

Acoustic Test Report

Sponsor:
Sentry Panel Products Ltd
Muirhouses
Bo'ness
Edinburgh
EH51 9SS

CONFIDENTIAL

Report: BMT/MTP/F14235/02

Report on the testing of single leaf 54mm Sentry Protech doorsets for acoustic performance to BS EN ISO 10140-2:2010

Issue date: November 2014



1762

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Contents

| | Page No. |
|---------------------------------------------------------------------|----------|
| 1 Introduction | 3 |
| 2 Test Specimen Details | 3 |
| 3 Methodology | 6 |
| 4 Parameters & Limitations | 7 |
| 5 Authorisation | 8 |
| Appendix 1 – Summary of Results & Test Data Sheets (13 Pages) | 9 |
| Appendix 2 – Drawing (1 Page) | 12 |

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1 Introduction

The test specimens were supplied by the client and delivered to BM TRADA on 22 August 2014. The specimens were installed into a timber stud partition within the test chamber by BM TRADA.

Test Details

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

Testing was conducted at BM TRADA, Chiltern House, Stocking Lane, Hughenden Valley, Buckinghamshire. HP14 4ND on the 22 August 2014.

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

Supporting Construction Description

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

2 Test Specimen Details

| | |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Names | SENTRY ProTech 54mm Plywood faced SENTRY ProTech 54mm MDF faced |
| Product Type | Single leaf doorsets |
| Material Type | Timber |
| Overall Dimensions | 900mm wide x 2100mm high x 120mm deep |
| Leaf Dimensions | 826mm wide x 2035mm high x 54mm deep |
| Variations between Tests | <p>13 tests were conducted on this product with variations in:</p> <ul style="list-style-type: none"> • Perimeter caulked • Perimeter sealing • Threshold sealing • Glazing configuration <p>Refer to Summary of Results & Test Data Sheets in Appendix 1 for details of the variations.</p> |

SENTRY ProTech 54mm Plywood faced

| | | Material/type | Dimensions (mm) | Density (kg/m ³) |
|-----------------|----------------|--------------------------------------------------------------------------------------------------------|-----------------|------------------------------|
| Core | | 3-layer core with vertical outer lamels and horizontal inner lamels comprising mixed softwood species* | 36 thick | 450-500* |
| Facings | | Poplar* plywood | 9 thick | 450* |
| Lippings | | Sapele* – all four edges | 8 thick | 640* |
| Adhesive | Facing | WBP melamine* | - | - |
| | Core | WBP melamine* | - | - |
| | Lipping | Polyurethane* | - | - |

* As stated by client, not checked by laboratory

SENTRY ProTech 54mm MDF faced

| | | Material/type | Dimensions (mm) | Density (kg/m ³) |
|-----------------|----------------|--------------------------------------------------------------------------------------------------------|-----------------|------------------------------|
| Core | | 3-layer core with vertical outer lamels and horizontal inner lamels comprising mixed softwood species* | 36 thick | 450-500* |
| Facings | | MDF* | 9 thick | 700* |
| Lippings | | Sapele* – all four edges | 8 thick | 640* |
| Adhesive | Facing | WBP melamine* | - | - |
| | Core | WBP melamine* | - | - |
| | Lipping | Polyurethane* | - | - |

* As stated by client, not checked by laboratory

Door Frame

| | Material/type | Dimensions (mm) | Density (kg/m ³) |
|-------------------------|------------------------------------------|-----------------|------------------------------|
| Head & jambs | Tulipwood* | 32 x 120 | 510* |
| Rebate | Single type | 12 x 55 | - |
| Stops | Tulipwood* | 12 x 50 | 510* |
| Threshold | Tulipwood* | 20 x 120 | 510* |
| Joints | Half lap joints with 2No. 5 x 80 screws* | - | - |

* As stated by client, not checked by laboratory

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Hardware

| | Make/type | Size (mm) | Fixing details (dimensions in mm) |
|--------------------------|----------------------------------------------------------------|--------------------------|---------------------------------------------------|
| Hinges | 3No. Halspan R90 lift-off hinges (Ref: HIN-BSS-100)* | 110 x 40 blade size | 4No. 5 x 30 into frame* 4No. 5 x 50 into leaf* |
| Locking mechanism | Tubular mortise latch*, no further detail provided by client | 21 x 16 x 65* | 2No. 3.2 x 25 screws into leaf* |
| Keeps | Strike plate*, no further detail provided by client | 56 x 25 | 2No. 3.2 x 20 screws into frame* |
| Handles | Aluminium lever handles*, no further detail provided by client | 76 x 40 x 9.5 backplate* | 4No. 3.5 x 25 screws into leaf face* |

* As stated by client, not checked by laboratory

Perimeter Sealing details

| | Make/type | Size (mm) | Location |
|------------------------|-------------------------|----------------------------------------------|------------------------------------------------------|
| Door leaf edges | None | - | - |
| Frame reveal | Head and jambs | Norseal 710* | Abutting the door stop in the frame reveal |
| | Threshold | Halspan dropseal, (Ref: SLS-DRP 300 series)* | Centrally fitted in the bottom edge of the door leaf |
| Seal continuity | All seals uninterrupted | - | - |

* As stated by client, not checked by laboratory

Glazing

| | Make/type/size (mm) | (dimensions in mm) |
|-------------------------------------|-----------------------------------------------------------------------------------|---------------------------|
| Glass type and configuration | Refer to Results & Data Sheets in Appendix 1 for details of variations | - |
| Overall size | 320 wide x 1595 high | - |
| Sight size | 300 wide x 1570 high | - |
| Cassette | Sapele* | 44 x 44 |
| Bead | Sapele* | 12 x 28 |
| Cassette fixing | 14No. into internal face of leaf | 4.5 x 45 |
| Bead fixing | 14No. into cassette, internally beaded | 3.5 x 25 |
| Gaskets | Norseal E100 Weather Strip* | 9 x 4.5* |
| Sealants | Sealmaster Fireglaze Mastic | 1 thick |

* As stated by client, not checked by laboratory

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3 Methodology

Airborne Sound Insulation Test

- The loudspeakers were placed in the corners of the source room
- The sound level meter was calibrated prior to testing.
- 5 measurements were taken in the source room, at fixed positions.
- 5 measurements were taken in the receive room at fixed positions.
- Background measurements were taking at each third octave frequency between 50Hz and 5000Hz.
- 6 Reverberation measurements were taken in the receive room, in accordance with BS EN ISO 3382-2:2008 interrupted, engineering method.
- Calculations, including C & C_{tr}, were carried out in accordance with BS EN ISO 717-1
- The sound reduction index was calculated using the following formula from BS EN ISO 10140-2:2010:

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

Where:

L1 is the logarithmic average of the source room measurements

L2 is the logarithmic average of the receive room measurements

S is the area of the test specimen

A is the equivalent absorption area, where $A = \frac{0.16V}{T}$

Where:

V = The volume of the receive room

T = the reverberation time measured in seconds

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

Test Equipment

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

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4 Parameters & Limitations

Parameters


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

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

Limitations

- The results only relate to the behaviour of the specimen submitted for test, as described in the Technical Specification (Section 2), and under the particular conditions of test.
- The results are not intended to be the sole criteria for assessing the acoustic performance of the element in use nor do they necessarily reflect the actual behaviour once installed on site.
- The specification and interpretation of test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. BM TRADA will be able to offer a review of the procedures adopted for a particular test to ensure that they are consistent with current practices.
- The results are solely for use by the client and the stated purpose.
- The client cannot rely on information provided without consent from BM TRADA.
- Any recommendations are specific to the assignment and the client.
- Extracts from the report are not permitted.

5 Authorisation

| | Issued by: | Checked by: |
|----------------------|-----------------------------------------------------------------------------------|--------------------|
| Signature: |  | |
| Name: | Martin Durham | Vincent Kerrigan |
| Title: | Technical Officer | Technical Manager |
| Date of Issue | 27th November 2014 | |

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Appendix 1 – Summary of Results & Test Data Sheets (13 Pages)

| | |
|----------------------|--------------------------------------------------------------------|
| Product Names | SENTRY ProTech 54mm Plywood faced SENTRY ProTech 54mm MDF faced |
| Product Type | Timber Single leaf doorsets |

| Datasheet Ref. | Variations | | Test Result R_w (C;C_{tr}) |
|-----------------------|-----------------------|--------------------------------------|---------------------------------------------------------|
| MTP/F14235/02/P013 | Product name | SENTRY ProTech 54mm Plywood faced | 37 (0;-3) dB |
| | Perimeter caulked | Yes | |
| | Perimeter sealing | None | |
| | Threshold sealing | None | |
| | Glazing configuration | None | |
| MTP/F14235/02/P014 | Product name | SENTRY ProTech 54mm Plywood faced | 35 (0;-2) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | None | |
| MTP/F14235/02/P015 | Product name | SENTRY ProTech 54mm Plywood faced | 35 (0;-2) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | 7mm Pilkington Pyroshield II | |

