



Acoustic

J&C Joel 

Inspiration in every performance

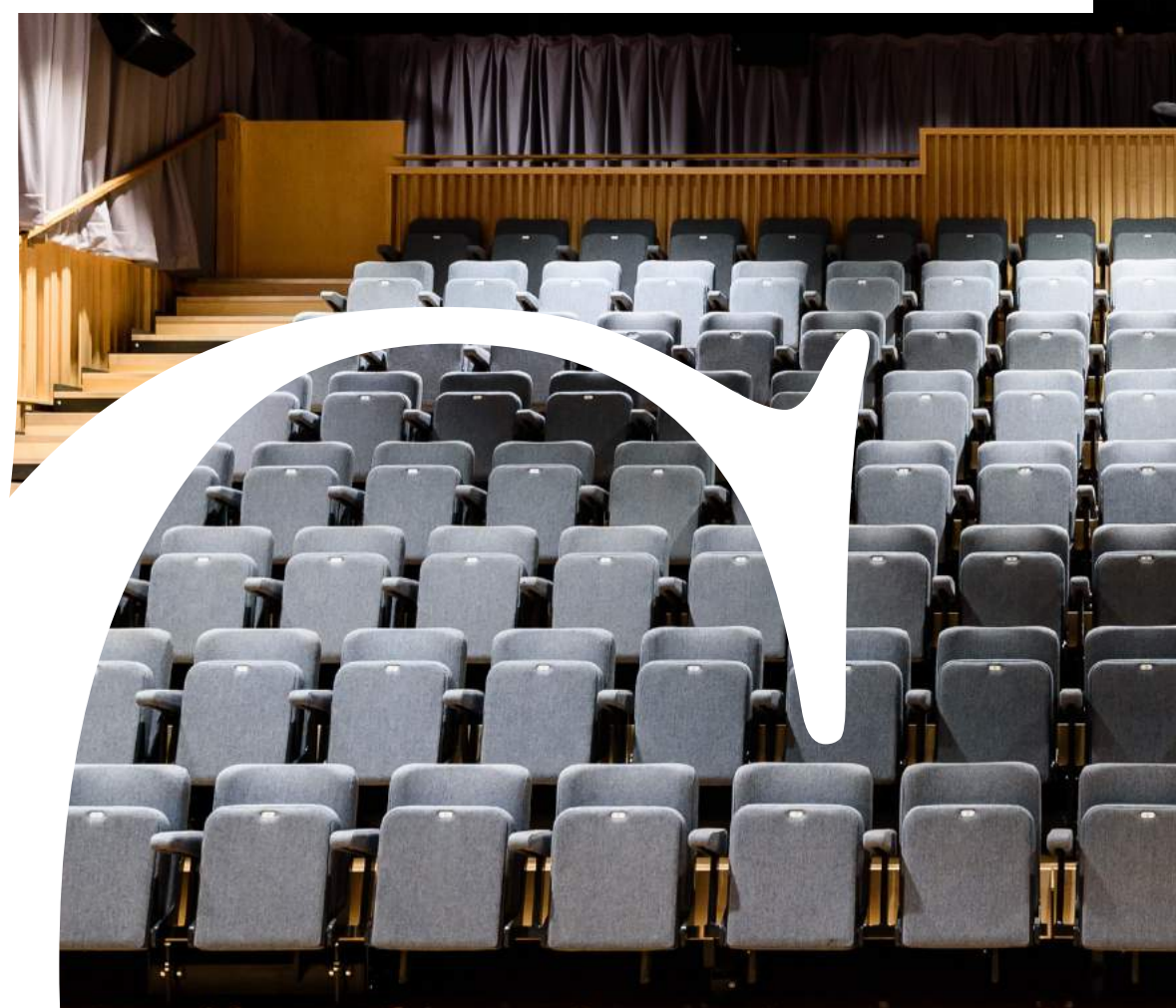
Welcome

Since the late 1970s, J&C Joel has been supplying wool serges into performing arts spaces. As well as its blackout and masking properties, its durability, and its cost-effectiveness, the acoustic absorption properties have been an acknowledged asset. More recently we started to measure these qualities objectively, using third-party test facilities to reassure our customers that the drapes and banners they are purchasing from J&C Joel are independently verified to meet their performance requirements.

Over the years we have built up an impressive array of acoustic fabrics, including 7 different constructions of serge ranging from 420gsm to 1,000gsm, bonded wool serge, and heavyweight cotton and synthetic velours. As well as acoustic drapery we have developed different 'banner' mechanisms, to vertically deploy absorptive surfaces which allow a venue's acoustic properties to be fine-tuned to suit the characteristics of the performance.

As well as absorption tests to measure the absorption coefficient, we have conducted insulation tests to measure the sound reduction index on multi-layered drapery. Now that we have around 100 test reports, we felt that it was time to compile them into a single document. We hope that this will prove to be a useful reference tool for acousticians, theatre consultants, venue managers, indeed anyone involved in performance spaces.

We have also included some reference guides on testing methodology and the materials being tested. As our range of fabrics and acoustic devices evolves, we intend to continue to add to this document. We welcome any feedback and suggestions on the range of data we are providing you with. After all, this has been created to assist people to understand more about the potential acoustic attributes of our range.



