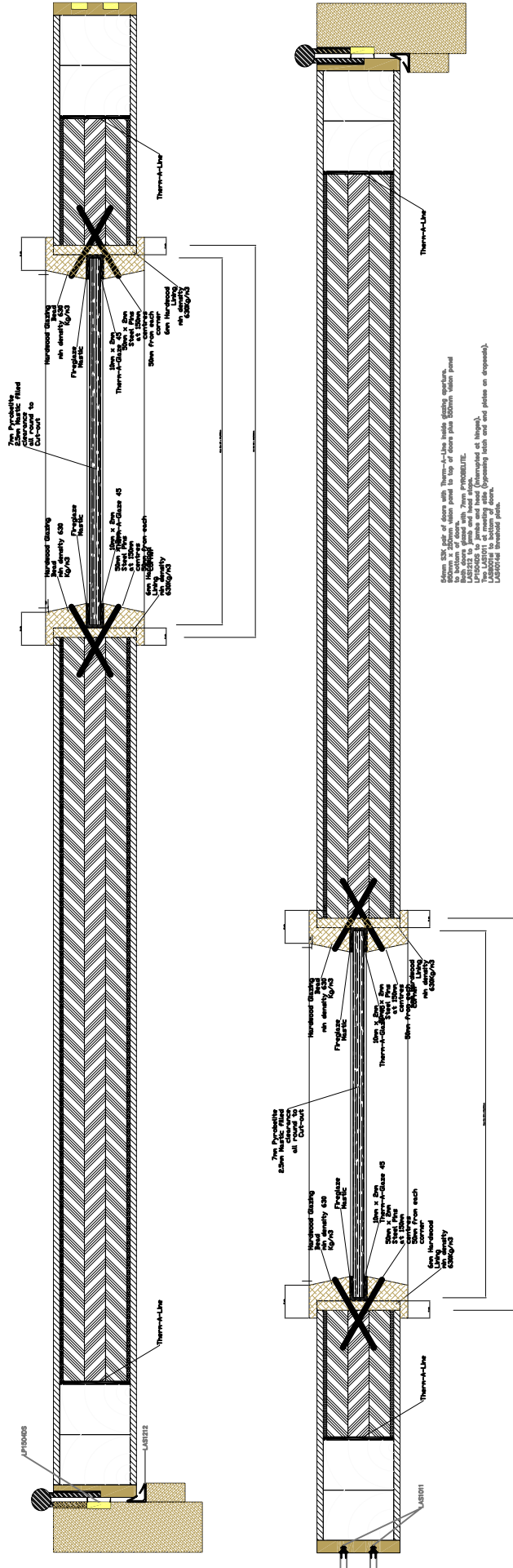


29 of 33

ORIENT

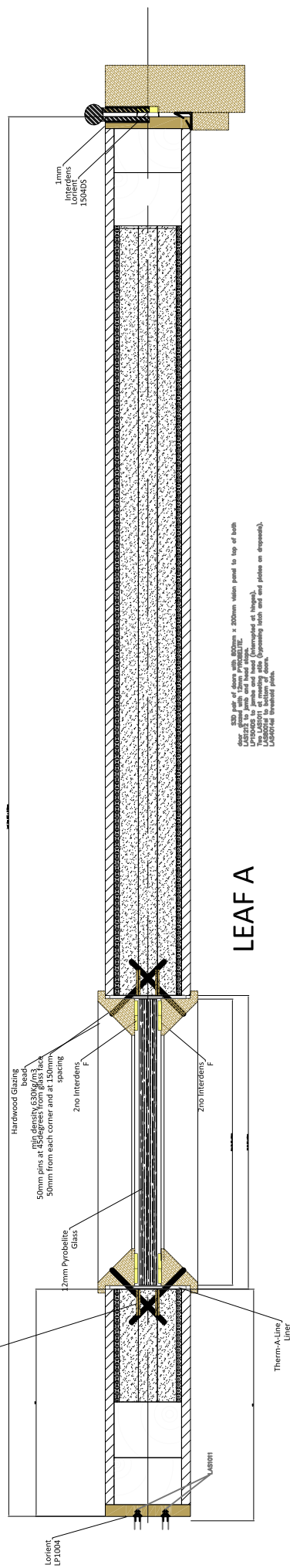
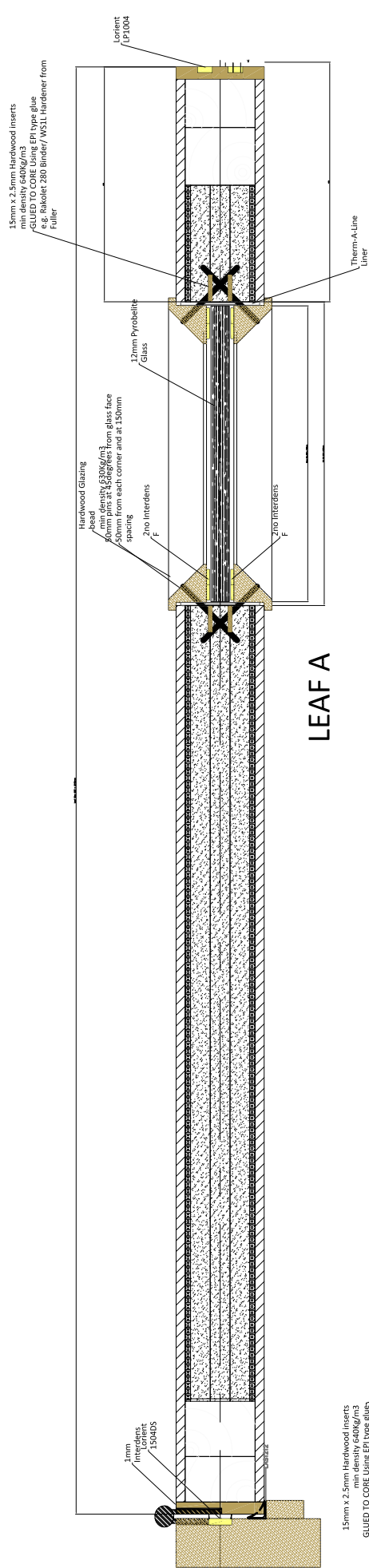
Acoustic, smoke and fire containment systems

TITLE:		SAUER/AFDSL04-061219	
DESCRIPTION:		TEST No 191205 002	
DATE:	05-02-20		
SCALE:	00 (A3)		
DRAWN BY:	AFDSL		
DRAWING No: 1			
	THIRD ANGLE PROJECTION	REV	0
		A4	