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| | | | |
|--------------------|-----------------------|--------------------------------------|--------------|
| MTP/F14235/02/P016 | Product name | SENTRY ProTech 54mm Plywood faced | 36 (0;-2) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | 7mm Pilkington Pyrodur Plus | |
| MTP/F14235/02/P017 | Product name | SENTRY ProTech 54mm Plywood faced | 36 (0;-2) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | 15mm Pilkington Pyrostop | |
| MTP/F14235/02/P018 | Product name | SENTRY ProTech 54mm Plywood faced | 36 (0;-1) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | 16mm AGC Flatglass Pyrobel | |
| MTP/F14235/02/P019 | Product name | SENTRY ProTech 54mm MDF faced | 37 (0;-3) dB |
| | Perimeter caulked | Yes | |
| | Perimeter sealing | None | |
| | Threshold sealing | None | |
| | Glazing configuration | None | |
| MTP/F14235/02/P021 | Product name | SENTRY ProTech 54mm MDF faced | 35 (0;-2) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | None | |

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| | | | |
|--------------------|-----------------------|--------------------------------------|---------------|
| MTP/F14235/02/P022 | Product name | SENTRY ProTech 54mm MDF faced | 35 (0;-1) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | 7mm Pilkington Pyroshield II | |
| MTP/F14235/02/P023 | Product name | SENTRY ProTech 54mm MDF faced | 36 (0;-2) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | 7mm Pilkington Pyrodur Plus | |
| MTP/F14235/02/P024 | Product name | SENTRY ProTech 54mm MDF faced | 36 (0;-1) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | 15mm Pilkington Pyrostop | |
| MTP/F14235/02/P025 | Product name | SENTRY ProTech 54mm MDF faced | 37 (0;-2) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | Halspan dropseal, SLS-DRP 300 series | |
| | Glazing configuration | 16mm AGC Flatglass Pyrobel | |
| MTP/F14235/02/P026 | Product name | SENTRY ProTech 54mm MDF faced | 27 (-1;-3) dB |
| | Perimeter caulked | No | |
| | Perimeter sealing | Nor710 | |
| | Threshold sealing | None | |
| | Glazing configuration | None | |

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| | |
|------------------------------|------------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm Plywood faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | Yes |
| Perimeter sealing | None |
| Threshold sealing | None |
| Glazing configuration | None |

For detailed technical specification, please refer to Section 2 of the report

Datasheet Ref. MTP/F14235/02/P013

Date of Test: 26/08/2014

Source Room Volume: 86.00 m³

Receive Room Volume: 67.00 m³

Specimen Installed By: BM TRADA

Area of Specimen (S): 1.89 m²

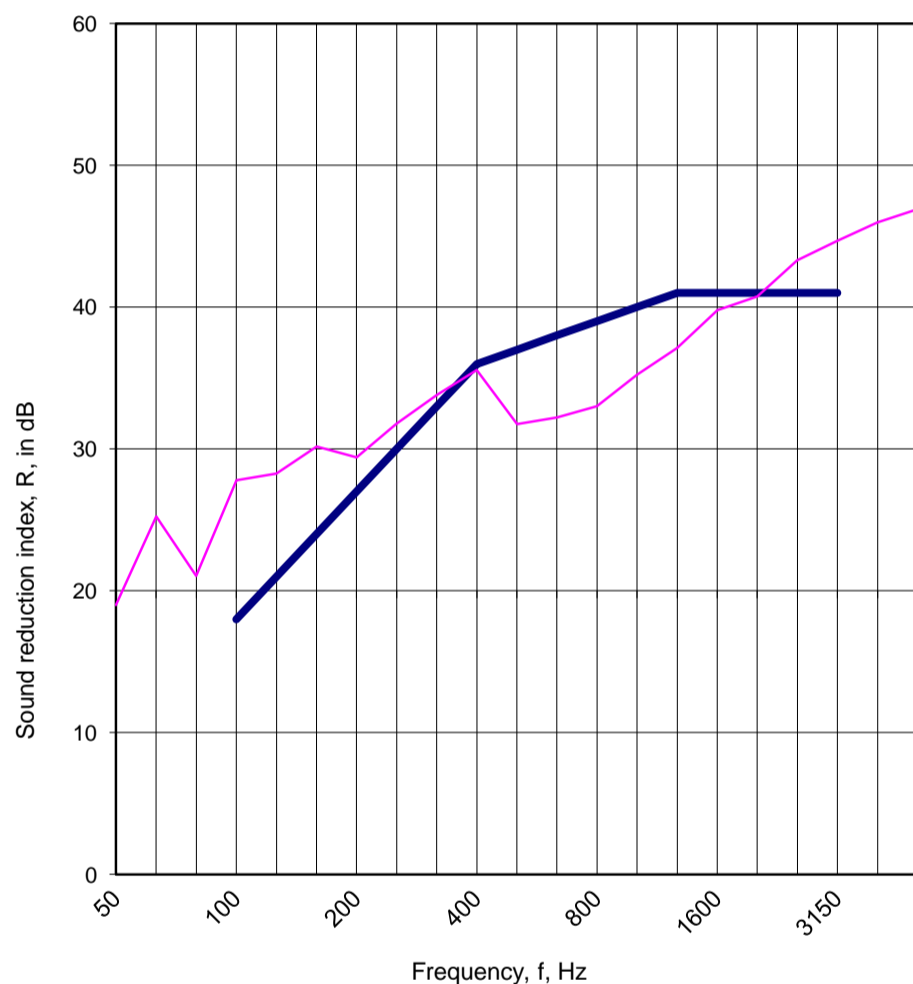
Temp. in Test Rooms: 16.8 °C

Static Pressure: 98740.0 Pa

Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 19.0 |
| 63 ⁺ | 25.3 |
| 80 ⁺ | 21.0 |
| 100 | 27.8 |
| 125 | 28.3 |
| 160 | 30.2 |
| 200 | 29.4 |
| 250 | 31.8 |
| 315 | 33.8 |
| 400 | 35.6 |
| 500 | 31.8 |
| 600 | 32.2 |
| 800 | 33.0 |
| 1000 | 35.2 |
| 1250 | 37.1 |
| 1600 | 39.8 |
| 2000 | 40.8 |
| 2500 | 43.3 |
| 3150 | 44.7 |
| 4000 | 46.0 |
| 5000 | 46.9 |
| AAD | -27.6 |

Frequency range for rating in accordance with ISO 717-1



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

$R_w = 37$ dB
 $R_w + C = 37$ dB
 $R_w + C_{tr} = 34$ dB

$C_{(50-3150)} = -1$ dB $C_{tr(50-3150)} = -4$ dB
 $C_{(50-5000)} = 0$ dB $C_{tr(50-5000)} = -4$ dB
 $C_{(100-5000)} = 0$ dB $C_{tr(100-5000)} = -3$ dB

Martin Durham
Technical Officer

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

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Report for: Sentry Panel Products Ltd
Report Ref: BMT/MTP/F14235/02

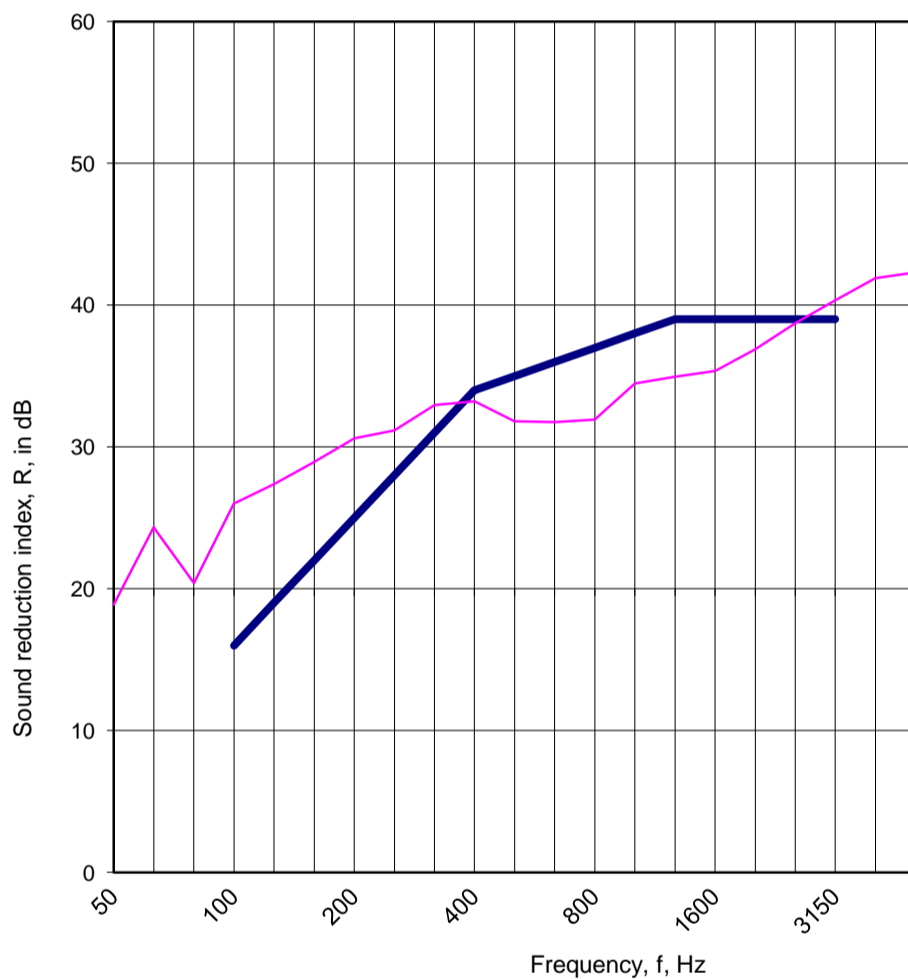
| | |
|--------------------------------------------------------------------------------------|------------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm Plywood faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | None |
| <i>For detailed technical specification, please refer to Section 2 of the report</i> | |

