Document No: QR-Acoustic-10
Issue No: 01
Issue Date: 21/01/2019

LORIENT

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 AMIOA, 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.

Contents

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_wdB

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 : 68.40m^3.
- Receiving room volume : 50.00m^3.

Testing & Technical Services
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2.6 Personnel present

Dunstan Ferris AMIOA	Lorient Polyproducts Ltd
Chris Gough	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.	Rw 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.	Rw 42dB

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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

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191206 003	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.	Rw 40dB

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

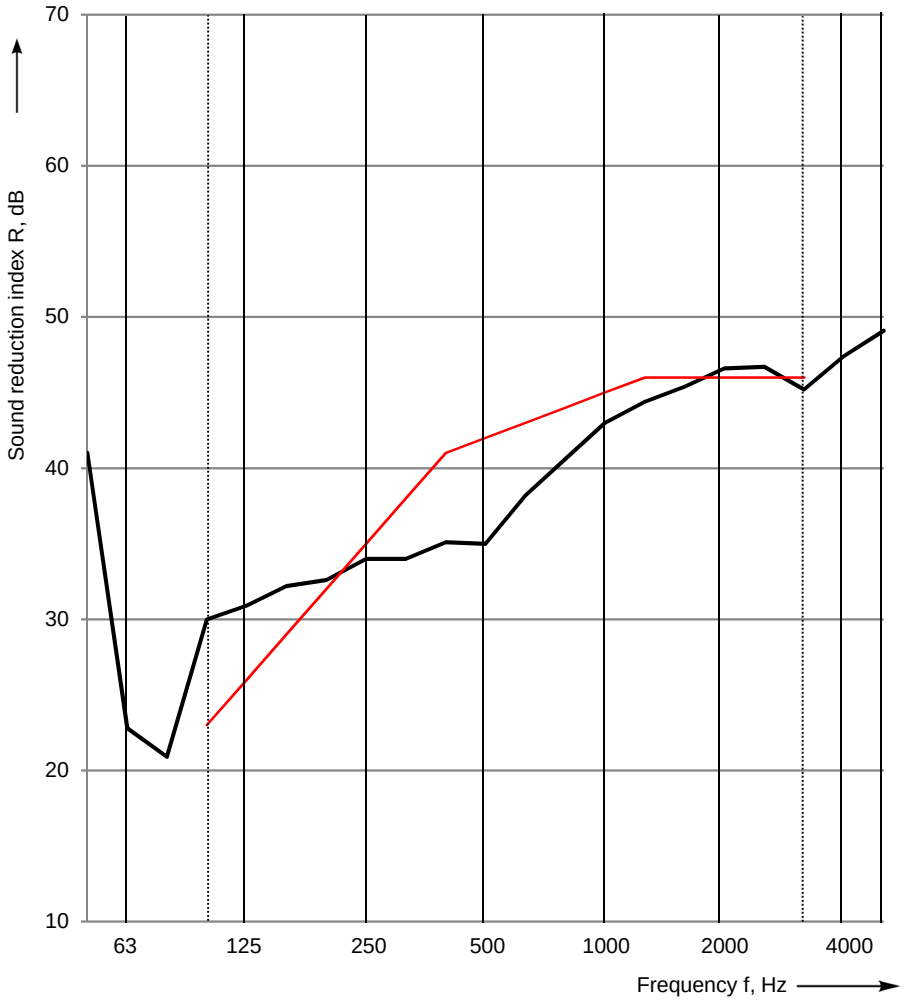
Test Number: 191204 001

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:	Lorient Testing & Technical Services	**Area S of test element:**	4.4m²
Test room temperature:	19.6ºC	**Source room volume:**	68.40m³
Test room static pressure	1018.1 hpa	**Receiving room volume:**	50.00m³
Test room relative humidity:	36%	**Sample mass per unit area:**	34.9 kg/m²

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			$C_{50\text{-}3150}$ =	-2 dB;	$C_{50\text{-}5000}$	-1 dB;	$C_{100\text{-}5000}$ = -1 dB;
$R_w (C;C_{tr})$ =	42	(-1; -4) dB	$C_{tr,50\text{-}3150}$ =	-6 dB;	$C_{tr,50\text{-}5000}$	-6 dB;	$C_{tr,100\text{-}5000}$ = -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

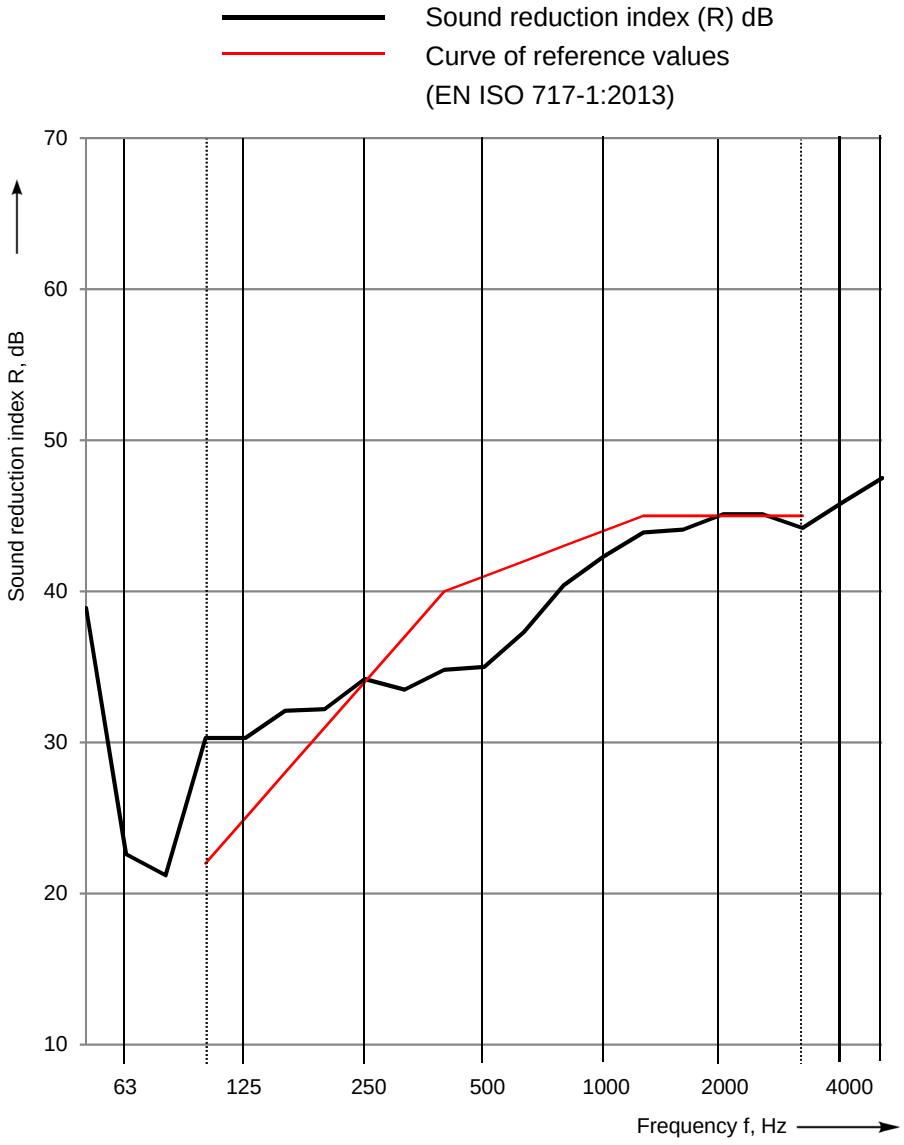
Test Number: 191204 003

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:	Lorient Testing & Technical Services	**Area S of test element:**	4.4m²
Test room temperature:	19.5ºC	**Source room volume:**	68.40m³
Test room static pressure	1017.9 hpa	**Receiving room volume:**	50.00m³
Test room relative humidity:	38%	**Sample mass per unit area:**	34.9 kg/m²

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		$C_{50\text{-}3150}$ =	-1 dB;	$C_{50\text{-}5000}$	0 dB;	$C_{100\text{-}5000}$ =	0 dB;
R_w (C;C_{tr}) =	41 (-1; -3) dB	$C_{tr,50\text{-}3150}$ =	-5 dB;	$C_{tr,50\text{-}5000}$	-5 dB;	$C_{tr,100\text{-}5000}$ =	-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. Perimeter and threshold gaps fully-caulked.