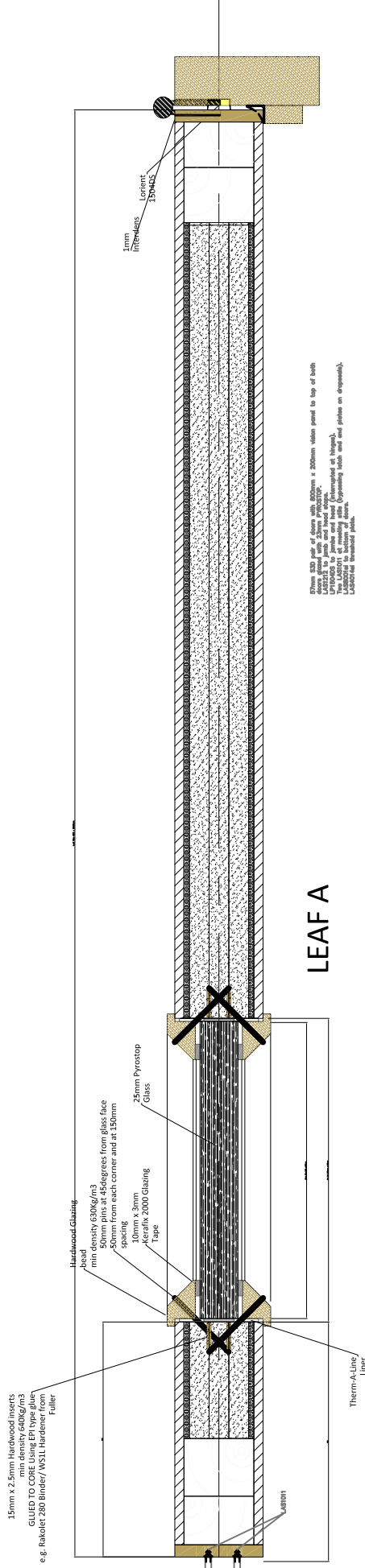
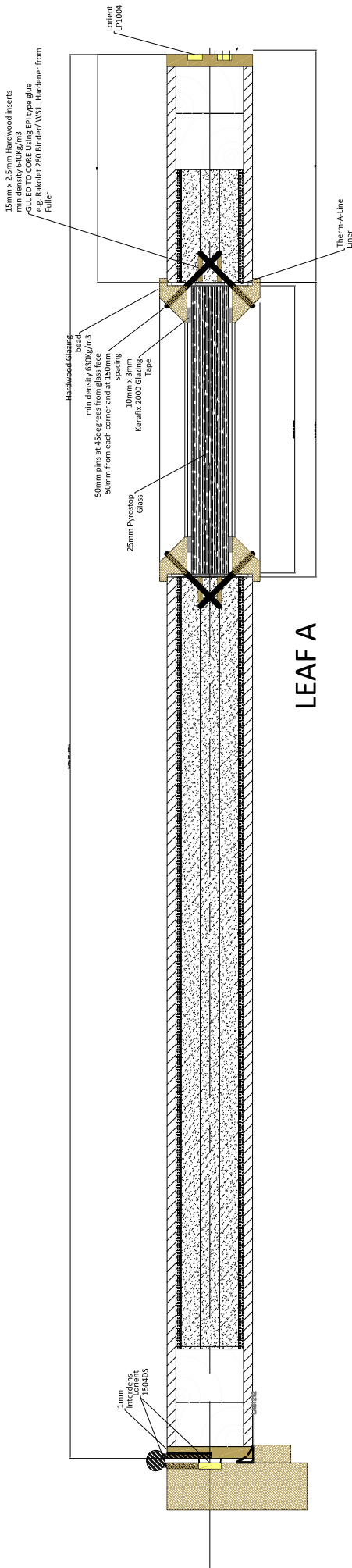
54mm S3K pair of doors with Therm-A-Line between core and perimeter.
 950mm x 250mm vision panel to top of doors plus 550mm vision panel
 to bottom of doors.
 Both doors glazed with 7mm PYROBELITE.
 LAS1212 to jamb and head stops.
 LP1504DS to jamba and head (interrupted at hinges).
 Two LAS1011 at meeting stile (bypassing latch and end plates on dropsails).
 LAS8001si to bottom of doors.
 LAS4014si threshold plate.

0	INITIAL ISSUE	REVISION
1	DESCRIPTION	DATE
Acoustic, smoke and fire containment systems LORIENT SYSTEMS LTD 100, NEWTON ROAD, NEWTON, LEICESTERSHIRE, LE19 1AA TEL: 01530 810000 FAX: 01530 810001 EMAIL: SALES@LORIENT.CO.UK LORIENT SYSTEMS LTD IS A COMPANY OF LORIENT GROUP LTD LORIENT GROUP LTD IS A COMPANY OF LORIENT GROUP LTD		
TITLE: SAUER/AFDSL04-061219		
DESCRIPTION: TEST No 191205 004		
DATE: 05-02-20		
SCALE: 001 (A3)		
DRAWN BY: AFDSL		
DRAWING No: 1		
REV: 0 A4		



57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with 12mm PYROBELITE.
 LAS1212 to jamb and head stops.
 LP1504DS to jambs and head (interrupted at hinges).
 Two LAS1011 at meeting stile (bypassing latch and end plates on dropseds).
 LAS8001si to bottom of doors.
 LAS4014si threshold plate.