Datasheet Ref. MTP/F14235/02/P014
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 18.9 |
| 63 ⁺ | 24.3 |
| 80 ⁺ | 20.4 |
| 100 | 26.0 |
| 125 | 27.4 |
| 160 | 28.9 |
| 200 | 30.6 |
| 250 | 31.2 |
| 315 | 32.9 |
| 400 | 33.2 |
| 500 | 31.8 |
| 600 | 31.7 |
| 800 | 31.9 |
| 1000 | 34.5 |
| 1250 | 35.0 |
| 1600 | 35.3 |
| 2000 | 36.9 |
| 2500 | 38.7 |
| 3150 | 40.3 |
| 4000 | 41.9 |
| 5000 | 42.3 |
| AAD | -26.9 |

Frequency range for rating in accordance with ISO 717-1



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | |
|------------------|--------------|
| $R_w =$ | 35 dB |
| $R_w + C =$ | 35 dB |
| $R_w + C_{tr} =$ | 33 dB |

| | | | |
|--------------------|------|----------------------|-------|
| $C_{(50-3150)} =$ | 0 dB | $C_{tr(50-3150)} =$ | -3 dB |
| $C_{(50-5000)} =$ | 0 dB | $C_{tr(50-5000)} =$ | -3 dB |
| $C_{(100-5000)} =$ | 0 dB | $C_{tr(100-5000)} =$ | -2 dB |

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Report Ref: BMT/MTP/F14235/02

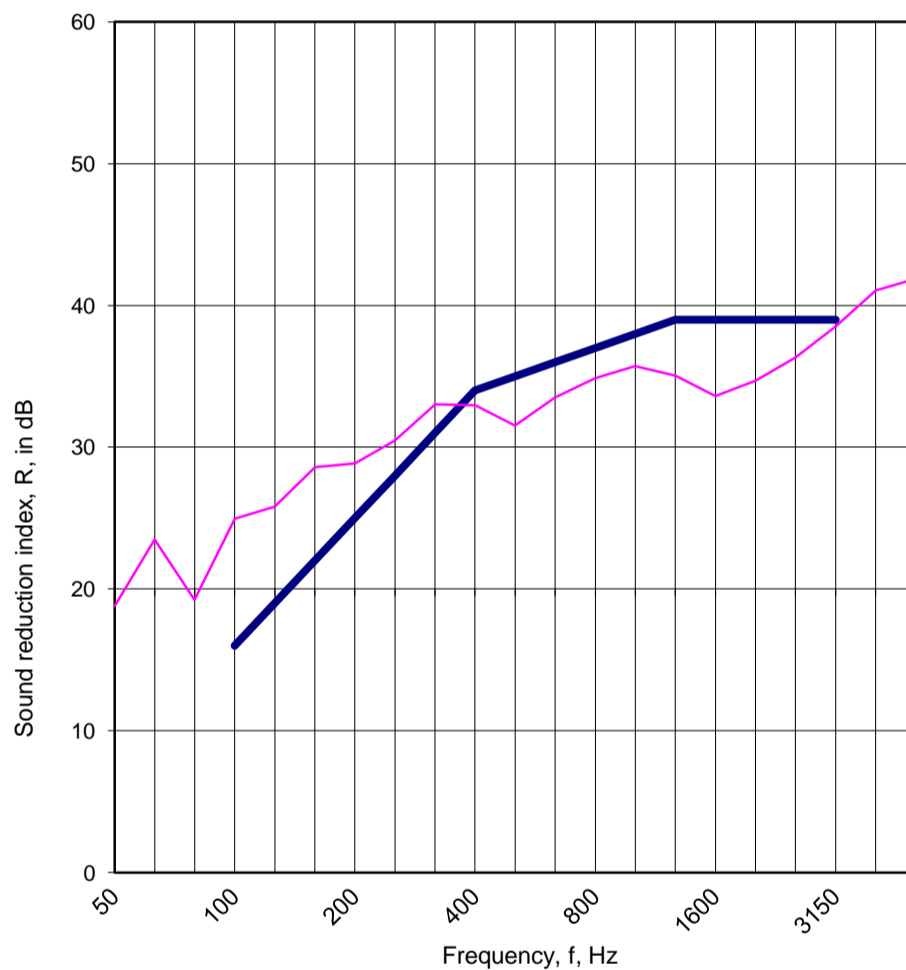
| | |
|--------------------------------------------------------------------------------------|------------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm Plywood faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | 7mm Pilkington Pyroshield II |
| <i>For detailed technical specification, please refer to Section 2 of the report</i> | |

Datasheet Ref. MTP/F14235/02/P015
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 18.8 |
| 63 ⁺ | 23.5 |
| 80 ⁺ | 19.2 |
| 100 | 25.0 |
| 125 | 25.8 |
| 160 | 28.6 |
| 200 | 28.9 |
| 250 | 30.5 |
| 315 | 33.0 |
| 400 | 33.0 |
| 500 | 31.5 |
| 600 | 33.5 |
| 800 | 34.9 |
| 1000 | 35.7 |
| 1250 | 35.0 |
| 1600 | 33.6 |
| 2000 | 34.7 |
| 2500 | 36.3 |
| 3150 | 38.5 |
| 4000 | 41.1 |
| 5000 | 41.9 |
| AAD | -28.2 |

↑
Frequency range for rating in accordance with ISO 717-1
↓



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | | |
|--------------------------------|---------------------------------|------------------------------------|
| $R_w = 35 \text{ dB}$ | $C_{(50-3150)} = 0 \text{ dB}$ | $C_{tr(50-3150)} = -3 \text{ dB}$ |
| $R_w + C = 35 \text{ dB}$ | $C_{(50-5000)} = 0 \text{ dB}$ | $C_{tr(50-5000)} = -3 \text{ dB}$ |
| $R_w + C_{tr} = 33 \text{ dB}$ | $C_{(100-5000)} = 0 \text{ dB}$ | $C_{tr(100-5000)} = -2 \text{ dB}$ |

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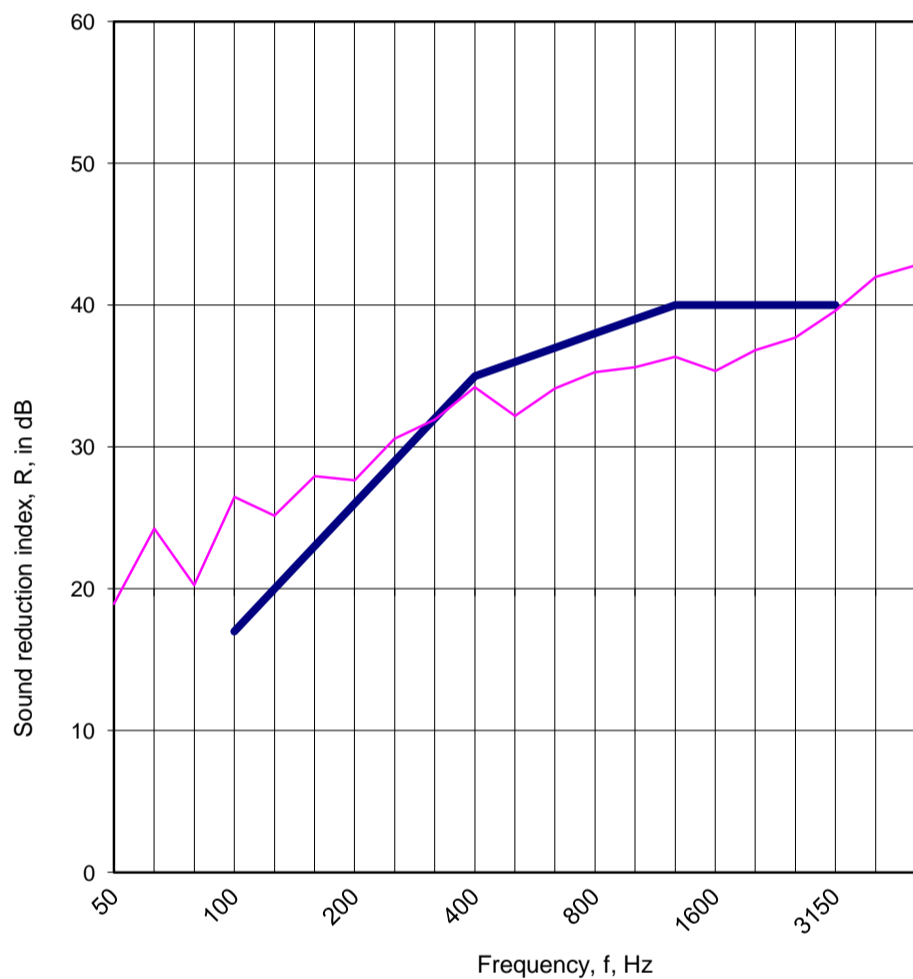
| | |
|--------------------------------------------------------------------------------------|------------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm Plywood faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | 7mm Pilkington Pyrodur Plus |
| <i>For detailed technical specification, please refer to Section 2 of the report</i> | |