Test Date: 04/12/2019

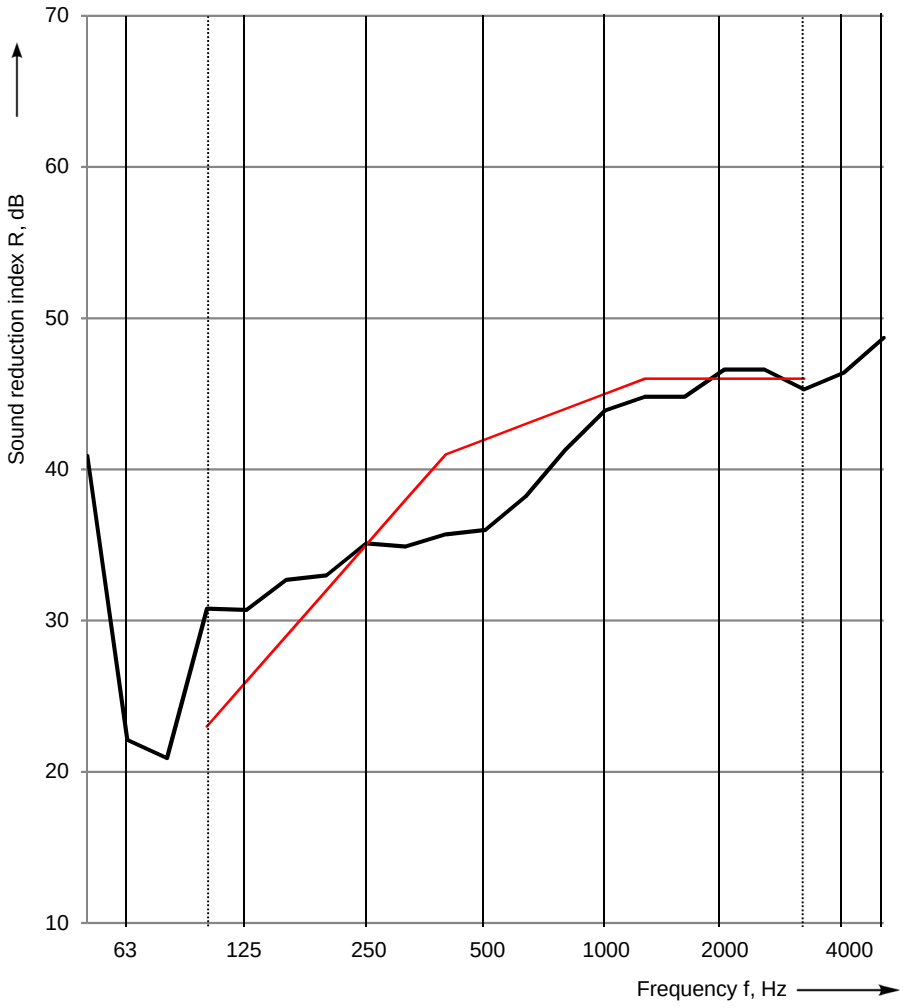
Test Number: 191204 004

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:	Lorient Testing & Technical Services	**Area S of test element:**	4.4m²
Test room temperature:	19.4ºC	**Source room volume:**	68.40m³
Test room static pressure	1017.7 hpa	**Receiving room volume:**	50.00m³
Test room relative humidity:	39%	**Sample mass per unit area:**	34.8 kg/m²

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			$C_{50\text{-}3150}$ =	-1 dB;	$C_{50\text{-}5000}$	0 dB;	$C_{100\text{-}5000}$ = 0 dB;
$R_w (C;C_{tr})$ =	42	(-1; -3) dB	$C_{tr,50\text{-}3150}$ =	-6 dB;	$C_{tr,50\text{-}5000}$	-6 dB;	$C_{tr,100\text{-}5000}$ = -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

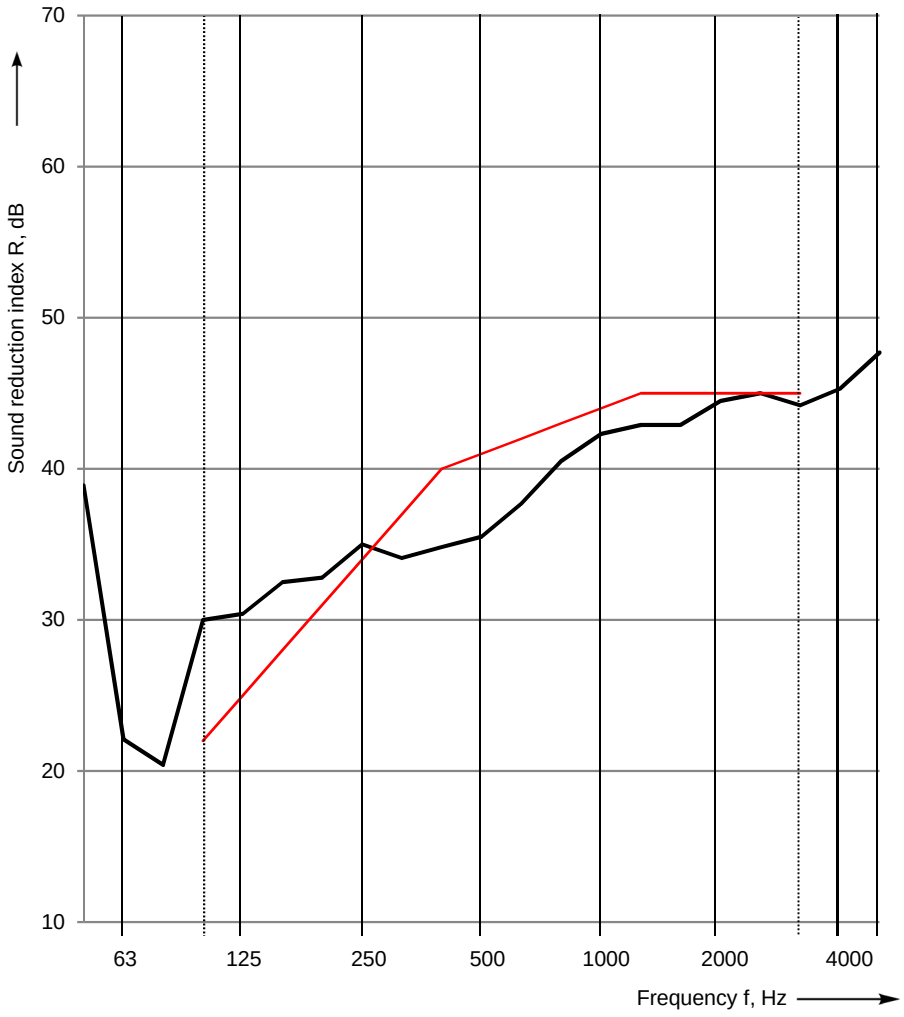
Test Number: 191204 005

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:	Lorient Testing & Technical Services	**Area S of test element:**	4.4m²
Test room temperature:	19.1ºC	**Source room volume:**	68.40m³
Test room static pressure	1017.6 hpa	**Receiving room volume:**	50.00m³
Test room relative humidity:	39%	**Sample mass per unit area:**	34.8 kg/m²

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			$C_{50\text{-}3150}$ =	-1 dB;	$C_{50\text{-}5000}$	0 dB;	$C_{100\text{-}5000}$ = 0 dB;
$R_w (C;C_{tr})$ =	41	(-1; -3) dB	$C_{tr,50\text{-}3150}$ =	-5 dB;	$C_{tr,50\text{-}5000}$	-5 dB;	$C_{tr,100\text{-}5000}$ = -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 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