	0	INITIAL ISSUE		04-06-00	
	REV	DESCRIPTION		DATE	
					
<p>ALL DOCUMENTS ARE THE PROPERTY OF LORIENT. NO REPRODUCTION OR REUSE OF ANY INFORMATION CONTAINED HEREIN IS ALLOWED WITHOUT THE AUTHORIZATION BY ORAL.</p> <p>UNLESS OF THIS EXEMPT, ANY REPRODUCTION OR REUSE OF ANY INFORMATION CONTAINED HEREIN IS PROHIBITED.</p> <p>POUR PRODUITS LTD</p>					
<p>THE:</p> <p>SAUER/AFDSL04-</p> <p>061219</p>					
<p>DESCRIPTION:</p>					
			TEST N°: 19/12/06 001		
			DATE: 05-02-20		
			SCALE: 000 (A3)		
			DRAWN BY: AFDSL		
			FORMING N°: 1		
		REVISION	REV	0	A4



57mm S3D pair of doors with 800mm x 200mm vision panel to top of both doors glazed with 23mm PYROSTOP.
LAS1212 to jamb and head stops.
LP1504DS to jambs and head (interrupted at hinges).
Two LAS1011 at meeting stile (bypassing latch and end plates on dropseals).
LAS8001si to bottom of doors.
LAS4014si threshold plate.