Datasheet Ref. MTP/F14235/02/P016
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 18.9 |
| 63 ⁺ | 24.3 |
| 80 ⁺ | 20.3 |
| 100 | 26.5 |
| 125 | 25.2 |
| 160 | 27.9 |
| 200 | 27.7 |
| 250 | 30.6 |
| 315 | 31.9 |
| 400 | 34.2 |
| 500 | 32.2 |
| 600 | 34.1 |
| 800 | 35.3 |
| 1000 | 35.6 |
| 1250 | 36.4 |
| 1600 | 35.4 |
| 2000 | 36.8 |
| 2500 | 37.7 |
| 3150 | 39.6 |
| 4000 | 42.0 |
| 5000 | 42.8 |
| AAD | -27.8 |

↑
Frequency range for rating in accordance with ISO 717-1
↓



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | | |
|------------------------------------------|-------------------------|----------------------------|
| $R_w = 36$ dB | $C_{(50-3150)} = 0$ dB | $C_{tr(50-3150)} = -4$ dB |
| $R_w + C = 36$ dB | $C_{(50-5000)} = 0$ dB | $C_{tr(50-5000)} = -4$ dB |
| $R_w + C_{tr} = 34$ dB | $C_{(100-5000)} = 0$ dB | $C_{tr(100-5000)} = -2$ dB |

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Report for: Sentry Panel Products Ltd
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| | |
|------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm Plywood faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | 15mm Pilkington Pyrostop |

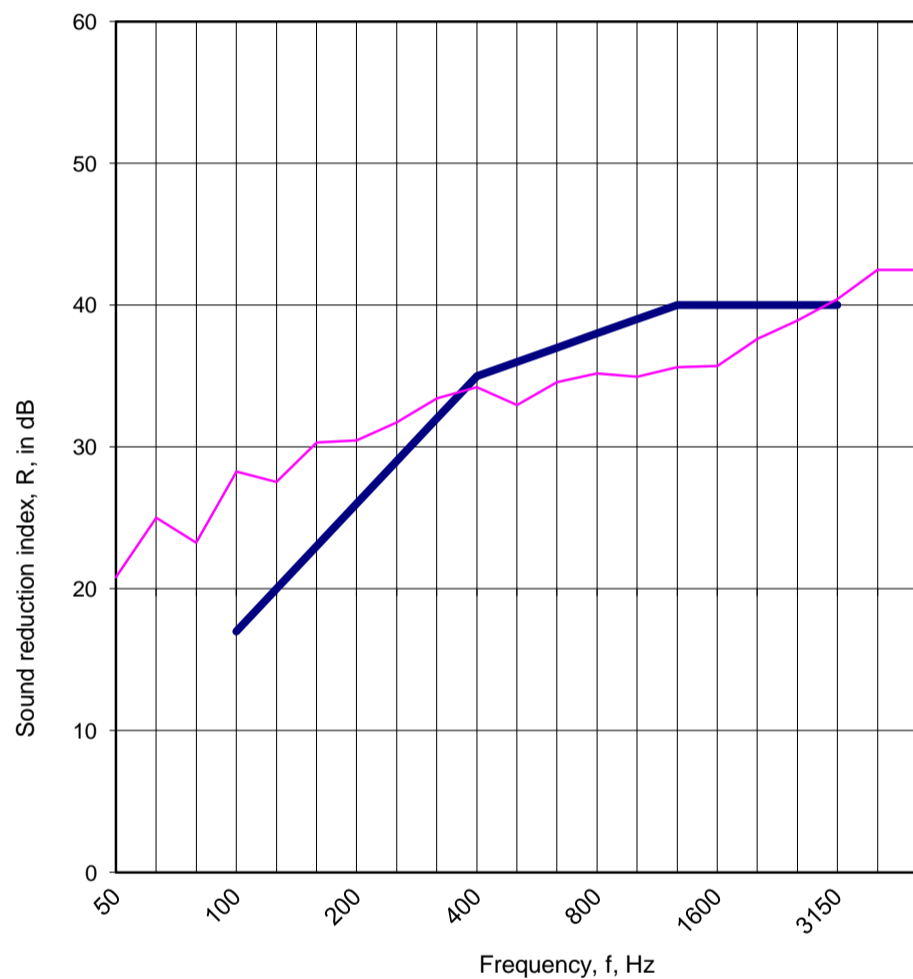
For detailed technical specification, please refer to Section 2 of the report

Datasheet Ref. MTP/F14235/02/P017
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 20.8 |
| 63 ⁺ | 25.0 |
| 80 ⁺ | 23.3 |
| 100 | 28.3 |
| 125 | 27.5 |
| 160 | 30.3 |
| 200 | 30.5 |
| 250 | 31.7 |
| 315 | 33.4 |
| 400 | 34.2 |
| 500 | 33.0 |
| 600 | 34.6 |
| 800 | 35.2 |
| 1000 | 34.9 |
| 1250 | 35.6 |
| 1600 | 35.7 |
| 2000 | 37.6 |
| 2500 | 38.9 |
| 3150 | 40.4 |
| 4000 | 42.5 |
| 5000 | 42.5 |
| AAD | -25.3 |

Frequency range for rating in accordance with ISO 717-1



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | |
|------------------|--------------|
| $R_w =$ | 36 dB |
| $R_w + C =$ | 36 dB |
| $R_w + C_{tr} =$ | 34 dB |

| | | | |
|--------------------|------|----------------------|-------|
| $C_{(50-3150)} =$ | 0 dB | $C_{tr(50-3150)} =$ | -2 dB |
| $C_{(50-5000)} =$ | 0 dB | $C_{tr(50-5000)} =$ | -3 dB |
| $C_{(100-5000)} =$ | 1 dB | $C_{tr(100-5000)} =$ | -2 dB |

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Report for: Sentry Panel Products Ltd
Report Ref: BMT/MTP/F14235/02

| | |
|------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm Plywood faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | 16mm AGC Flatglass Pyrobel |

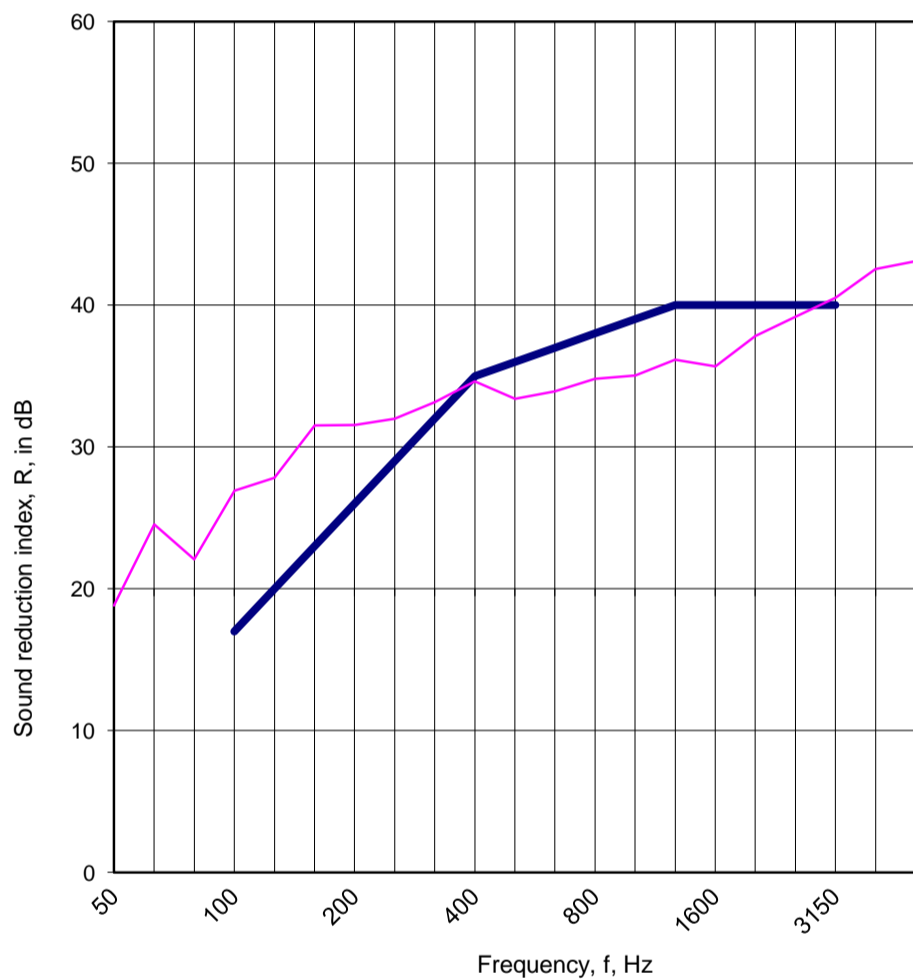
For detailed technical specification, please refer to Section 2 of the report

Datasheet Ref. MTP/F14235/02/P018
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 18.8 |
| 63 ⁺ | 24.5 |
| 80 ⁺ | 22.1 |
| 100 | 26.9 |
| 125 | 27.8 |
| 160 | 31.5 |
| 200 | 31.6 |
| 250 | 32.0 |
| 315 | 33.2 |
| 400 | 34.6 |
| 500 | 33.4 |
| 600 | 33.9 |
| 800 | 34.8 |
| 1000 | 35.0 |
| 1250 | 36.2 |
| 1600 | 35.7 |
| 2000 | 37.8 |
| 2500 | 39.2 |
| 3150 | 40.5 |
| 4000 | 42.5 |
| 5000 | 43.1 |
| AAD | -24.4 |