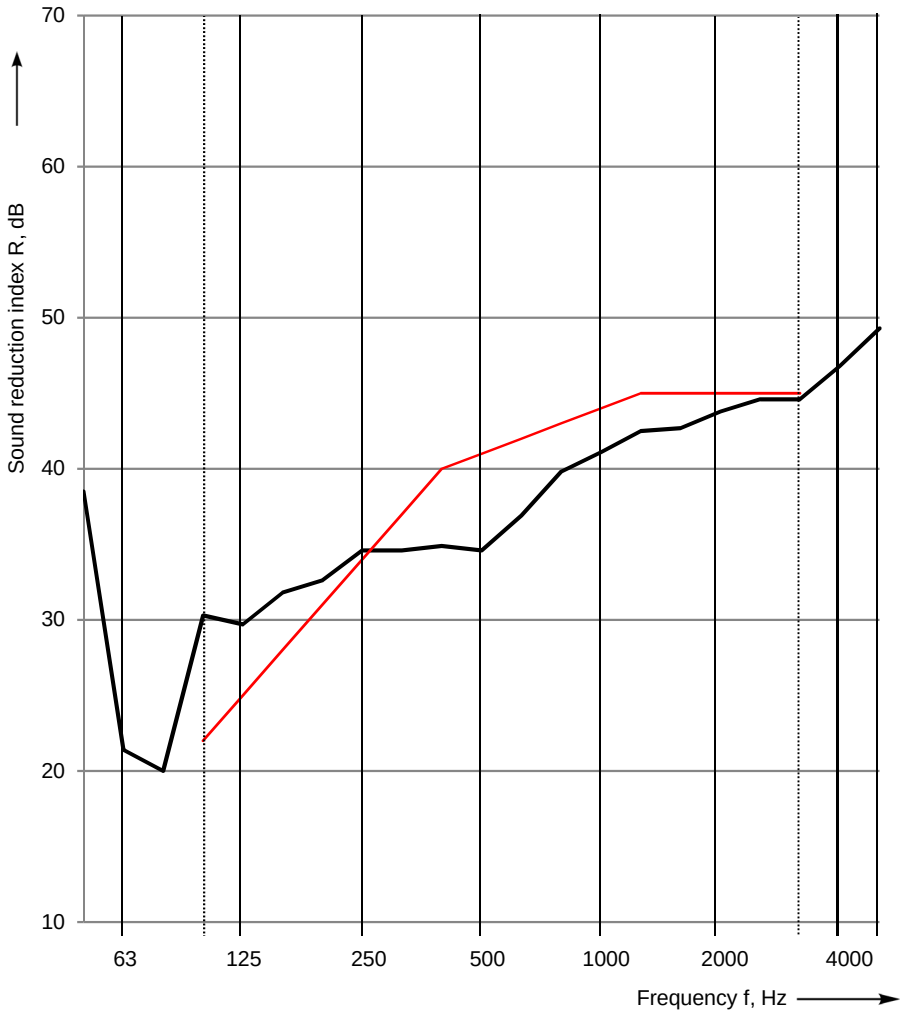
Test Number: 191205 001

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:	Lorient Testing & Technical Services	**Area S of test element:**	4.4m²
Test room temperature:	20.1ºC	**Source room volume:**	68.40m³
Test room static pressure	1020.8 hpa	**Receiving room volume:**	50.00m³
Test room relative humidity:	33%	**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 planel 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: 19.4ºC
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
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1250	42
1600	42.2
2000	43.1
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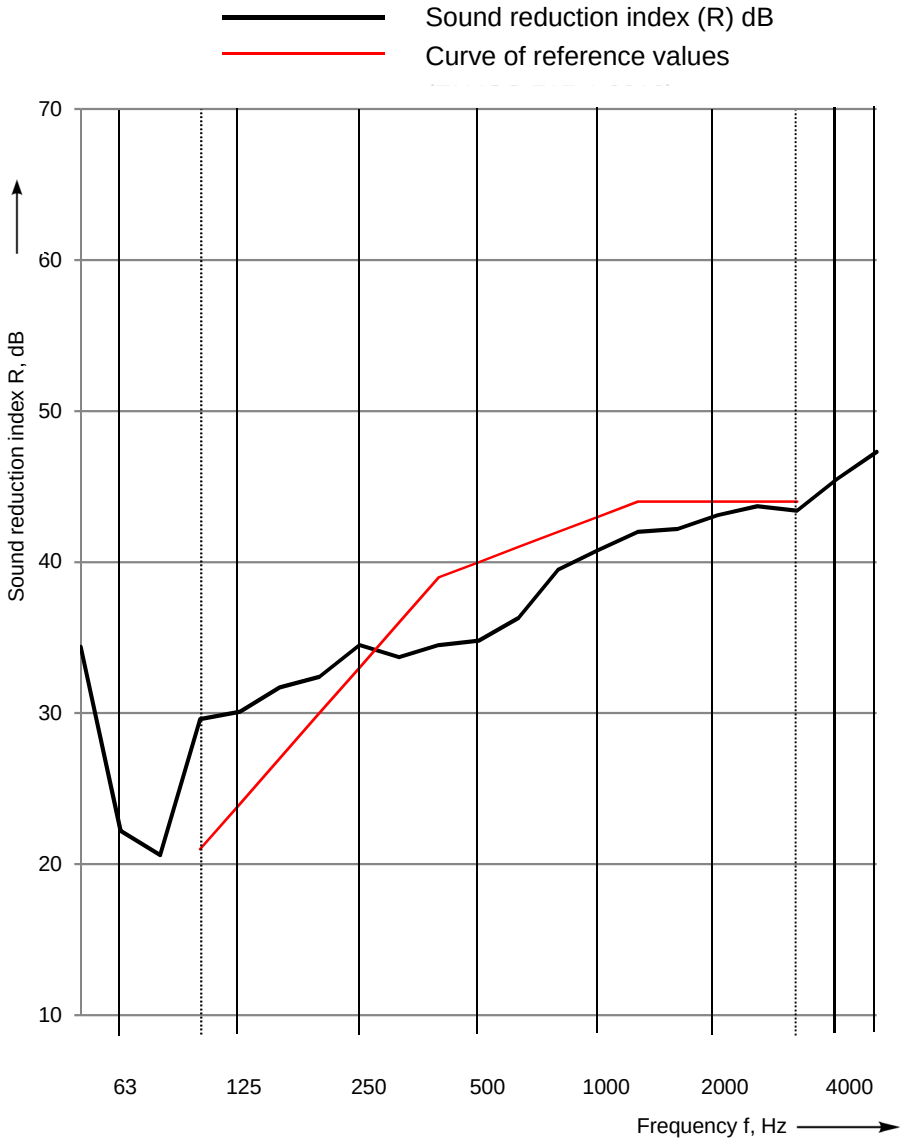
3150	43.4
4000	45.5
5000	47.3



* Correction applied for flanking

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

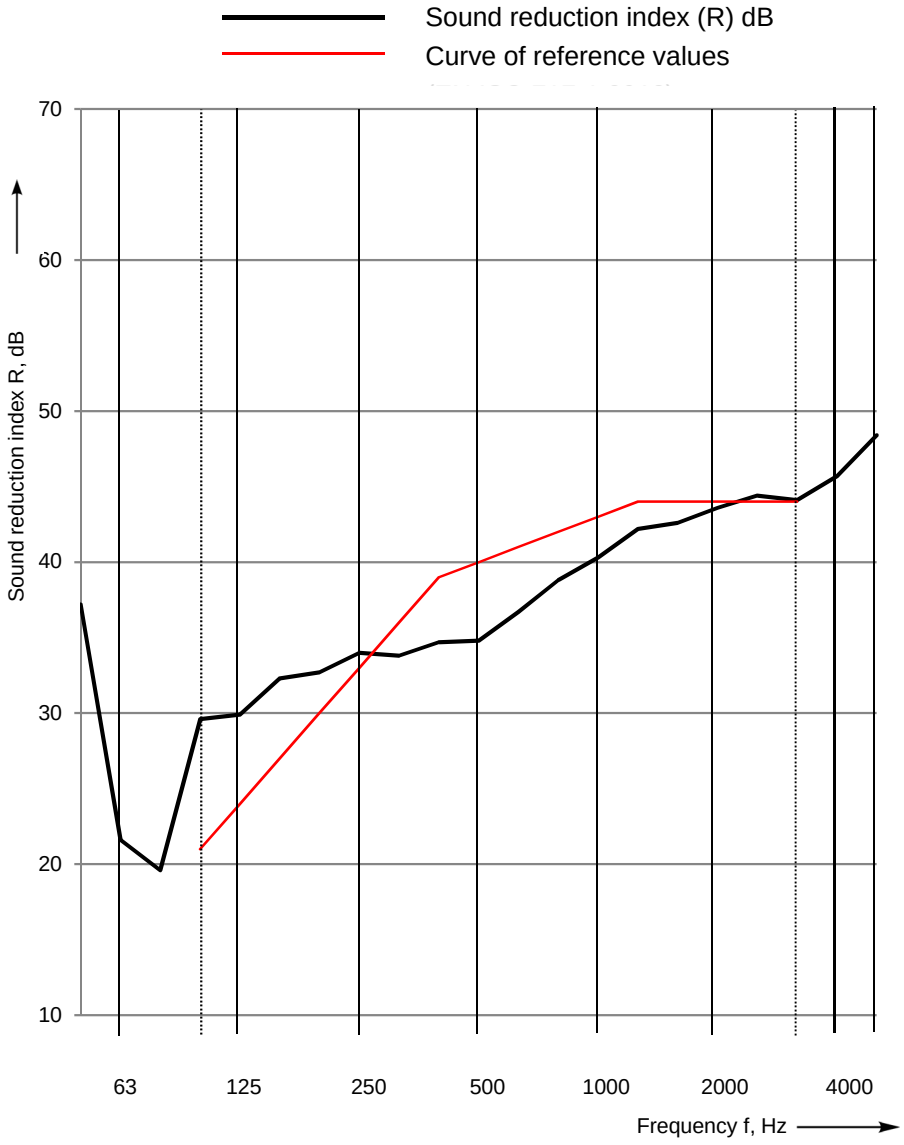
Test Date: 05/12/2019

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:	18.7ºC	**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			$C_{50\text{-}3150}$ =	-1 dB;	$C_{50\text{-}5000}$	0 dB;	$C_{100\text{-}5000}$ = 0 dB;
R_w (C;C_{tr}) =	40	(-1; -3) dB	$C_{tr,50\text{-}3150}$ =	-5 dB;	$C_{tr,50\text{-}5000}$	-5 dB;	$C_{tr,100\text{-}5000}$ = -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