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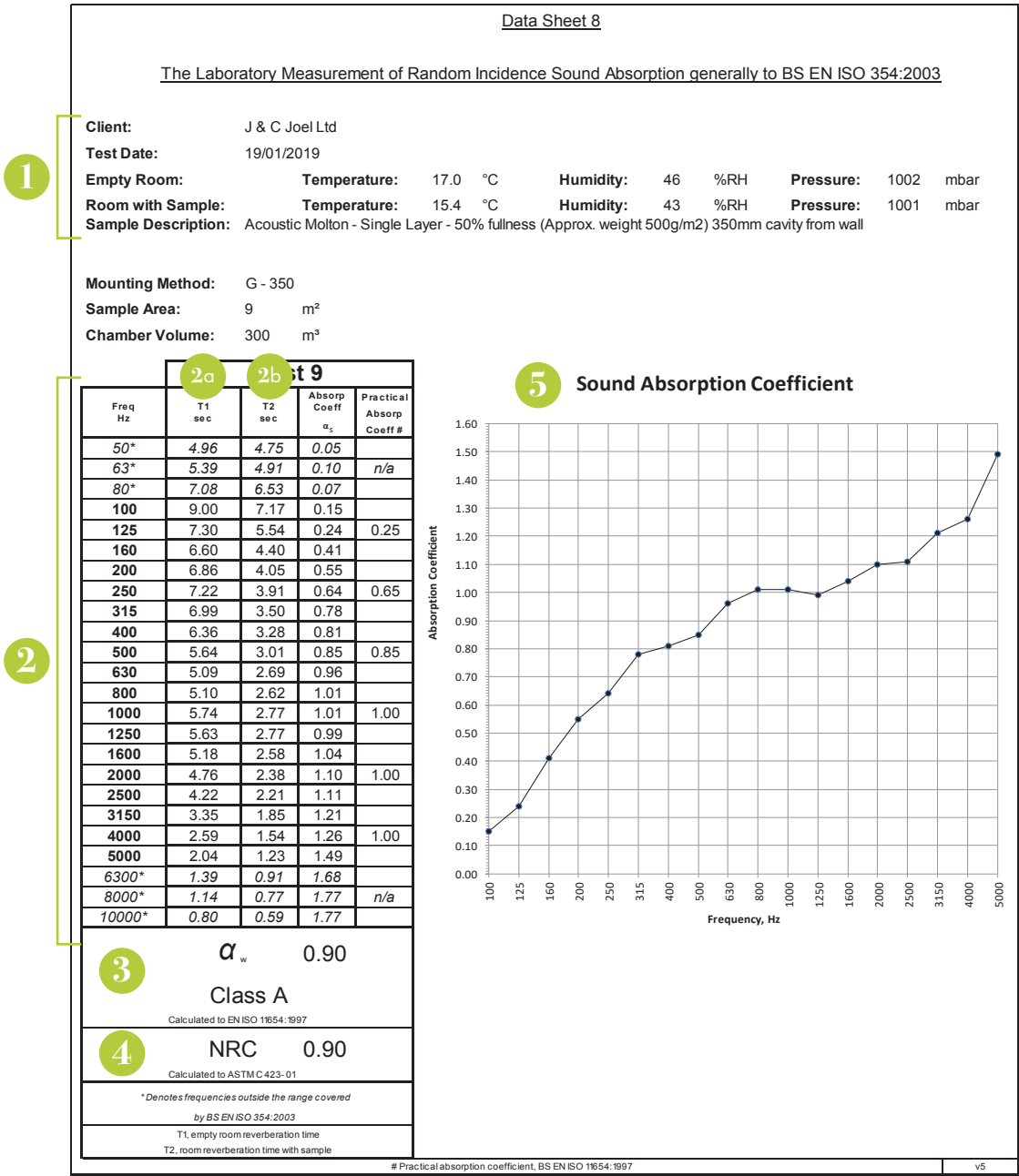
- Acoustic Drapery Insulation Reports

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- Basic Acoustics

Acoustic Test Reports Explanation

A collection of our products are tested for their acoustic properties. These tests produce a sound absorption coefficient classification, which helps us to objectively demonstrate their effectiveness and offer you the best product for the space you are wanting to improve. All of our acoustic reports are available for download on the J&C Joel website. All acoustic reports are available for download on the website, alternatively please contact one of our team for technical advice or information.



1. Test Conditions

The temperature, humidity and pressure of the room in which the test was conducted.

2. Test Results

SAC results table, across the sound frequency spectrum.

2a. T1 - reverberation time in an empty room.

2b. T2 - reverberation time in a room with the drape.

3. SAC Classification (at 1KHz)

The Sound Absorption Coefficient is the fraction of sound energy absorbed by a material expressed as a value between 1.0 (perfect absorption / no reflection) and 0 (zero absorption / total reflection).

4. Noise Reduction Coefficient

Similar to the sound absorption class but using an American test standard, according to ASTM C 423/01.

5. Sound Absorption Coefficient (SAC)

Graph displaying results of sound absorbers into sound absorption class A-E, according to BS EN ISO 11654:1997, including frequencies.

Sample Description Explanation

The layout of sample descriptions on acoustic reports:

(Fabric Type - Acoustic Layers - Fullness - (Weight) - Cavity From the Wall)

The 'Fabric Type' refers to the fabric that is being acoustically tested for this article.

'Acoustic layers' applies to the layers of the fabric examined in the report. For our Motorised Banners reports, multiple acoustic layers can be bonded & pressed to give the fabric, a larger acoustic absorption coefficient.

The 'Fullness' of a drape refers to the amount of fabric, used during manufacture to produce a pleated finish.

The 'Weight' stated on the reports refers to the approximate weight of the fabric per square meter.

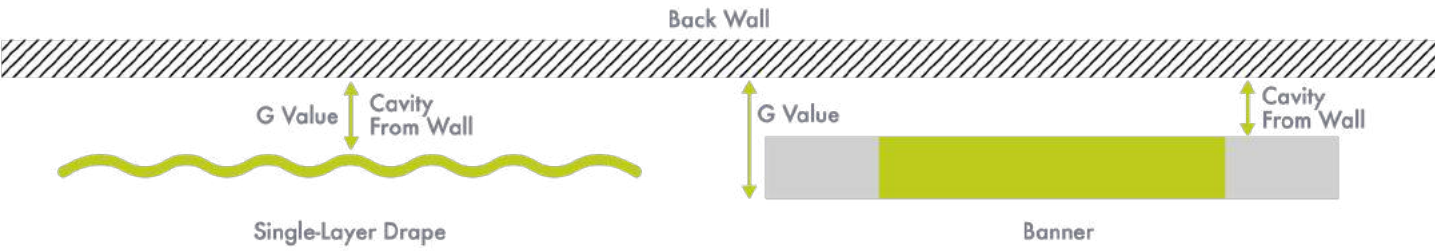
'Cavity From the Wall' is the distance between the fabric and the back wall.

Differentiation of G-Value & Cavity From the Wall

Cavity From the Wall - The test specimen is hung parallel to the room surface. The suffix of the mounting type is the distance in millimetres from the back of the test specimen and the wall.

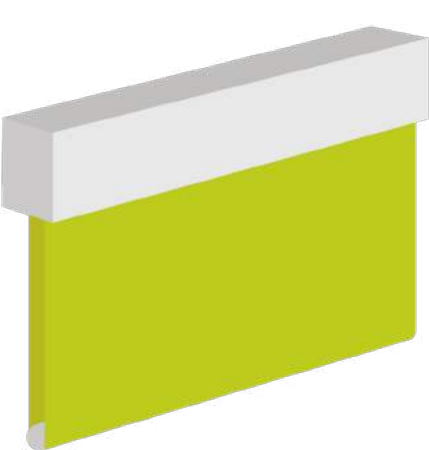
G-Value - The test specimen is hung parallel to the room surface. The suffix of the mounting type is the distance in millimetres from the face of the test specimen and the wall.