↑
Frequency range for rating in accordance with ISO 717-1
↓



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

$R_w = 36$ dB
 $R_w + C = 36$ dB
 $R_w + C_{tr} = 35$ dB

$C_{(50-3150)} = 0$ dB $C_{tr(50-3150)} = -3$ dB
 $C_{(50-5000)} = 1$ dB $C_{tr(50-5000)} = -3$ dB
 $C_{(100-5000)} = 1$ dB $C_{tr(100-5000)} = -2$ dB

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Report for: Sentry Panel Products Ltd
Report Ref: BMT/MTP/F14235/02

| | |
|------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm MDF faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | Yes |
| Perimeter sealing | None |
| Threshold sealing | None |
| Glazing configuration | None |

For detailed technical specification, please refer to Section 2 of the report

Datasheet Ref. MTP/F14235/02/P019

Date of Test: 26/08/2014

Source Room Volume: 86.00 m³

Receive Room Volume: 67.00 m³

Specimen Installed By: BM TRADA

Area of Specimen (S): 1.89 m²

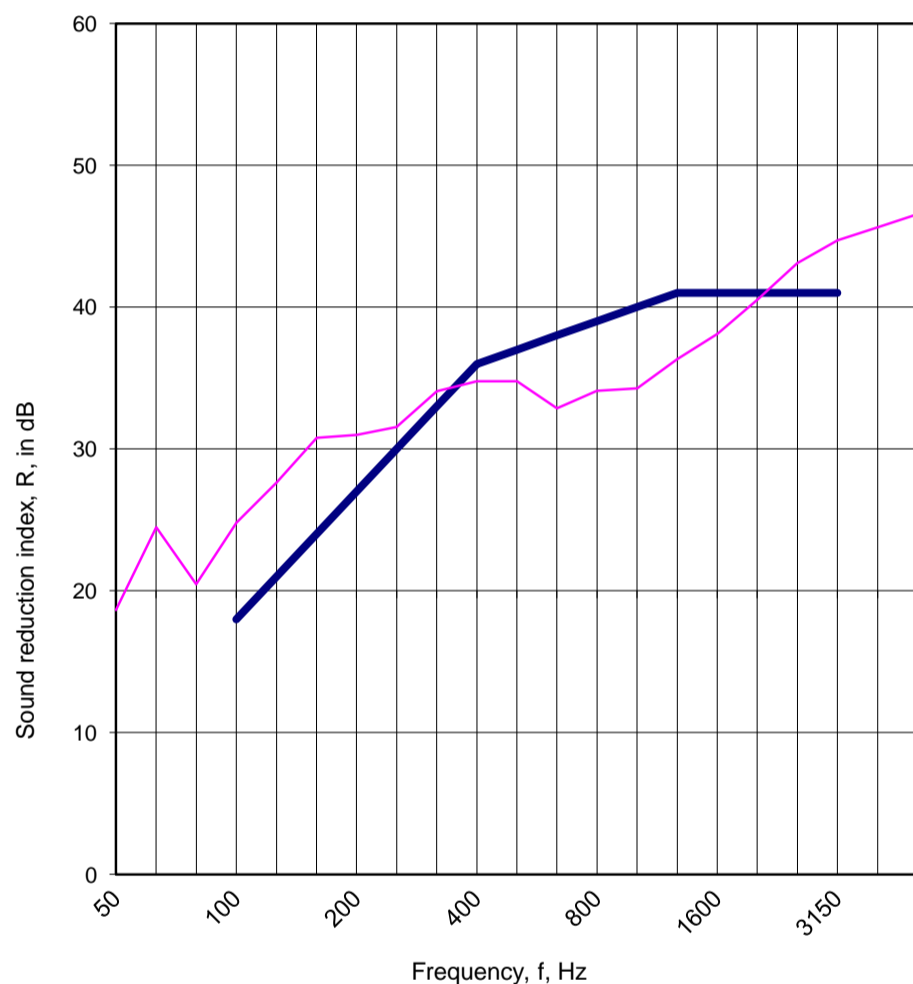
Temp. in Test Rooms: 16.8 °C

Static Pressure: 98740.0 Pa

Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 18.6 |
| 63 ⁺ | 24.5 |
| 80 ⁺ | 20.5 |
| 100 | 24.8 |
| 125 | 27.6 |
| 160 | 30.8 |
| 200 | 31.0 |
| 250 | 31.6 |
| 315 | 34.1 |
| 400 | 34.8 |
| 500 | 34.8 |
| 600 | 32.9 |
| 800 | 34.1 |
| 1000 | 34.3 |
| 1250 | 36.3 |
| 1600 | 38.1 |
| 2000 | 40.5 |
| 2500 | 43.1 |
| 3150 | 44.7 |
| 4000 | 45.6 |
| 5000 | 46.6 |
| AAD | -27.2 |

Frequency range for rating in accordance with ISO 717-1



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

$R_w = 37$ dB
 $R_w + C = 37$ dB
 $R_w + C_{tr} = 34$ dB

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

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Report for: Sentry Panel Products Ltd
Report Ref: BMT/MTP/F14235/02

| | |
|------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm MDF faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | None |

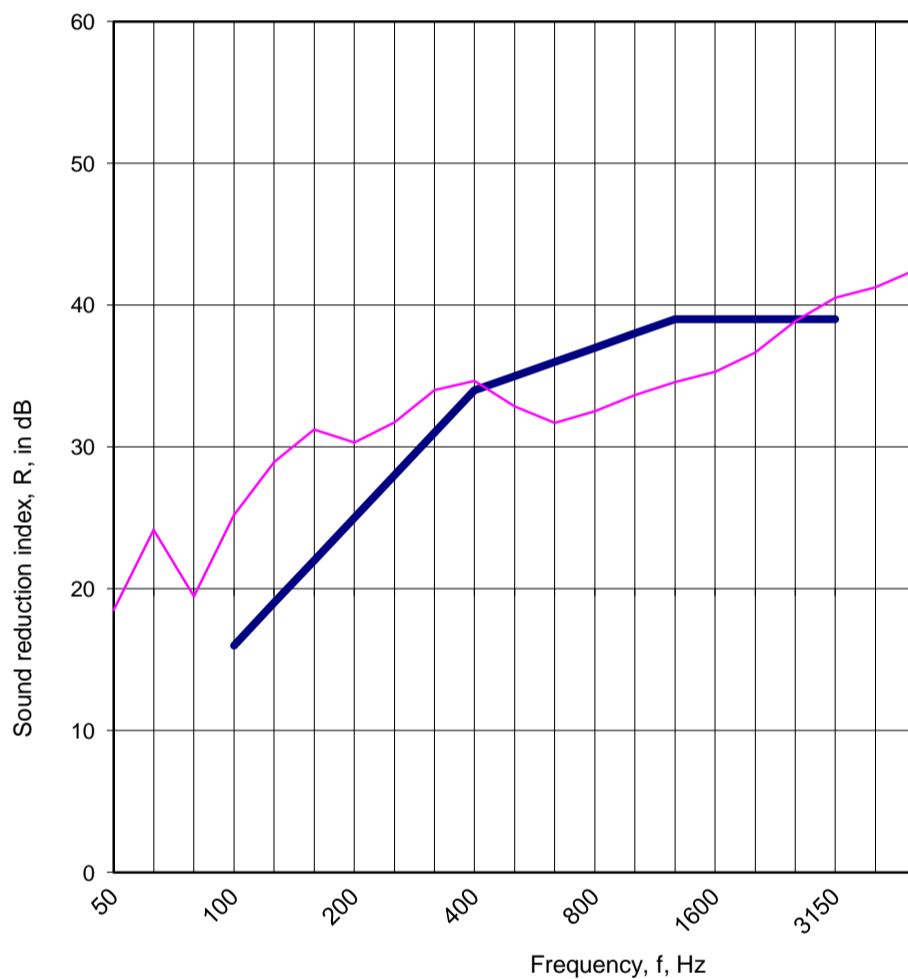
For detailed technical specification, please refer to Section 2 of the report

Datasheet Ref. MTP/F14235/02/P021
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 18.5 |
| 63 ⁺ | 24.2 |
| 80 ⁺ | 19.5 |
| 100 | 25.2 |
| 125 | 28.9 |
| 160 | 31.2 |
| 200 | 30.3 |
| 250 | 31.7 |
| 315 | 34.0 |
| 400 | 34.7 |
| 500 | 32.9 |
| 600 | 31.7 |
| 800 | 32.5 |
| 1000 | 33.7 |
| 1250 | 34.6 |
| 1600 | 35.3 |
| 2000 | 36.7 |
| 2500 | 38.9 |
| 3150 | 40.5 |
| 4000 | 41.3 |
| 5000 | 42.5 |
| AAD | -25.8 |

Frequency range for rating in accordance with ISO 717-1



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | |
|------------------|--------------|
| $R_w =$ | 35 dB |
| $R_w + C =$ | 35 dB |
| $R_w + C_{tr} =$ | 33 dB |

| | | | |
|--------------------|------|----------------------|-------|
| $C_{(50-3150)} =$ | 0 dB | $C_{tr(50-3150)} =$ | -3 dB |
| $C_{(50-5000)} =$ | 0 dB | $C_{tr(50-5000)} =$ | -3 dB |
| $C_{(100-5000)} =$ | 1 dB | $C_{tr(100-5000)} =$ | -2 dB |