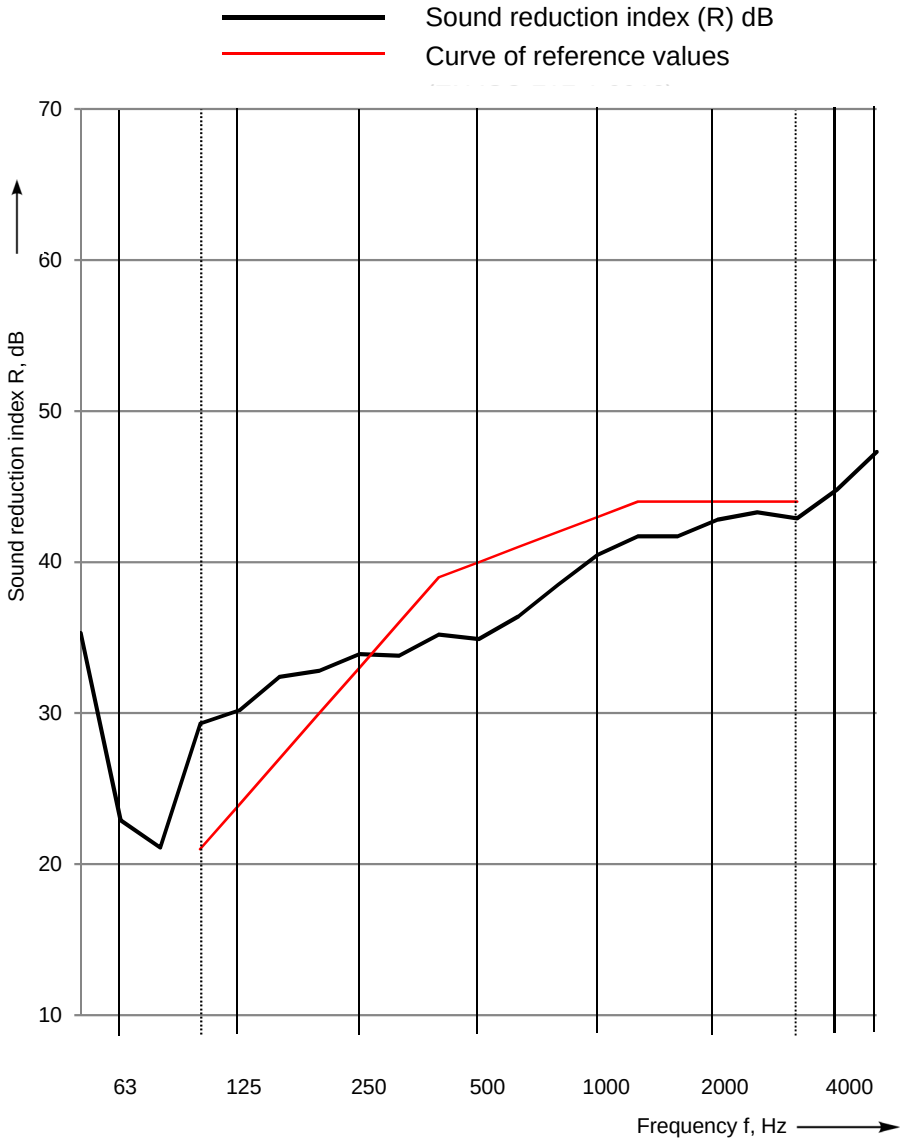
Test Number: 191205 004

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 19.0ºC
Test room static pressure 1018.6 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: 32.1 kg/m²

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			$C_{50\text{-}3150}$ =	-1 dB;	$C_{50\text{-}5000}$	0 dB;	$C_{100\text{-}5000}$ = 0 dB;
R_w (C;C_{tr}) =	40	(-1; -3) dB	$C_{tr,50\text{-}3150}$ =	-4 dB;	$C_{tr,50\text{-}5000}$	-4 dB;	$C_{tr,100\text{-}5000}$ = -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

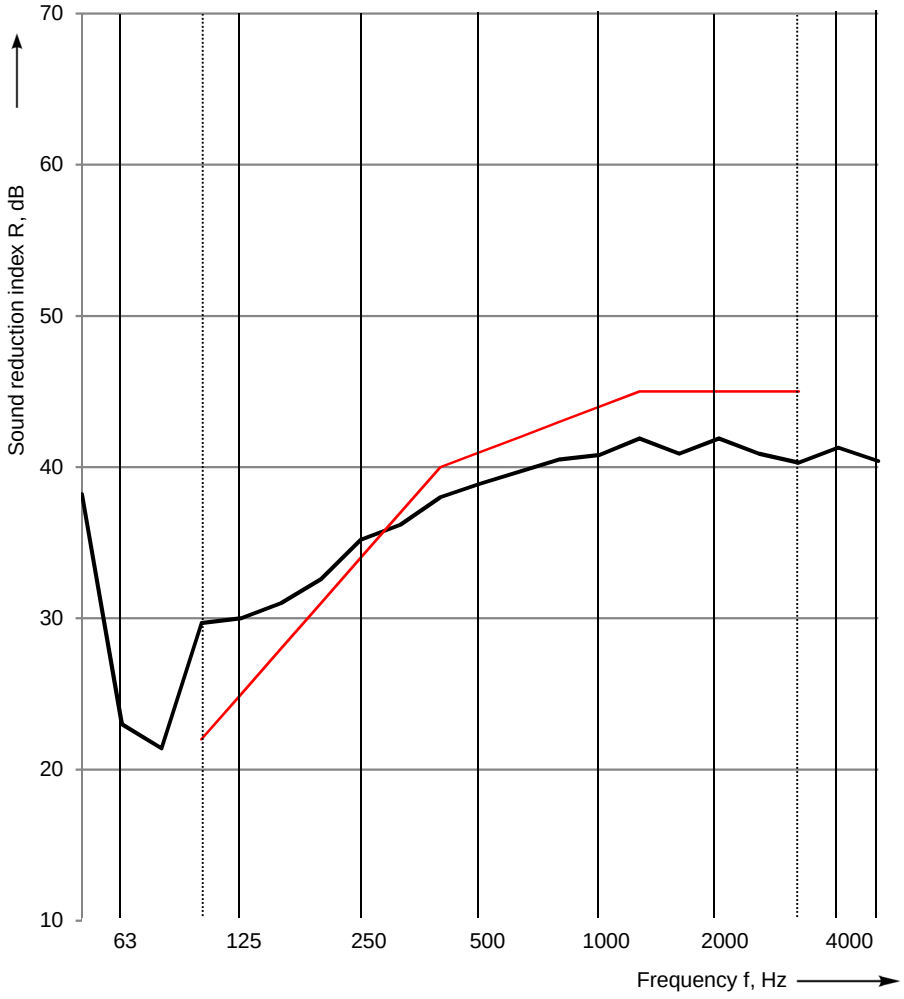
Test Number: 191205 005

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:	Lorient Testing & Technical Services	**Area S of test element:**	4.4m²
Test room temperature:	19.2ºC	**Source room volume:**	68.40m³
Test room static pressure	1005.0 hpa	**Receiving room volume:**	50.00m³
Test room relative humidity:	55%	**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			$C_{50\text{-}3150}$ =	-1 dB;	$C_{50\text{-}5000}$	-1 dB;	$C_{100\text{-}5000}$ = -1 dB;
$R_w (C;C_{tr})$ =	41	(-1; -2) dB	$C_{tr,50\text{-}3150}$ =	-4 dB;	$C_{tr,50\text{-}5000}$	-5 dB;	$C_{tr,100\text{-}5000}$ = -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. 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