Please refer to the diagram below.

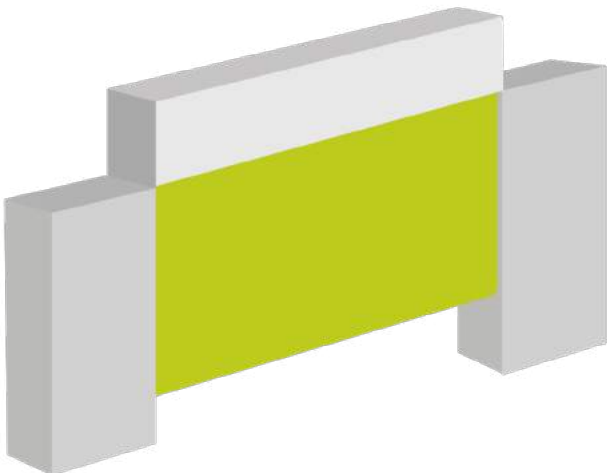


Banner Housing Within a Recess

Acoustic Banner Without a Recess



Acoustic Banner Within a Recess



Our acoustic testing laboratory experience shows that designs based on actual test data are much more likely to achieve the required performance without being excessively over or under-designed. Laboratory testing is usually completed to show compliance with building regulations, to investigate a problem or as part of the design process.

Our highly trained and experienced engineers perform a wide range of noise, vibration, airflow and rain noise measurements in our laboratory.

The layout of our permanent test facility is flexible. This allows us to accommodate a wide range of products and test set-ups. Samples can be readily installed and tested, which allows our clients to do several tests in a day, a unique and valuable aspect of our service.

Independent Testing

Testing is usually completed to obtain performance data for publications or as the starting point for further design work. We are a UKAS accredited testing laboratory No.0444. Building Control Authorities and Sustainability Assessors prefer that companies doing these tests are independently accredited by this service, and it is an accreditation that enables our clients to minimise their risk, enhance their reputation in the marketplace and save considerable amounts of money.

UKAS Accreditations

Our purpose-built laboratory is accredited for the following test standards:

- BS EN ISO 10140: Parts 1: 2016 – Laboratory Measurement of Sound Insulation of Building Elements (specific elements)
- BS EN ISO 10140: Parts 2: 2010 – Laboratory Measurement of Airborne Sound Insulation of Building Elements
- BS EN ISO 10140: Parts 3: 2010 – Laboratory Measurement of Impact Sound Insulation of Building Elements
- BS EN ISO 10140: Parts 4: 2010 – Laboratory Measurement of Sound Insulation of Building Elements (procedures and requirements)
- BS EN ISO 10140: Parts 5: 2010 – Laboratory Measurement of Sound Insulation of Building Elements (test facilities and equipment)
- BS EN ISO 10848-2:2006 – Ceilings Laboratory Measurement of Flanking Transmission of Airborne Sound between Adjoining Rooms
- BS EN ISO 354:2003 Laboratory Measurement of Sound Absorption Coefficient
- BS EN ISO 140-3:1995 Laboratory Measurement of Airborne Sound Insulation
- BS EN ISO 140-6:1998 Laboratory Measurement of Impact Sound Insulation
- BS EN ISO 140-8:1998 Laboratory Measurement of the Reduction of Transmitted Impact Noise
- BS EN ISO 140-18:2006 Laboratory Measurement of Sound Generated by Rainfall on Building Elements (Roofs)
- BS EN ISO 20140-9:1994 Measurement of Sound Insulation in buildings and building elements (suspended ceilings)
- BS EN ISO 717-1:2013 & BS EN ISO 717-2:2013 Rating of Sound Insulation in Buildings and Building Elements
- BS EN ISO 7235:2009 Laboratory measurement for ducted silencers and air-terminal units. Insertion loss, flow noise and total pressure loss

We are accredited for on-site pre-completion testing to the following standards under UK Building Regulations:

- Building Regulations 2010, Approved Document E (2003 incorporating 2004 & 2010 amendments) Sound Insulation Tests including Pre-completion testing for Dwellings and Rooms for Residential Purpose (RRP)
- BS EN ISO 140-4:1998 Field Measurement of Airborne Sound Insulation between Rooms
- BS EN ISO 140-7:1998 Field Measurement of Impact Sound Insulation of Floors

Our laboratory is also UKAS accredited for testing to the following EU Directives/Regulations:

- European Directive 2000/14/EC and its amendment 2005/88/EC Measurement of Airborne Noise Emitted by Outdoor Machines
- ISO 11094:1991 – Acoustics Test code for the measurement of airborne noise emitted by power lawn mowers, lawn tractors, lawn and garden tractors, professional mowers, and lawn and garden tractors with mowing attachments (including ISO 3744:1994)

Summary

Tests have been done in SRL's Laboratory at Holbrook House, Sudbury, Suffolk, to determine the random incidence sound absorption coefficient of various types of curtain in accordance with BS EN ISO 354:2003 in all ways apart for the sample areas. There were 9m² where the standard requires a minimum of 10m², therefore these tests are not completely in accordance with the test standard.

From these measurements, the required results have been derived and are presented in both tabular and graphic form in Data Sheets 1 to 9.

The results are given in 1/3rd octave bands over the frequency range 50Hz to 10kHz, which is beyond that required by the test standard.



Richard Calvert
For and on behalf of
SRL Technical Services Limited
Tel: 01787 247595
Email: rcalvert@srltsl.com



Jack Dalziel
Head of Testing

2.0 Description of Test

2.1 Description of Sample

Tests were performed on various curtains which were hung parallel to the wall in the test chamber. The samples were mounted on a test frame simulating the final install conditions. Airspaces of 100mm, 190mm, 200mm, 260mm, 350mm and 450mm between the face of the curtain and the wall were tested. The curtains measured 3m high by 3m wide and were suspended on a steel pole frame system giving an area of 9m².

Please note – The area of each test sample was below the minimum 10m² required by the test standard and tests therefore do not completely comply with the test standard. All other elements of the tests are in accordance with the standard.