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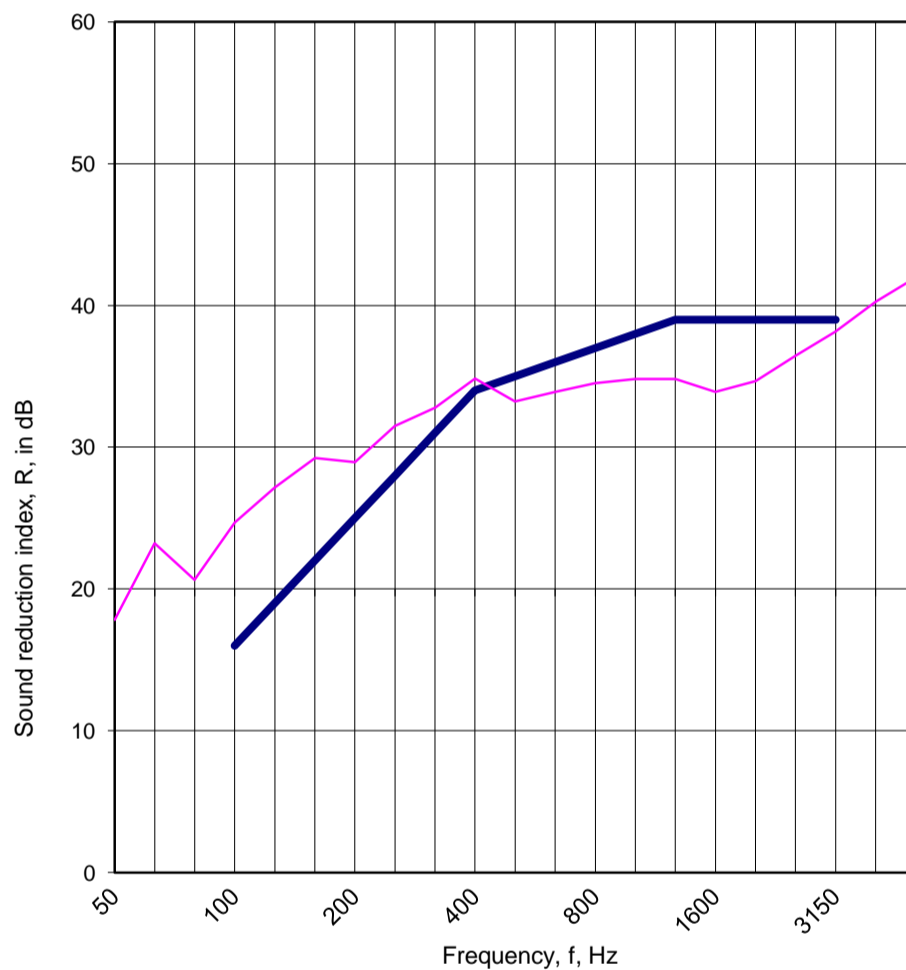
| | |
|--------------------------------------------------------------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm MDF faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | 7mm Pilkington Pyroshield II |
| <i>For detailed technical specification, please refer to Section 2 of the report</i> | |

Datasheet Ref. MTP/F14235/02/P022
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 17.8 |
| 63 ⁺ | 23.2 |
| 80 ⁺ | 20.6 |
| 100 | 24.7 |
| 125 | 27.2 |
| 160 | 29.2 |
| 200 | 29.0 |
| 250 | 31.5 |
| 315 | 32.8 |
| 400 | 34.8 |
| 500 | 33.2 |
| 600 | 33.9 |
| 800 | 34.5 |
| 1000 | 34.8 |
| 1250 | 34.8 |
| 1600 | 33.9 |
| 2000 | 34.7 |
| 2500 | 36.5 |
| 3150 | 38.1 |
| 4000 | 40.3 |
| 5000 | 42.0 |
| AAD | -26.6 |

↑
Frequency range for rating in accordance with ISO 717-1
↓



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | | |
|--------------------------------|---------------------------------|------------------------------------|
| $R_w = 35 \text{ dB}$ | $C_{(50-3150)} = 0 \text{ dB}$ | $C_{tr(50-3150)} = -3 \text{ dB}$ |
| $R_w + C = 35 \text{ dB}$ | $C_{(50-5000)} = 0 \text{ dB}$ | $C_{tr(50-5000)} = -3 \text{ dB}$ |
| $R_w + C_{tr} = 34 \text{ dB}$ | $C_{(100-5000)} = 0 \text{ dB}$ | $C_{tr(100-5000)} = -2 \text{ dB}$ |

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Report for: Sentry Panel Products Ltd
Report Ref: BMT/MTP/F14235/02

| | |
|------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm MDF faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | 7mm Pilkington Pyrodur Plus |

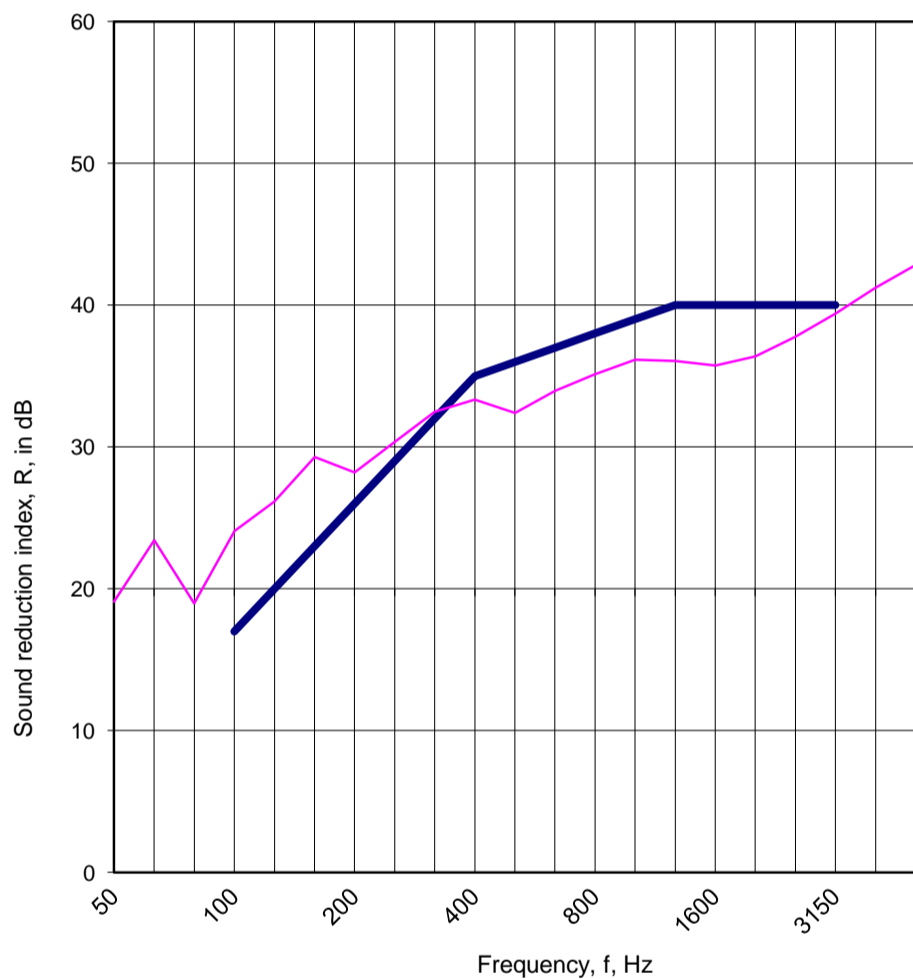
For detailed technical specification, please refer to Section 2 of the report

Datasheet Ref. MTP/F14235/02/P023
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 19.1 |
| 63 ⁺ | 23.4 |
| 80 ⁺ | 19.0 |
| 100 | 24.1 |
| 125 | 26.2 |
| 160 | 29.3 |
| 200 | 28.2 |
| 250 | 30.4 |
| 315 | 32.5 |
| 400 | 33.3 |
| 500 | 32.4 |
| 600 | 33.9 |
| 800 | 35.1 |
| 1000 | 36.1 |
| 1250 | 36.1 |
| 1600 | 35.7 |
| 2000 | 36.4 |
| 2500 | 37.8 |
| 3150 | 39.4 |
| 4000 | 41.2 |
| 5000 | 42.8 |
| AAD | -28.7 |

↑ Frequency range for rating in accordance with ISO 717-1 ↓



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | | |
|------------------------|-------------------------|----------------------------|
| $R_w = 36$ dB | $C_{(50-3150)} = 0$ dB | $C_{tr(50-3150)} = -4$ dB |
| $R_w + C = 36$ dB | $C_{(50-5000)} = 0$ dB | $C_{tr(50-5000)} = -4$ dB |
| $R_w + C_{tr} = 34$ dB | $C_{(100-5000)} = 0$ dB | $C_{tr(100-5000)} = -2$ dB |

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Report Ref: BMT/MTP/F14235/02