INITIAL ISSUE	REVISION	DATE
0	1	05-02-20
1	2	05-02-20
2	3	05-02-20
3	4	05-02-20
4	5	05-02-20
5	6	05-02-20
6	7	05-02-20
7	8	05-02-20
8	9	05-02-20
9	10	05-02-20
10	11	05-02-20
11	12	05-02-20
12	13	05-02-20
13	14	05-02-20
14	15	05-02-20
15	16	05-02-20
16	17	05-02-20
17	18	05-02-20
18	19	05-02-20
19	20	05-02-20
20	21	05-02-20
21	22	05-02-20
22	23	05-02-20
23	24	05-02-20
24	25	05-02-20
25	26	05-02-20
26	27	05-02-20
27	28	05-02-20
28	29	05-02-20
29	30	05-02-20
30	31	05-02-20
31	32	05-02-20
32	33	05-02-20
33	34	05-02-20
34	35	05-02-20
35	36	05-02-20
36	37	05-02-20
37	38	05-02-20
38	39	05-02-20
39	40	05-02-20
40	41	05-02-20
41	42	05-02-20
42	43	05-02-20
43	44	05-02-20
44	45	05-02-20
45	46	05-02-20
46	47	05-02-20
47	48	05-02-20
48	49	05-02-20
49	50	05-02-20
50	51	05-02-20
51	52	05-02-20
52	53	05-02-20
53	54	05-02-20
54	55	05-02-20
55	56	05-02-20
56	57	05-02-20
57	58	05-02-20
58	59	05-02-20
59	60	05-02-20
60	61	05-02-20
61	62	05-02-20
62	63	05-02-20
63	64	05-02-20
64	65	05-02-20
65	66	05-02-20
66	67	05-02-20
67	68	05-02-20
68	69	05-02-20
69	70	05-02-20
70	71	05-02-20
71	72	05-02-20
72	73	05-02-20
73	74	05-02-20
74	75	05-02-20
75	76	05-02-20
76	77	05-02-20
77	78	05-02-20
78	79	05-02-20
79	80	05-02-20
80	81	05-02-20
81	82	05-02-20
82	83	05-02-20
83	84	05-02-20
84	85	05-02-20
85	86	05-02-20
86	87	05-02-20
87	88	05-02-20
88	89	05-02-20
89	90	05-02-20
90	91	05-02-20
91	92	05-02-20
92	93	05-02-20
93	94	05-02-20
94	95	05-02-20
95	96	05-02-20
96	97	05-02-20
97	98	05-02-20
98	99	05-02-20
99	100	05-02-20
100	101	05-02-20
101	102	05-02-20
102	103	05-02-20
103	104	05-02-20
104	105	05-02-20
105	106	05-02-20
106	107	05-02-20
107	108	05-02-20
108	109	05-02-20
109	110	05-02-20
110	111	05-02-20
111	112	05-02-20
112	113	05-02-20
113	114	05-02-20
114	115	05-02-20
115	116	05-02-20
116	117	05-02-20
117	118	05-02-20
118	119	05-02-20
119	120	05-02-20
120	121	05-02-20
121	122	05-02-20
122	123	05-02-20
123	124	05-02-20
124	125	05-02-20
125	126	05-02-20
126	127	05-02-20
127	128	05-02-20
128	129	05-02-20
129	130	05-02-20
130	131	05-02-20
131	132	05-02-20
132	133	05-02-20
133	134	05-02-20
134	135	05-02-20
135	136	05-02-20
136	137	05-02-20
137	138	05-02-20
138	139	05-02-20
139	140	05-02-20
140	141	05-02-20
141	142	05-02-20
142	143	05-02-20
143	144	05-02-20
144	145	05-02-20
145	146	05-02-20
146	147	05-02-20
147	148	05-02-20
148	149	05-02-20
149	150	05-02-20
150	151	05-02-20
151	152	05-02-20
152	153	05-02-20
153	154	05-02-20
154	155	05-02-20
155	156	05-02-20
156	157	05-02-20
157	158	05-02-20
158	159	05-02-20
159	160	05-02-20
160	161	05-02-20
161	162	05-02-20
162	163	05-02-20
163	164	05-02-20
164	165	05-02-20
165	166	05-02-20
166	167	05-02-20
167	168	05-02-20
168	169	05-02-20
169	170	05-02-20
170	171	05-02-20
171	172	05-02-20
172	173	05-02-20
173	174	05-02-20
174	175	05-02-20
175	176	05-02-20
176	177	05-02-20
177	178	05-02-20
178	179	05-02-20
179	180	05-02-20
180	181	05-02-20
181	182	05-02-20
182	183	05-02-20
183	184	05-02-20
184	185	05-02-20
185	186	05-02-20
186	187	05-02-20
187	188	05-02-20
188	189	05-02-20
189	190	05-02-20
190	191	05-02-20
191	192	05-02-20
192	193	05-02-20
193	194	05-02-20
194	195	05-02-20
195	196	05-02-20
196	197	05-02-20
197	198	05-02-20
198	199	05-02-20
199	200	05-02-20
200	201	05-02-20
201	202	05-02-20
202	203	05-02-20
203	204	05-02-20
204	205	05-02-20
205	206	05-02-20
206	207	05-02-20