Mounting Method:	G-100, G-190, G-200, G-260, G-350 and G-450
Sampling plan:	Taken from top of pile.
Sample condition:	New
Details supplied by:	J & C Joel Ltd
Sample installed by:	J & C Joel Ltd

2.2 Sample Delivery Date

15 October 2020

2.3 Test Procedures

The sample was mounted/located and tested in accordance with the relevant standard. The method and procedure are described in Appendix A. The measurement uncertainty is given in Appendix B. The method of mounting samples is given in Appendix C.

Appendix A - Test Procedure

Measurements of Random Incidence Sound Absorption
Coefficients Generally to BS EN ISO 354:2003 - TPI4 (Plane Absorbers)

In the laboratory, random incidence sound absorption coefficients are determined from the rate of decay of a sound field in a reverberation room, with and without a test sample installed. The rate of decay is described by the time a sound field takes to decay by 60dB, known as the reverberation time.

The reverberation room is constructed from 215mm brick, which is internally plastered with a reinforced concrete roof and floor. The reverberation room is rectangular, measuring 8.3 metres long, 6.7 metres wide and 5.4 metres high. The volume is 300m³, the total surface area, 275m². From the ceiling hang 10 randomly positioned diffusers, with a total surface area (for one side) of 20m². The room is isolated from the surrounding structure by the use of resilient mountings and seals, ensuring good acoustic isolation.

Using at least two omnidirectional loudspeaker positions, broad band random noise is produced in the room using an electronic generator and power amplifier. When the amplification system is switched off, the decay of sound is filtered into one-third octave band widths and the reverberation times measured. This process is repeated for each of six microphone positions and the values arithmetically averaged to obtain a final value for each frequency.

The sample area should normally be between 10m² and 15.7m². This may be larger if it is suspected that the absorption properties will be low. The sample in this instance has an area of 9m² and therefore tests are described as generally in accordance with the test standard. The sample is suspended from a pre-assembled rig positioned on the floor of the reverberation room close to one wall. The test rig provides a space between the sample and wall, the depth of which can be varied to simulate specific requirements. The procedure of measuring the reverberation times then repeated.

The sound absorption coefficients are calculated from the difference in decay rates for each frequency according to the formula:

$$\alpha_s = \frac{A_T}{S}$$

where

- α_s is the random incidence absorption coefficient
- A_T is the increase in equivalent sound absorption area of the test specimen (m²)
- S is the area covered by the test specimen (m²)

The equivalent absorption area of the test specimen is further defined as:

$$A_T=55.3V\left(\frac{1}{c_2T_2}-\frac{1}{c_1T_1}\right)-4V(m_2-m_1)$$

where

- V is the volume of the empty reverberation room (m³)
- c₁ is the speed of sound in the empty room (m/sec)
- T₁ is the reverberation time in the empty room (sec)
- m₁ is the power attenuation coefficient calculated according to ISO 9613-1 using the climatic conditions that have been present in the empty room during the measurement.

c₂, T₂ and m₂ have the same meanings as c₁, T₁ and m₁ but with the test specimen in the room.

It is occasionally found that the absorption coefficient derived in this manner reaches a value greater than unity. This is impossible, by definition, and investigation has shown that this anomaly is due to diffraction of the impinging sound waves at the edges of the sample. In practical terms this is insignificant.

Appendix B - Measurement Uncertainty

BS EN ISO 354:2003 - TP14

I. Introduction

The estimated values of uncertainty are based on a standard uncertainty multiplied by a coverage factor of K = 2, which provides a level of confidence of approximately 95%.

Table 1: Uncertainty For Equivalent Absorption Area Measurement

Frequency, Hz	Expanded uncertainty K = 2, 95% % of A ₁ or A ₂
100	9.0
125	8.1
160	5.6
200	6.7
250	4.3
315	8.1
400	4.6
500	5.0
630	5.3
800	3.2
1000	3.5
1250	3.1
1600	2.8
2000	2.7
2500	2.2
3150	1.8
4000	1.6
5000	1.6

2. Estimation of Expanded Uncertainty For Sample Equivalent Sound Absorption Area

The expanded uncertainty, U_A,m² is estimated by using the following formulae:-

$$U_A=\sqrt{\left(\frac{uA_1}{100}\right)^2+\left(\frac{uA_2}{100}\right)^2}$$

where

- U_A is the expanded uncertainty for the sample equivalent sound absorption area, for K = 2, 95%, m²
- u is the estimated expanded uncertainty for the equivalent sound absorption area, taken from Table 1 above, K = 2, 95%, % of A₁ or A₂
- A₁ is the equivalent sound absorption area of the empty room, m²
- A₂ is the equivalent sound absorption area of the room with the sample, m²

3. Estimation of expanded Uncertainty For Sound Absorption Coefficients

The expanded uncertainty for sound absorption coefficients, U_{α_s} , is estimated using the following formulae:-

$$U_{\alpha_s}=\frac{\alpha_sU_A}{A}$$

where

- U_{α_s} is the expanded uncertainty for sound absorption coefficients, K=2, 95%
- α_s is the sound absorption coefficient
- U_A is the expanded uncertainty for the sample equivalent sound absorption area, K=2, 95%, m²
- A is the sample equivalent sound absorption area, m²

Appendix C - Mounting Methods

Description of Test Specimen Mountings for Sound Absorption Tests

BS EN ISO 354:2003 describes various test specimen mountings. The methods of mounting used for these tests is briefly described as follows:

Type G Mounting

The test specimen, such as a curtain, is hung parallel to the room surface. The suffix of the mounting type (e.g. Type G-100) is the distance in mm from the room side outer face of the test specimen and room surface.