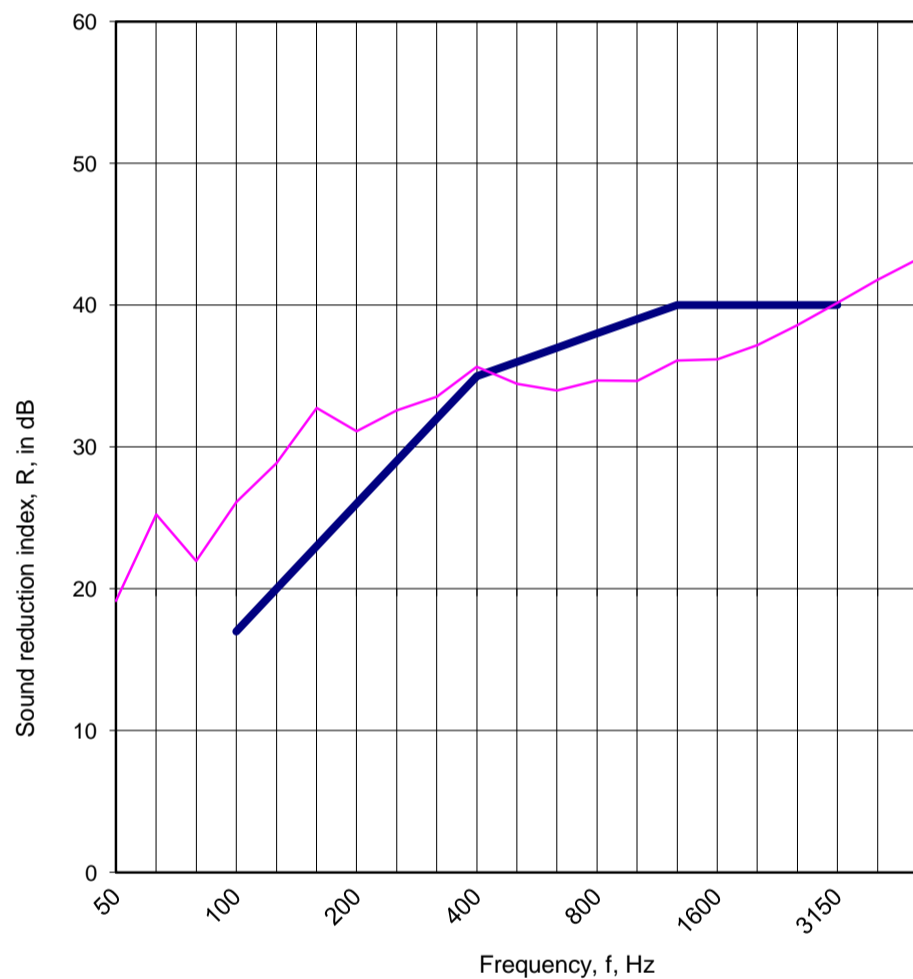
| | |
|--------------------------------------------------------------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm MDF faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | 15mm Pilkington Pyrostop |
| <i>For detailed technical specification, please refer to Section 2 of the report</i> | |

Datasheet Ref. MTP/F14235/02/P024
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 19.2 |
| 63 ⁺ | 25.2 |
| 80 ⁺ | 22.0 |
| 100 | 26.1 |
| 125 | 28.8 |
| 160 | 32.8 |
| 200 | 31.1 |
| 250 | 32.6 |
| 315 | 33.5 |
| 400 | 35.7 |
| 500 | 34.4 |
| 600 | 34.0 |
| 800 | 34.7 |
| 1000 | 34.6 |
| 1250 | 36.1 |
| 1600 | 36.2 |
| 2000 | 37.2 |
| 2500 | 38.6 |
| 3150 | 40.2 |
| 4000 | 41.8 |
| 5000 | 43.2 |
| AAD | -24.2 |

Frequency range for rating in accordance with ISO 717-1



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | |
|------------------|--------------|
| $R_w =$ | 36 dB |
| $R_w + C =$ | 36 dB |
| $R_w + C_{tr} =$ | 35 dB |

| | | | |
|--------------------|------|----------------------|-------|
| $C_{(50-3150)} =$ | 0 dB | $C_{tr(50-3150)} =$ | -3 dB |
| $C_{(50-5000)} =$ | 1 dB | $C_{tr(50-5000)} =$ | -3 dB |
| $C_{(100-5000)} =$ | 1 dB | $C_{tr(100-5000)} =$ | -1 dB |

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Report for: Sentry Panel Products Ltd
Report Ref: BMT/MTP/F14235/02

| | |
|------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm MDF faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | Halspan dropseal, SLS-DRP 300 series |
| Glazing configuration | 16mm AGC Flatglass Pyrobel |

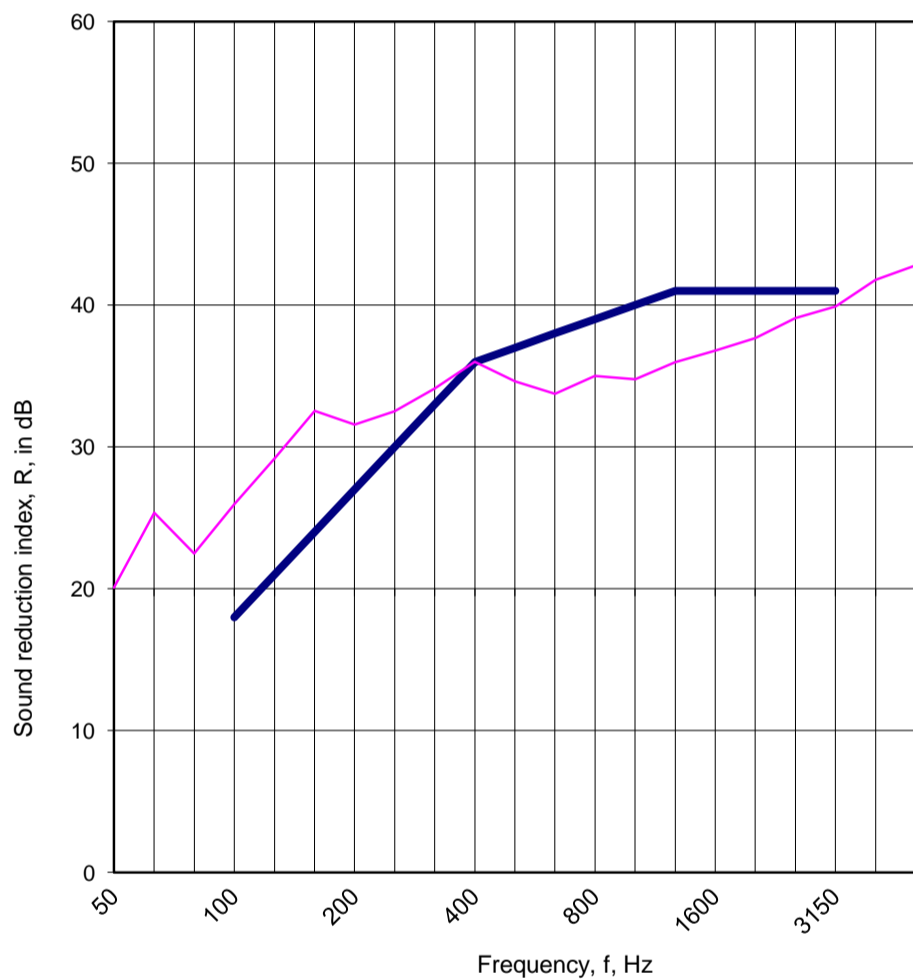
For detailed technical specification, please refer to Section 2 of the report

Datasheet Ref. MTP/F14235/02/P025
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 20.1 |
| 63 ⁺ | 25.4 |
| 80 ⁺ | 22.5 |
| 100 | 26.0 |
| 125 | 29.2 |
| 160 | 32.6 |
| 200 | 31.6 |
| 250 | 32.5 |
| 315 | 34.1 |
| 400 | 36.0 |
| 500 | 34.6 |
| 600 | 33.7 |
| 800 | 35.0 |
| 1000 | 34.8 |
| 1250 | 36.0 |
| 1600 | 36.8 |
| 2000 | 37.7 |
| 2500 | 39.1 |
| 3150 | 39.9 |
| 4000 | 41.8 |
| 5000 | 42.8 |
| AAD | -31.4 |

↑
Frequency range for rating in accordance with ISO 717-1
↓



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

| | | |
|------------------------|-------------------------|----------------------------|
| $R_w = 37$ dB | $C_{(50-3150)} = -1$ dB | $C_{tr(50-3150)} = -3$ dB |
| $R_w + C = 37$ dB | $C_{(50-5000)} = 0$ dB | $C_{tr(50-5000)} = -3$ dB |
| $R_w + C_{tr} = 35$ dB | $C_{(100-5000)} = 0$ dB | $C_{tr(100-5000)} = -2$ dB |

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Report for: Sentry Panel Products Ltd
Report Ref: BMT/MTP/F14235/02