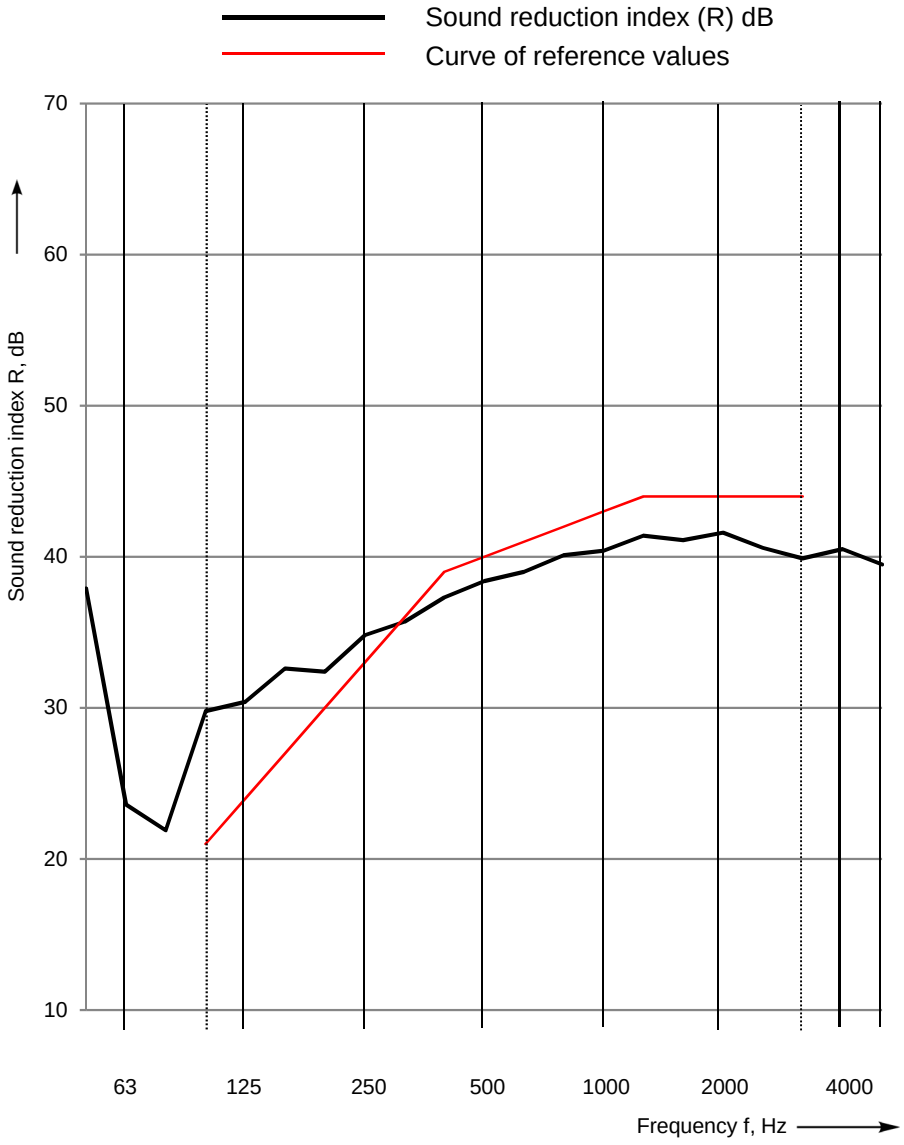
Test Number: 191206 001

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by: Lorient Testing & Technical Services
Test room temperature: 20.5ºC
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			$C_{50\text{-}3150}$ =	-1 dB;	$C_{50\text{-}5000}$	0 dB;	$C_{100\text{-}5000}$ = 0 dB;
R_w (C;C_{tr}) =	40	(0; -2) dB	$C_{tr,50\text{-}3150}$ =	-3 dB;	$C_{tr,50\text{-}5000}$	-4 dB;	$C_{tr,100\text{-}5000}$ = -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	**Area S of test element:**	4.4m²
Test room temperature:	19.3ºC	**Source room volume:**	68.40m³
Test room static pressure	1005.6 hpa	**Receiving room volume:**	50.00m³
Test room relative humidity:	49%	**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
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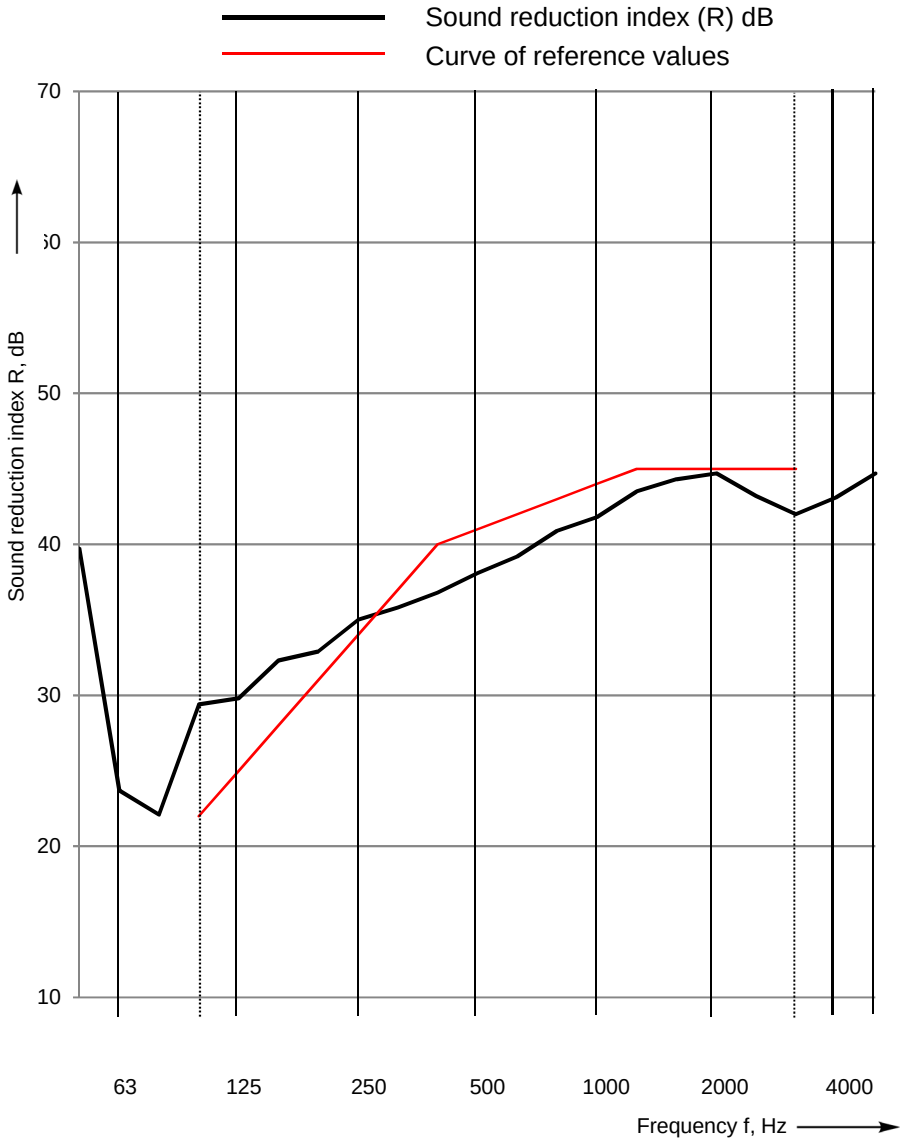
3150	42
4000	43.1
5000	44.7