Photograph 1



Showcase





Acoustic Banners Absorption Reports

Product	Page
Single Layer Banner	20
Double Layer Banner	28
Concertina Banner	42

Frequency Comparison Chart

Banner Type	Fabric	Distance	125Hz
Concertina Banner System	Pressed Tay Wool Serge - Enclosed (150mm Cavity Between Material)	100mm	0.75
Concertina Banner System	Pressed Tay Wool Serge - Enclosed (150mm Cavity Between Material)	350mm	0.75
Concertina Banner System	Pressed Tay Wool Serge - Enclosed (100mm Cavity Between Material)	100mm	0.75
Concertina Banner System	Pressed Tay Wool Serge - Enclosed (100mm Cavity Between Material)	350mm	0.65
Concertina Banner System	Pressed Tay Wool Serge (150mm Cavity Between Material)	100mm	0.50
Concertina Banner System	Pressed Tay Wool Serge (150mm Cavity Between Material)	350mm	0.50
Concertina Banner System	Pressed Tay Wool Serge (100mm Cavity Between Material)	100mm	0.40
Concertina Banner System	Pressed Tay Wool Serge (100mm Cavity Between Material)	350mm	0.50
Concertina Banner System	Pressed Wool Serge 800	100mm	0.35
Concertina Banner System	Pressed Wool Serge 800	350mm	0.35
Concertina Banner System	Pressed Wool Serge 565 (100mm Cavity Between Material)	100mm	0.25
Concertina Banner System	Pressed Wool Serge 565 (100mm Cavity Between Material)	160mm	0.30
Concertina Banner System	Pressed Wool Serge 565 (100mm Cavity Between Material)	350mm	0.35
Concertina Banner System	Pressed Coloured Wool Serge (100mm Cavity Between Material)	100mm	0.25
Concertina Banner System	Pressed Coloured Wool Serge (100mm Cavity Between Material)	350mm	0.35
Double Layer Banner System	Bonded Coloured Wool Serge (100mm Cavity Between Material)	100mm	0.30
Double Layer Banner System	Bonded Coloured Wool Serge (100mm Cavity Between Material)	350mm	0.30
Double Layer Banner System	Bonded Coloured Wool Serge - Enclosed	100mm	0.40
Double Layer Banner System	Bonded Coloured Wool Serge - Enclosed	350mm	0.35
Double Layer Banner System	Bonded Wool Serge 565	100mm	0.30
Double Layer Banner System	Bonded Wool Serge 565	150mm	0.30
Double Layer Banner System	Bonded Wool Serge 565	350mm	0.40
Double Layer Banner System	Bonded Wool Serge 565 - Enclosed	100mm	0.40
Double Layer Banner System	Bonded Wool Serge 565 - Enclosed	350mm	0.35
Double Layer Banner System	Bonded Wool Serge 565 & Printed Theatre Canvas - Enclosed	150mm	0.70
Double Layer Banner System	Bonded Wool Serge 565 & Printed Theatre Canvas	350mm	0.30
Single Layer Banner System	Bonded Wool Serge 565	100mm	0.10
Single Layer Banner System	Bonded Wool Serge 565	150mm	0.30
Single Layer Banner System	Bonded Wool Serge 565	350mm	0.25
Single Layer Banner System	Bonded Coloured Wool Serge	150mm	0.25
Single Layer Banner System	Bonded Wool Serge 420	100mm	0.10
Single Layer Banner System	Bonded Wool Serge 420	350mm	0.25

250Hz	500Hz	1000Hz	2000Hz	4000Hz
0.95	1.00	0.90	0.90	0.95
0.95	1.00	1.00	1.00	1.00
0.90	1.00	0.95	0.85	0.90
0.85	1.00	1.00	0.95	0.95
0.80	1.00	0.95	0.95	1.00
0.80	1.00	1.00	1.00	1.00
0.80	1.00	1.00	0.90	0.95
0.70	1.00	1.00	1.00	1.00
0.65	1.00	1.00	1.00	1.00
0.65	1.00	1.00	1.00	1.00
0.60	1.00	1.00	1.00	1.00
0.65	1.00	1.00	1.00	1.00
0.60	0.95	1.00	1.00	1.00
0.60	1.00	1.00	0.95	1.00
0.65	0.95	1.00	1.00	1.00
0.50	0.80	0.90	0.80	0.90
0.50	0.90	1.00	0.95	1.00
0.85	1.00	0.95	0.85	0.85
0.85	1.00	1.00	1.00	1.00
0.70	1.00	1.00	1.00	1.00
0.65	0.95	1.00	1.00	1.00
0.70	1.00	1.00	1.00	1.00
0.75	0.95	0.85	0.85	0.85
0.80	1.00	1.00	1.00	1.00
0.80	0.90	0.85	0.95	0.95
0.75	1.00	1.00	1.00	1.00
0.40	0.75	0.90	0.80	0.95
0.85	0.95	0.80	0.75	0.75
0.65	0.75	0.85	0.85	1.00
0.85	0.95	0.85	0.80	0.85
0.40	0.75	0.85	0.75	0.85
0.65	0.70	0.80	0.80	0.95

Fabrics Used In Banners

Printed Theatre Canvas



CUSTOM



Customised Digital Print



Approx Roll Length:
30m / 98ft



Width:
500cm / 197"



Weight:
340 g/m²



Fire Rating:
NDFR



Fire Certification:
BS5867, B1

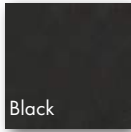


Customised Digital Print

Bonded Wool Serge 420



Two layers of our Wool Serge 420, bonded together for a more stable structure.



Black



Colour Available



Approx Roll Length:
57m / 187ft



Width:
150cm / 59"



Weight:
840 g/m²



FR Rating:
IFR



FR Certification:
BS5867



Custom Dye
N/A

Bonded Coloured Wool Serge



Two layers of our Coloured Wool Serge, bonded together for a more stable structure.

Plum

Scarlet

Cognac

Gold

Midnight

Oxford

Marine

TV Blue

Ultra Blue

Chroma Key Blue

Mole

Bottle

Emerald

Chroma Key Green

Original Grey

Black

Slate

Natural



18 Colours Available



Approx Roll Length:
57m / 187ft



Width:
150cm / 59"



Weight:
1000 g/m²



Fire Rating:
IFR



Fire Certification:
BS5867, IMO



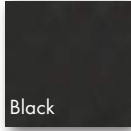
Custom Dye Available*

*CUSTOM DYE price on application, 4 wk lead time *BONDING 3 wk lead time *DYE & BOND 7 wk lead time

Bonded Wool Serge 565



Two layers of our Wool Serge 565, bonded together for a more stable structure.



Black



Colour Available



Approx Roll Length:
57m / 187ft



Width:
150cm / 59"



Weight:
1130 g/m²



FR Rating:
IFR



FR Certification:
BS5867, NFPA 701, IMO, AS1530.2/3



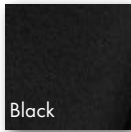
Custom Dye
N/A

Fabrics Used In Banners

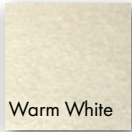
Pressed Tay Wool Serge



Our Tay Wool Serge, with a pressed finish, suitable for use on our concertina banners.