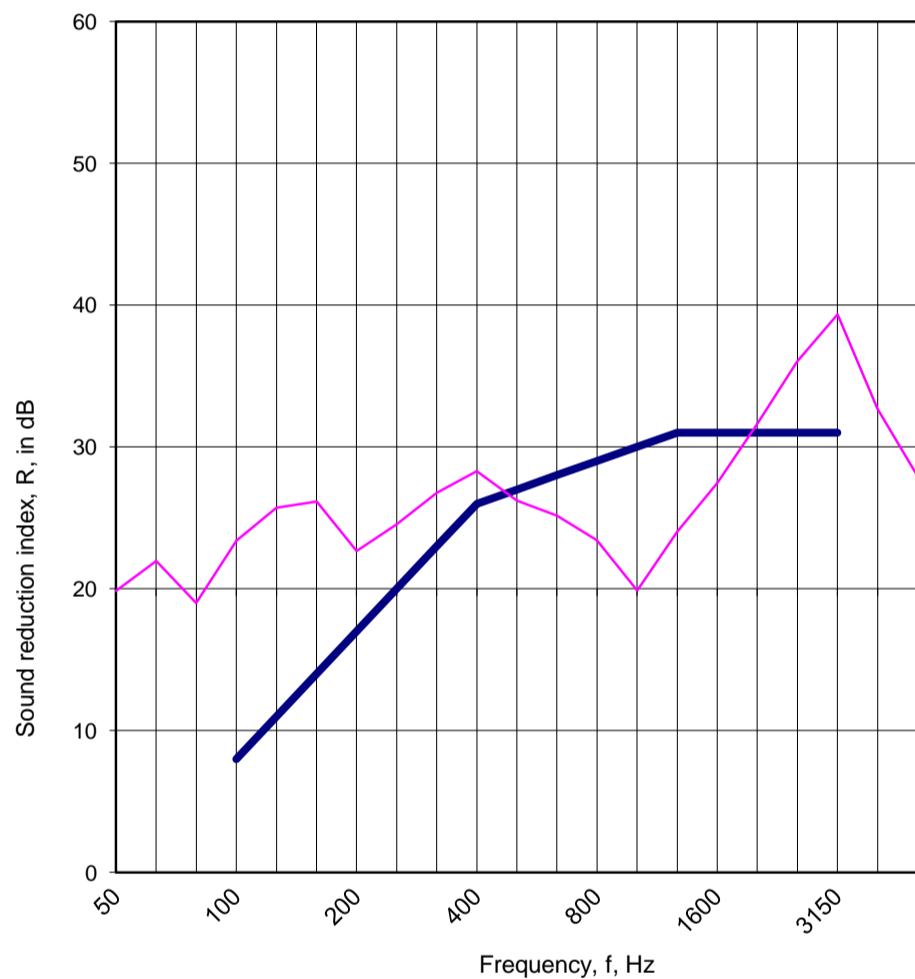
| | |
|--------------------------------------------------------------------------------------|--------------------------------------|
| Client: | Sentry Panel Products Ltd |
| Product Name | SENTRY ProTech 54mm MDF faced |
| Product Type | Single leaf doorset |
| Material Type | Timber |
| Variations: | |
| Perimeter caulked | No |
| Perimeter sealing | Nor710 |
| Threshold sealing | None |
| Glazing configuration | None |
| <i>For detailed technical specification, please refer to Section 2 of the report</i> | |

Datasheet Ref. MTP/F14235/02/P026
Date of Test: 26/08/2014

Source Room Volume: 86.00 m³
Receive Room Volume: 67.00 m³
Specimen Installed By: BM TRADA
Area of Specimen (S): 1.89 m²
Temp. in Test Rooms: 16.8 °C
Static Pressure: 98740.0 Pa
Humidity in Test Rooms: 61.0 %

| f, Hz | R, dB |
|-----------------|-------|
| 50 ⁺ | 19.9 |
| 63 ⁺ | 22.0 |
| 80 ⁺ | 19.0 |
| 100 | 23.4 |
| 125 | 25.7 |
| 160 | 26.1 |
| 200 | 22.7 |
| 250 | 24.5 |
| 315 | 26.8 |
| 400 | 28.3 |
| 500 | 26.2 |
| 600 | 25.2 |
| 800 | 23.4 |
| 1000 | 19.9 |
| 1250 | 24.0 |
| 1600 | 27.5 |
| 2000 | 31.6 |
| 2500 | 36.0 |
| 3150 | 39.3 |
| 4000 | 32.7 |
| 5000 | 27.9 |
| AAD | -29.8 |

↑
Frequency range for rating in accordance with ISO 717-1
↓



— Rating Curve (ISO 717-1) — Sound Reduction Index, R, in dB

$R_w = 27$ dB
 $R_w + C = 26$ dB
 $R_w + C_{tr} = 24$ dB

$C_{(50-3150)} = -1$ dB $C_{tr(50-3150)} = -3$ dB
 $C_{(50-5000)} = 0$ dB $C_{tr(50-5000)} = -3$ dB
 $C_{(100-5000)} = 0$ dB $C_{tr(100-5000)} = -3$ dB

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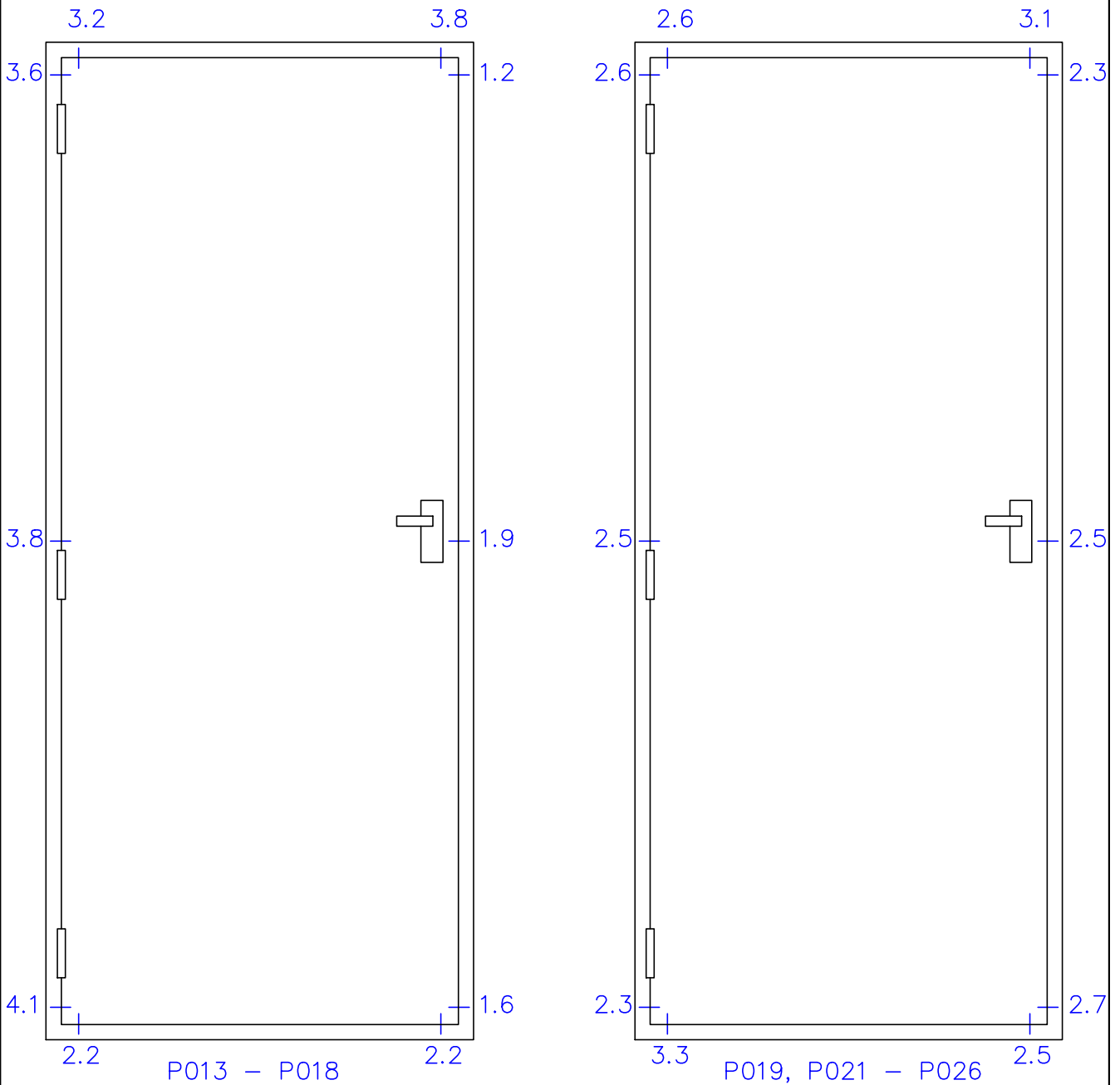
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Report for: Sentry Panel Products Ltd
Report Ref: BMT/MTP/F14235/02

Appendix 2 – Drawings (1 Page)

| | |
|-----------------|-----------------|
| Figure 1 | Leaf/frame gaps |
|-----------------|-----------------|

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BMTRADA

Chiltern House, Stocking Lane, Hughenden Valley
 High Wycombe, Buckinghamshire, HP14 4ND, UK.
 Tel: +44 (0)1494 569800 Fax: +44 (0)1494 564895

Schematic drawing showing leaf/frame gaps.

Date Drawn
 27/11/2014

Drawn By
 ATM

Scale Not to Scale
 All dimensions in mm
 unless otherwise stated

Project No.
 BMT/MTP/F14235/02

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



testing@bmtrada.com



bmtradagroup.com



+44 (0) 1494 569800