* Correction applied for flanking

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

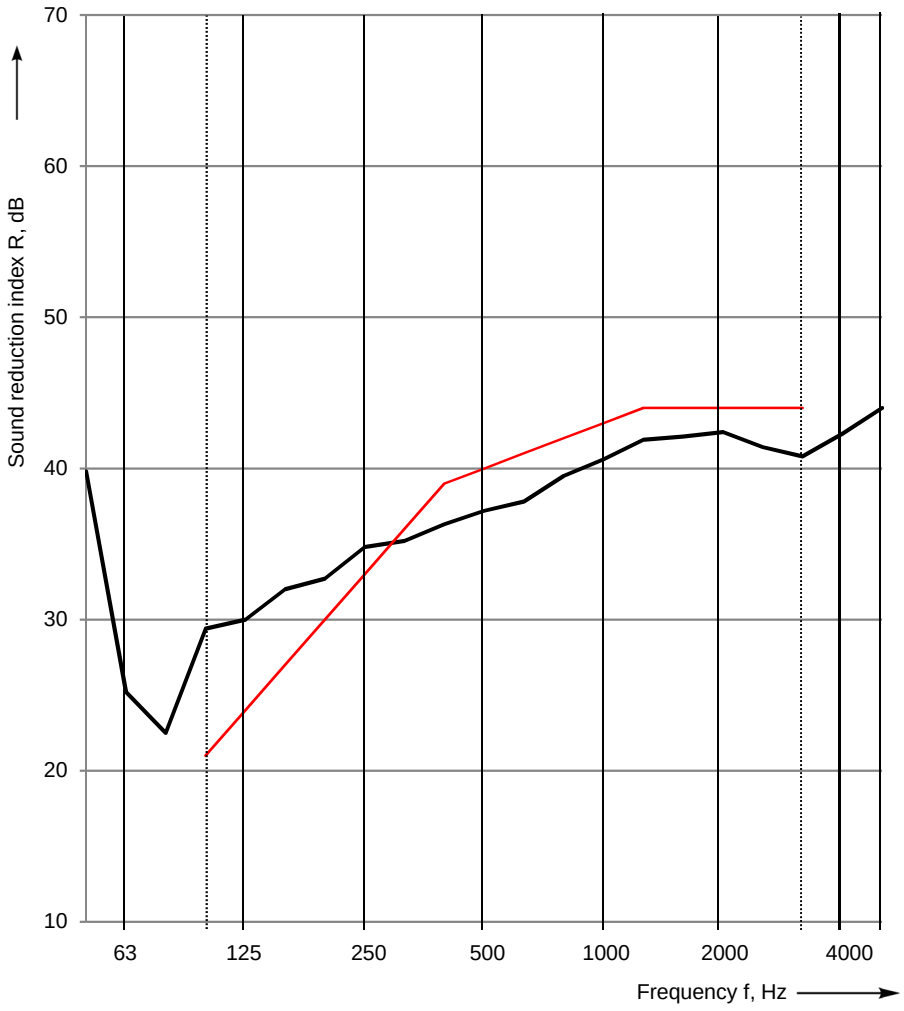
Test Number: 191206 003

Client: AFDSL & Sauerland Spanplatte

Test specimen installed by:	Lorient Testing & Technical Services	**Area S of test element:**	4.4m²
Test room temperature:	19.2ºC	**Source room volume:**	68.40m³
Test room static pressure	1005.6 hpa	**Receiving room volume:**	50.00m³
Test room relative humidity:	49%	**Sample mass per unit area:**	38.85kg/m²

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			$C_{50\text{-}3150}$ =	-1 dB;	$C_{50\text{-}5000}$	0 dB;	$C_{100\text{-}5000}$ = 0 dB;
$R_w (C;C_{tr})$ =	40	(0; -2) dB	$C_{tr,50\text{-}3150}$ =	-3 dB;	$C_{tr,50\text{-}5000}$	-3 dB;	$C_{tr,100\text{-}5000}$ = -2 dB;

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

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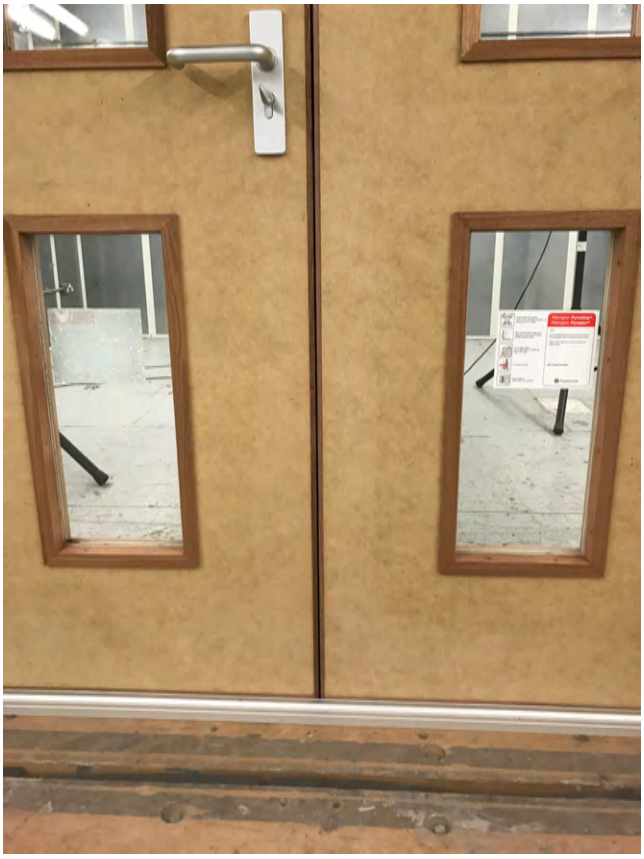
E: testing@lorientuk.com

lorientuk.com

4.0 Photos of test samples

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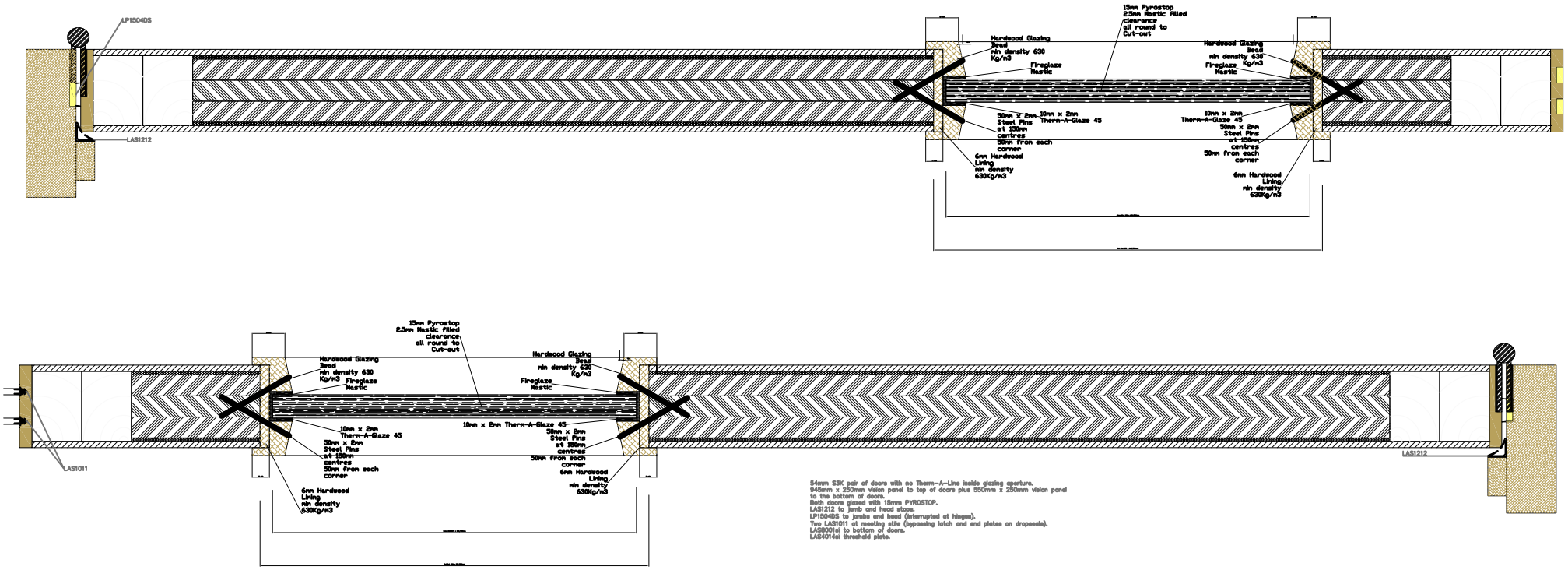


54mm S3K pair of doors with no Therm–A–Line between core and perimeter.
945mm x 250mm vision panel to top of doors plus 550mm x 250mm vision panel to the bottom of doors.
Both doors glazed with 15mm PYROSTOP.
LAS1212 to jamb and head stops.
LP1504DS to jambs and head (interrupted at hinges).
Two LAS1011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