Black



Warm White



2 Colours Available



Approx Roll Length:
25m / 82ft



Width:
150cm / 59"



Weight:
625 g/m²



FR Rating:
IFR



FR Certification:
BS5867



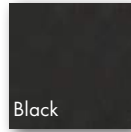
Custom Dye Available*

*CUSTOM DYE price on application, 4 wk lead time, MOQ 4 rolls

Pressed Wool Serge 800



Our Wool Serge 800, with a pressed finish, suitable for use on our concertina banners.



Black



Colour Available



Approx Roll Length:
38m / 125ft



Width:
150cm / 59"



Weight:
800 g/m²



FR Rating:
IFR



FR Certification:
BS5867



Custom Dye
N/A



J&C Joel Concertina Banner System in Testing

Single Layer Banner

Cadenza (Single Layer Banner)

The Cadenza Acoustic Banner is a budget-friendly option within the J&C Joel variable acoustic range. Deploying a single layer of Bonded Wool Serge it achieves a Class B acoustic absorption rating according to EN ISO 11654:1997.

The Cadenza can offer an absorbent area of up to 48m². With 6m as the maximum width, and 10m as the maximum drop. Custom sizes are available on request.

Works with Bonded Wool Serge*, available in 1,130gsm, 1000gsm, or 840gsm to achieve different acoustic requirements. The standard fabric colour is black, with a range of 10 colours available on 1,000gsm, custom colours available subject to MOQ. *100% recycled wool product. Other fabrics are available for acoustic or decorative purposes.

The standard operating speed is around 140mm/s which enables a 5m tall banner to deploy in 35s.

Designed and Manufactured in the UK.



Features

- Tubular Motor (typically Becker)
- End of Travel & Ultimate Limit Switches
- Standard power requirement of 230v 13A power supply per banner location.

Control Option One

- Uses the JCJ Conductor Control System, enables advanced control over a number of options using a tablet interface.
- Requires a 300x300 enclosure for electronics. Can be mounted on the unit (shown below) or the wall.
- Allows preset positions, individual and group control of up to 100 banners, with movement based on meterage or percentage of travel.
- Absolute Encoder (optional extra, shown below)
- Secondary Brake (optional extra, shown below)
- E-Stops compliant with ISO 13850 & can interface with other stage engineering packages through a global e-stop system.
- Can integrate into a building management system.

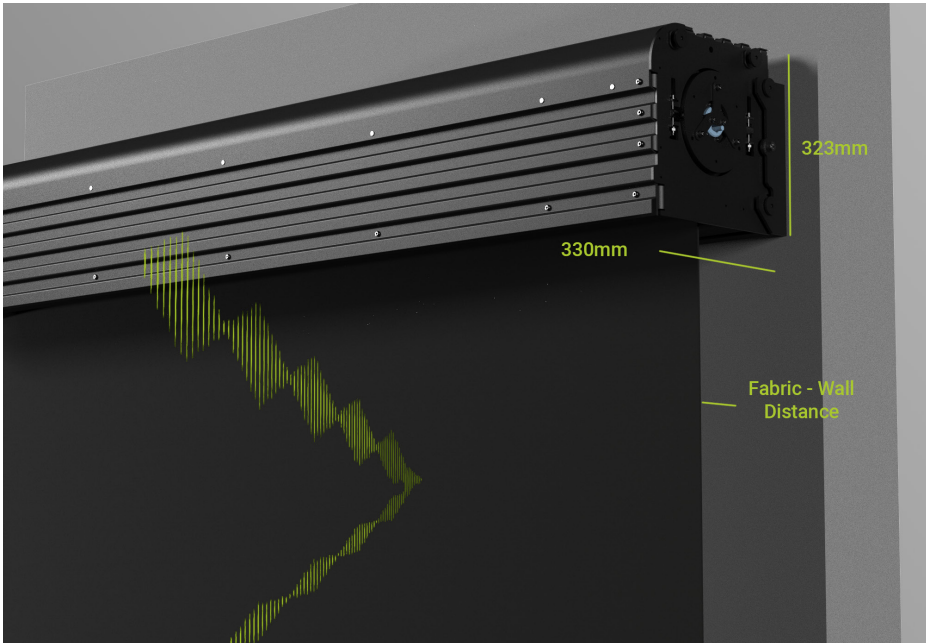
Installation

- Mounting brackets provide a simple wall or ceiling fix. The same part is used for both scenarios. Once the brackets are fixed, the banner slots into place and is fixed with a bolt.
- J&C Joel can provide full installation services or supply mechanical and electrical drawings to aid your installation.

Control Option Two

- Uses the motor manufacturer's propriety software, allows control of upto 100 units from a mobile device
- Can be integrated into a building management system (BMS).
- Control via radio frequency, with the motors providing positional feedback to the control and signal amplification
- Application allows multiple pre-set positions for banners based on percentage of deployment.

Technical Data



For use with Tay Wool Serge & Pressed Wool Serge, please see page 19.

Fabric	Fabric-Wall Distance mm	Acoustic Absorption Co-efficient					
		125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
Bonded Wool Serge 1130 gsm	100	0.10	0.40	0.75	0.90	0.80	0.95
	150	0.26	0.90	0.98	0.81	0.77	0.79
	350	0.25	0.65	0.75	0.85	0.85	1.00
Bonded Wool Serge 840 gsm	100	0.10	0.40	0.75	0.85	0.75	0.85
	350	0.25	0.65	0.70	0.80	0.80	0.95
Bonded Coloured Wool Serge 1000 gsm	150	0.22	0.91	0.98	0.88	0.75	0.85

Class B EN ISO 11654:1997 (SAC)

NRC 0.75 ASTM C 423-01 (SAC)

Drop up to 10m Width up to 6m 48m² Absorbent Surface

Single Phase 240v

Contents

Fabric	Wall Cavity	Class	SAC Classification	Page
Bonded Wool Serge 420	100mm	C	0.70	22
Bonded Wool Serge 420	350mm	B	0.80	23
Bonded Wool Serge 565	100mm	C	0.70	24
Bonded Wool Serge 565	150mm	B	0.80	25
Bonded Wool Serge 565	350mm	B	0.85	26
Bonded Coloured Wool Serge	150mm	B	0.85	27

Acoustic Test Report - Absorption

Absorption Class: C

Calculated to EN ISO 11654:1997

Fabric: Bonded Wool Serge 420
Fullness: Single Layer Banner System
Cavity from Wall: 100mm