207	208	05-02-20
208	209	05-02-20
209	210	05-02-20
210	211	05-02-20
211	212	05-02-20
212	213	05-02-20
213	214	05-02-20
214	215	05-02-20
215	216	05-02-20
216	217	05-02-20
217	218	05-02-20
218	219	05-02-20
219	220	05-02-20
220	221	05-02-20
221	222	05-02-20
222	223	05-02-20
223	224	05-02-20
224	225	05-02-20
225	226	05-02-20
226	227	05-02-20
227	228	05-02-20
228	229	05-02-20
229	230	05-02-20
230	231	05-02-20
231	232	05-02-20
232	233	05-02-20
233	234	05-02-20
234	235	05-02-20
235	236	05-02-20
236	237	05-02-20
237	238	05-02-20
238	239	05-02-20
239	240	05-02-20
240	241	05-02-20
241	242	05-02-20
242	243	05-02-20
243	244	05-02-20
244	245	05-02-20
245	246	05-02-20
246	247	05-02-20
247	248	05-02-20
248	249	05-02-20
249	250	05-02-20
250	251	05-02-20
251	252	05-02-20
252	253	05-02-20
253	254	05-02-20
254	255	05-02-20
255	256	05-02-20
256	257	05-02-20
257	258	05-02-20
258	259	05-02-20
259	260	05-02-20
260	261	05-02-20
261	262	05-02-20
262	263	05-02-20
263	264	05-02-20
264	265	05-02-20
265	266	05-02-20
266	267	05-02-20
267	268	05-02-20
268	269	05-02-20
269	270	05-02-20
270	271	05-02-20
271	272	05-02-20
272	273	05-02-20
273	274	05-02-20
274	275	05-02-20
275	276	05-02-20
276	277	05-02-20
277	278	05-02-20
278	279	05-02-20
279	280	05-02-20
280	281	05-02-20
281	282	05-02-20
282	283	05-02-20
283	284	05-02-20
284	285	05-02-20
285	286	05-02-20
286	287	05-02-20
287	288	05-02-20
288	289	05-02-20
289	290	05-02-20
290	291	05-02-20
291	292	05-02-20
292	293	05-02-20
293	294	05-02-20
294	295	05-02-20
295	296	05-02-20
296	297	05-02-20
297	298	05-02-20
298	299	05-02-20
299	300	05-02-20
300	301	05-02-20
301	302	05-02-20
302	303	05-02-20
303	304	05-02-20
304	305	05-02-20
305	306	05-02-20
306	307	05-02-20
307	308	05-02-20
308	309	05-02-20
309	310	05-02-20
310	311	05-02-20
311	312	05-02-20
312	313	05-02-20
313	314	05-02-20
314	315	05-02-20
315	316	05-02-20
316	317	05-02-20
317	318	05-02-20
318	319	05-02-20
319	320	05-02-20
320	321	05-02-20
321	322	05-02-20
322	323	05-02-20
323	324	05-02-20
324	325	05-02-20
325	326	05-02-20
326	327	05-02-20
327	328	05-02-20
328	329	05-02-20
329	330	05-02-20
330	331	05-02-20
331	332	05-02-20
332	333	05-02-20
333	334	05-02-20
334	335	05-02-20
335	336	05-02-20
336	337	05-02-20
337	338	05-02-20
338	339	05-02-20
339	340	05-02-20
340	341	05-02-20
341	342	05-02-20
342	343	05-02-20
343	344	05-02-20
344	345	05-02-20
345	346	05-02-20
346	347	05-02-20
347	348	05-02-20
348	349	05-02-20
349	350	05-02-20
350	351	05-02-20
351	352	05-02-20
352	353	05-02-20
353	354	05-02-20
354	355	05-02-20
355	356	05-02-20
356	357	05-02-20
357	358	05-02-20
358	359	05-02-20
359	360	05-02-20
360	361	05-02-20
361	362	05-02-20
362	363	05-02-20
363	364	05-02-20
364	365	05-02-20
365	366	05-02-20
366	367	05-02-20
367	368	05-02-20
368	369	05-02-20
369	370	05-02-20
370	371	05-02-20
371	372	05-02-20
372	373	05-02-20
373	374	05-02-20
374	375	05-02-20
375	376	05-02-20
376	377	05-02-20
377	378	05-02-20
378	379	05-02-20
379	380	05-02-20
380	381	05-02-20



Lorient Polyproducts Ltd

Discovery House, Unit 3
Heathfield Units
Battle Road
Heathfield Industrial Estate
Newton Abbot
TQ12 6RY
United Kingdom

T: +44 (0)1626 834252

F: +44 (0)1626 833166

E: testing@lorientuk.com

For further information
about Lorient products
please visit:
www.lorientgroup.com



@LorientUK



/company/lorient



@lorientuk



/LorientPolyproducts