REV	DESCRIPTION	DATE
0	INITIAL ISSUE	05-02-20

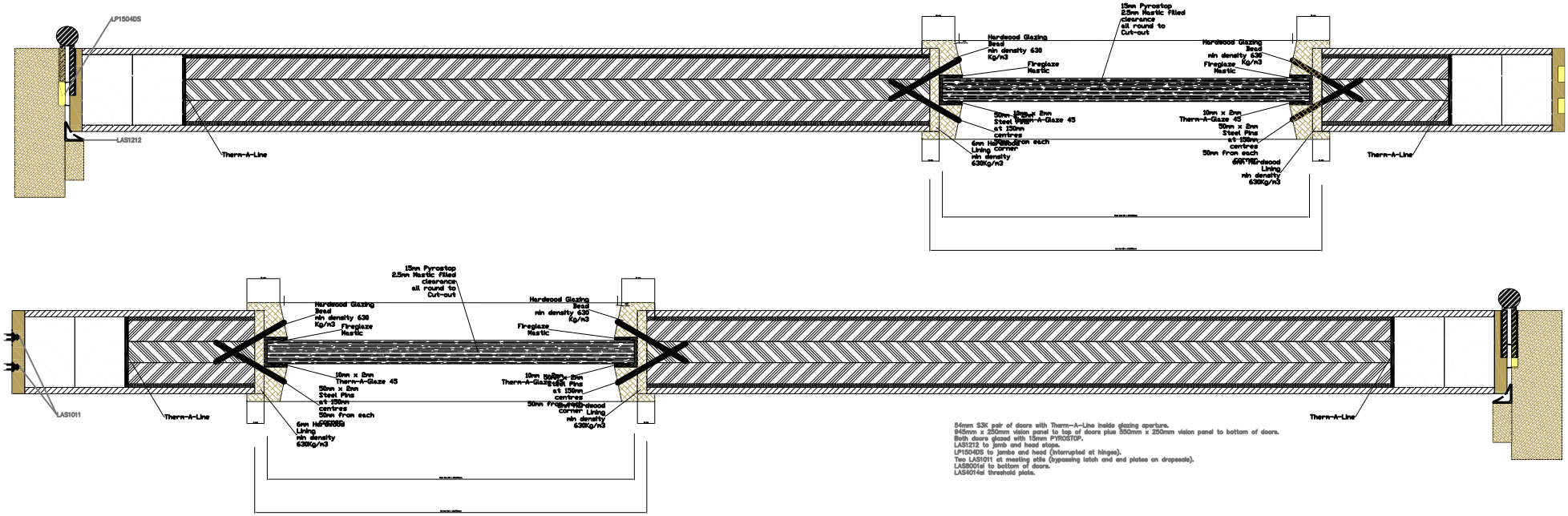
LORIENT
Acoustic, smoke and fire containment systems

TITLE:
SAUER/AFDSL04-061219

DESCRIPTION:
TEST No 191204 003

DATE:	05-02-20
SCALE:	0:0 (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.
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.

REV	DESCRIPTION	DATE
0	INITIAL ISSUE	05-02-20

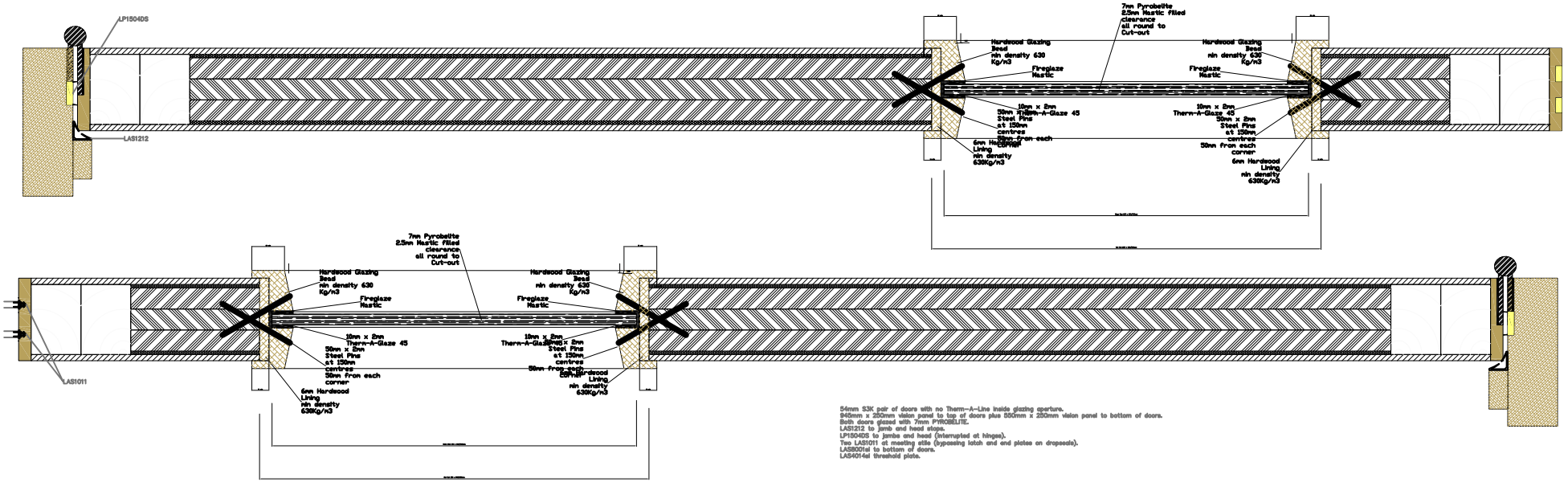
LORIENT
Acoustic, smoke and fire containment systems

TITLE:
SAUER/AFDSL04-061219

DESCRIPTION:
TEST No 191204 005

DATE:	05-02-20
SCALE:	0:0 (A3)
DRAWN BY:	AFDSL
DRAWING No:	1

THIRD ANGLE PROJECTION | REV 0 | A4



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.
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.

REV	DESCRIPTION	DATE
0	INITIAL ISSUE	05-02-20

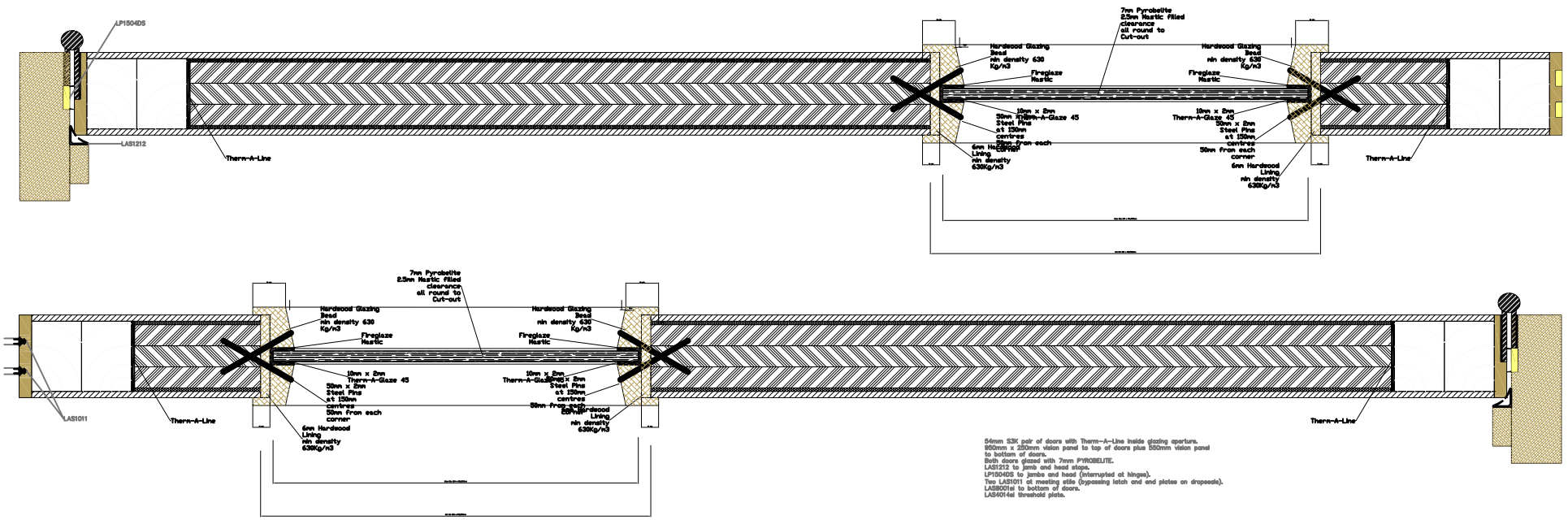
LORIENT
Acoustic, smoke and fire containment systems

TITLE:
SAUER/AFDSL04-061219

DESCRIPTION:
TEST No 191205 002

DATE:	05-02-20
SCALE:	0:0 (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 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.