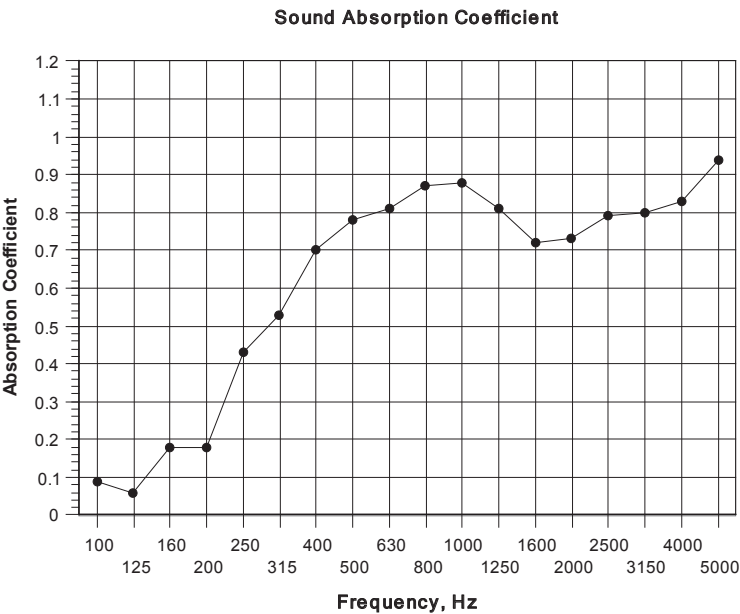
Inspiration in every performance

Data Sheet 1

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.9 °C Humidity: 54 %RH Pressure: 1010 mbar
Sample Description: Single Layer Banner System - Bonded Wool Serge 420 (Approx. Weight 840g/m² Made up of 2 Bonded Layers of 420g/m² Fabric) - 100mm Cavity From Wall
Mounting Method: G-100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 2				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	5.15	-0.02	
63*	4.60	4.58	0.01	n/a
80*	5.86	5.54	0.05	
100	6.96	6.22	0.09	
125	7.22	6.70	0.06	0.10
160	6.82	5.57	0.18	
200	6.37	5.25	0.18	
250	7.19	4.57	0.43	0.40
315	7.06	4.18	0.53	
400	6.40	3.50	0.70	
500	5.35	3.02	0.78	0.75
630	5.03	2.87	0.81	
800	5.43	2.90	0.87	
1000	5.96	3.02	0.88	0.85
1250	5.70	3.08	0.81	
1600	5.08	3.02	0.72	
2000	4.62	2.83	0.73	0.75
2500	4.17	2.57	0.79	
3150	3.50	2.28	0.80	
4000	2.85	1.95	0.83	0.85
5000	2.25	1.58	0.94	
6300*	1.66	1.24	0.98	
8000*	1.38	1.06	1.00	n/a
10000*	0.93	0.75	1.13	



α_w 0.70(H)
Class C
Calculated to EN ISO 11654:1997
NRC 0.70
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B

Calculated to EN ISO 11654:1997

Fabric: Bonded Wool Serge 420
Fullness: Single Layer Banner System
Cavity from Wall: 350mm



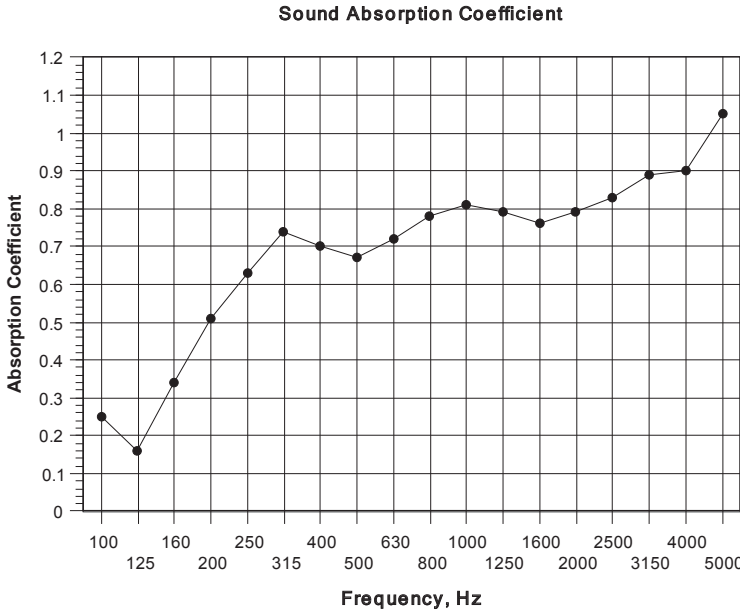
Inspiration in every performance

Data Sheet 2

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.9 °C Humidity: 54 %RH Pressure: 1010 mbar
Sample Description: Single Layer Banner System - Bonded Wool Serge 420 (Approx. Weight 840g/m² Made up of 2 Bonded Layers of 420g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G-350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 3				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	4.76	0.07	
63*	4.60	3.85	0.23	n/a
80*	5.86	5.00	0.16	
100	6.96	5.26	0.25	
125	7.22	5.93	0.16	0.25
160	6.82	4.79	0.34	
200	6.37	3.99	0.51	
250	7.19	3.91	0.63	0.65
315	7.06	3.58	0.74	
400	6.40	3.50	0.70	
500	5.35	3.22	0.67	0.70
630	5.03	3.02	0.72	
800	5.43	3.04	0.78	
1000	5.96	3.14	0.81	0.80
1250	5.70	3.10	0.79	
1600	5.08	2.96	0.76	
2000	4.62	2.75	0.79	0.80
2500	4.17	2.52	0.83	
3150	3.50	2.19	0.89	
4000	2.85	1.90	0.90	0.95
5000	2.25	1.53	1.05	
6300*	1.66	1.18	1.20	
8000*	1.38	1.03	1.15	n/a
10000*	0.93	0.75	1.13	



α_w 0.80(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.75
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Bonded Wool Serge 565
Fullness: Single Layer Banner System
Cavity from Wall: 100mm