REV	DESCRIPTION	DATE
0	INITIAL ISSUE	05-02-20

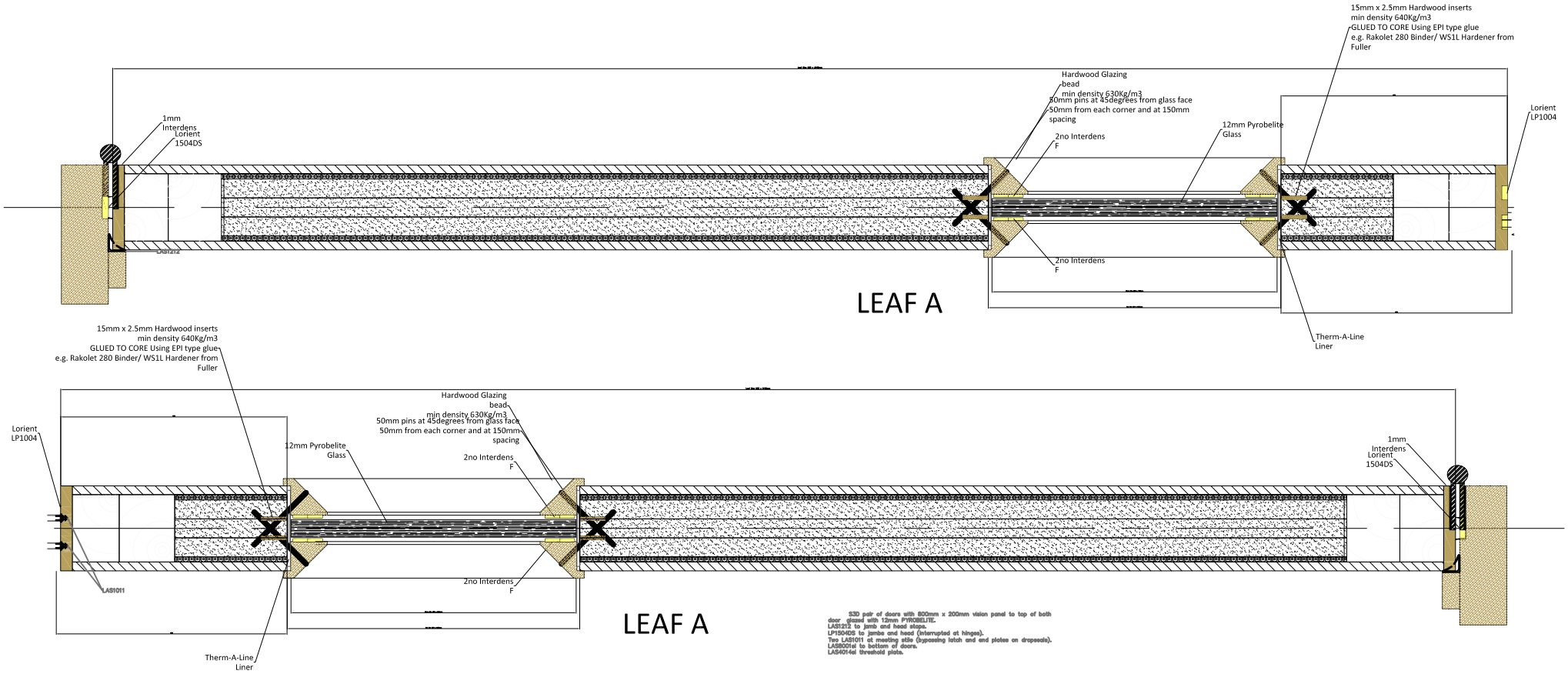
LORIENT
Acoustic, smoke and fire containment systems

TITLE:
SAUER/AFDSL04-061219

DESCRIPTION:
TEST No 191205 004

DATE:	05-02-20
SCALE:	0:0 (A3)
DRAWN BY:	AFDSL
DRAWING No:	1

THIRD ANGLE PROJECTION | REV 0 | A4



S3D pair of doors with 800mm x 200mm vision panel to top of both door 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.

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.

REV	DESCRIPTION	DATE
0	INITIAL ISSUE	05-02-20

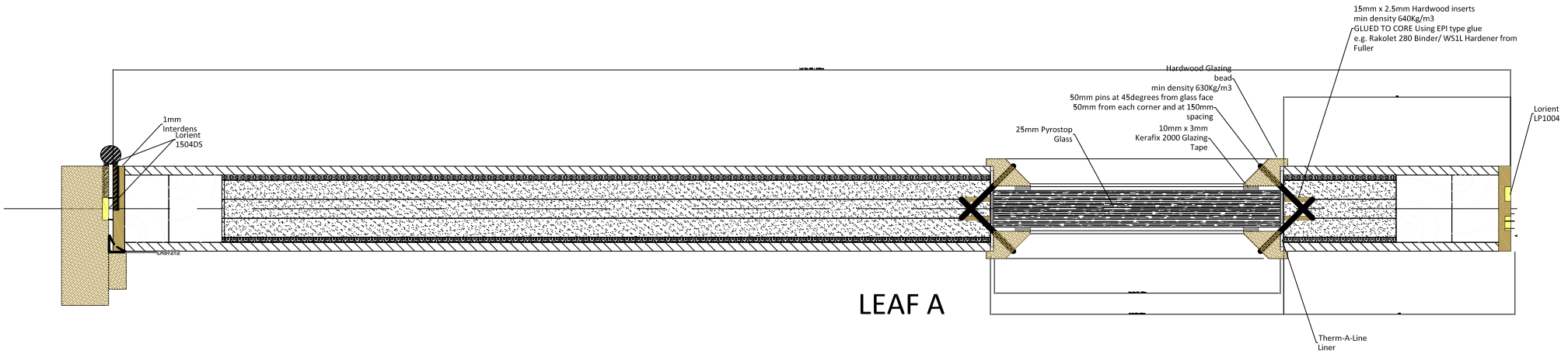
LORIENT
Acoustic, smoke and fire containment systems

TITLE:
SAUER/AFDSL04-061219

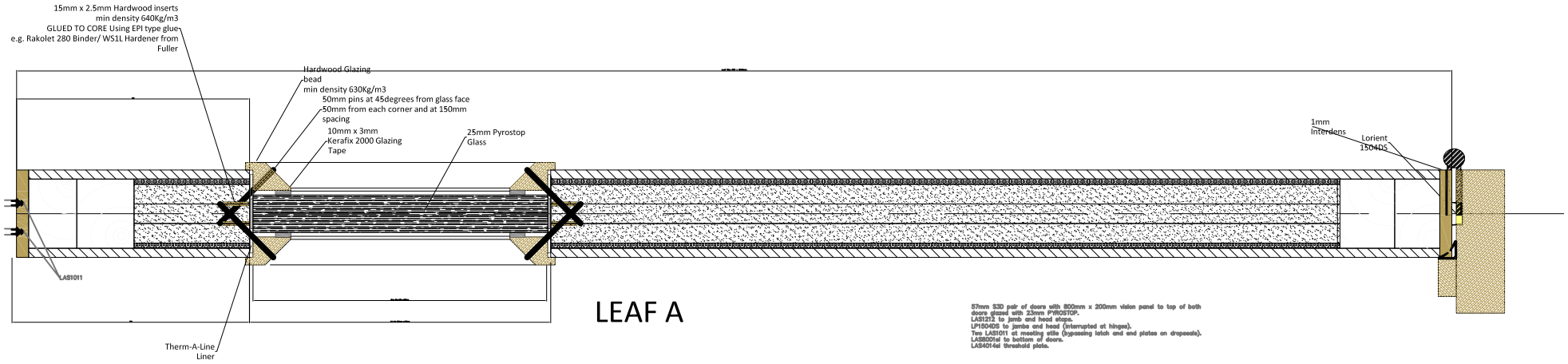
DESCRIPTION:
TEST No 191206 001

DATE:	05-02-20
SCALE:	0:0 (A3)
DRAWN BY:	AFDSL
DRAWING No:	1

THIRD ANGLE PROJECTION | REV 0 | A4



LEAF A



LEAF A

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.

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.

REV	DESCRIPTION	DATE
0	INITIAL ISSUE	05-02-20

LORIENT
Acoustic, smoke and fire containment systems

TITLE:
SAUER/AFDSL04-061219

DESCRIPTION:
TEST No 191206 003

DATE:	05-02-20
SCALE:	0:0 (A3)
DRAWN BY:	AFDSL
DRAWING No:	1

THIRD ANGLE PROJECTION | REV 0 | A4

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