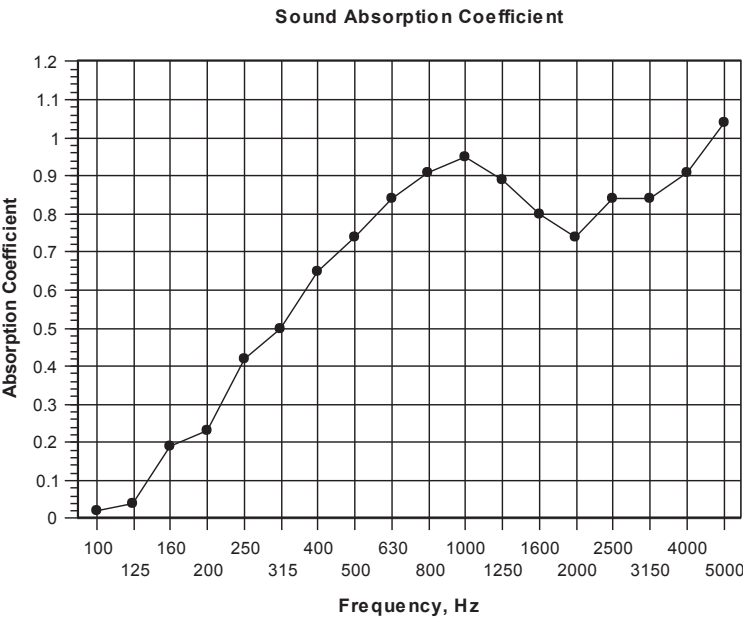


Data Sheet 1

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.8 °C Humidity: 52 %RH Pressure: 1010 mbar
Sample Description: Single Layer Banner System - Bonded Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Bonded Layers of 565g/m² Fabric) - 100mm Cavity From Wall
Mounting Method: G-100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 6				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	5.19	-0.02	
63*	4.60	4.56	0.01	n/a
80*	5.86	5.55	0.05	
100	6.96	6.74	0.02	
125	7.22	6.83	0.04	0.10
160	6.82	5.50	0.19	
200	6.37	5.02	0.23	
250	7.19	4.61	0.42	0.40
315	7.06	4.27	0.50	
400	6.40	3.63	0.65	
500	5.35	3.09	0.74	0.75
630	5.03	2.83	0.84	
800	5.43	2.84	0.91	
1000	5.96	2.91	0.95	0.90
1250	5.70	2.93	0.89	
1600	5.08	2.89	0.80	
2000	4.62	2.81	0.74	0.80
2500	4.17	2.49	0.84	
3150	3.50	2.22	0.84	
4000	2.85	1.87	0.91	0.95
5000	2.25	1.51	1.04	
6300*	1.66	1.17	1.15	
8000*	1.38	1.00	1.17	n/a
10000*	0.93	0.73	1.14	



α_w 0.70(H)
Class C
Calculated to EN ISO 11654:1997
NRC 0.70
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Bonded Wool Serge 565
Fullness: Single Layer Banner System
Cavity from Wall: 150mm

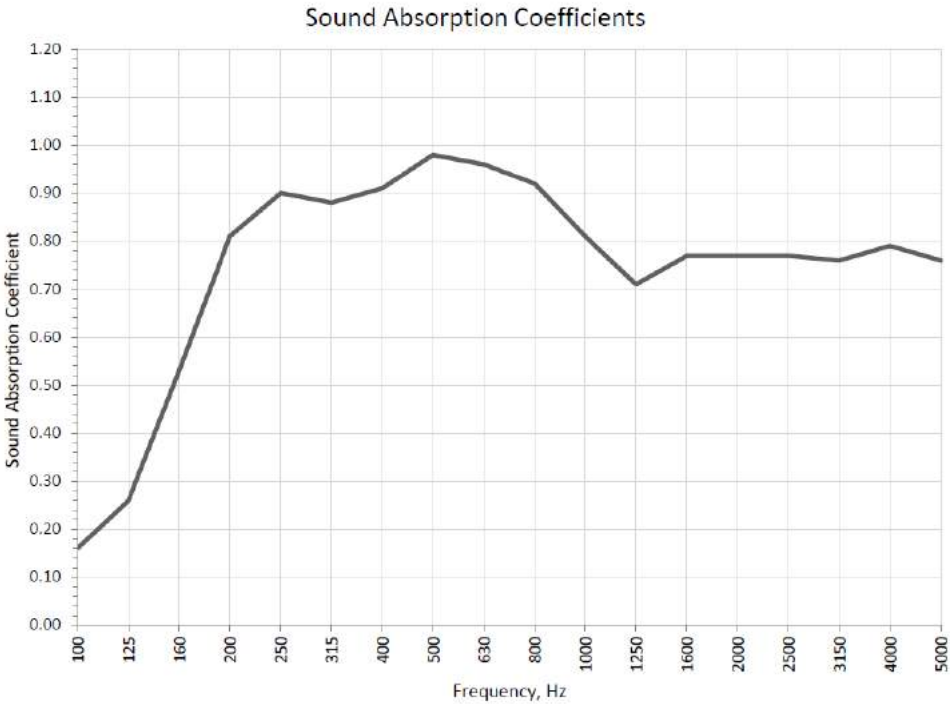


Data Sheet 7

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 7
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-150
Sample Description: Bonded Wool Serge 565g/m² - single layer
Test Room: Empty With Sample
Air Temperature: 15.6 °C 15.4 °C
Air Humidity: 48 % RH 46 % RH
Air Pressure: 1021 mbar 1019 mbar
Sample Area: 9 m²

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.36	0.03	n/a
63*	4.18	3.98	0.07	
80*	7.24	6.09	0.14	
100	6.90	5.71	0.16	0.30
125	6.66	5.03	0.26	
160	6.03	3.80	0.53	
200	6.46	3.29	0.81	0.85
250	6.79	3.20	0.90	
315	6.54	3.17	0.88	
400	6.06	3.01	0.91	0.95
500	5.54	2.77	0.98	
630	4.90	2.62	0.96	
800	4.93	2.69	0.92	0.80
1000	5.32	2.97	0.81	
1250	5.11	3.05	0.71	
1600	4.79	2.84	0.77	0.75
2000	4.33	2.66	0.77	
2500	3.79	2.44	0.77	
3150	3.01	2.09	0.76	0.75
4000	2.38	1.73	0.79	
5000	1.84	1.42	0.76	
6300*	1.30	1.06	0.83	n/a
8000*	1.06	0.89	0.78	
10000*	0.73	0.63	0.91	



α_w 0.80(L)
Class B
Calculated to BS EN ISO 11654:1997
NRC 0.85
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited

v1

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Bonded Wool Serge 565
Fullness: Single Layer Banner System
Cavity from Wall: 350mm

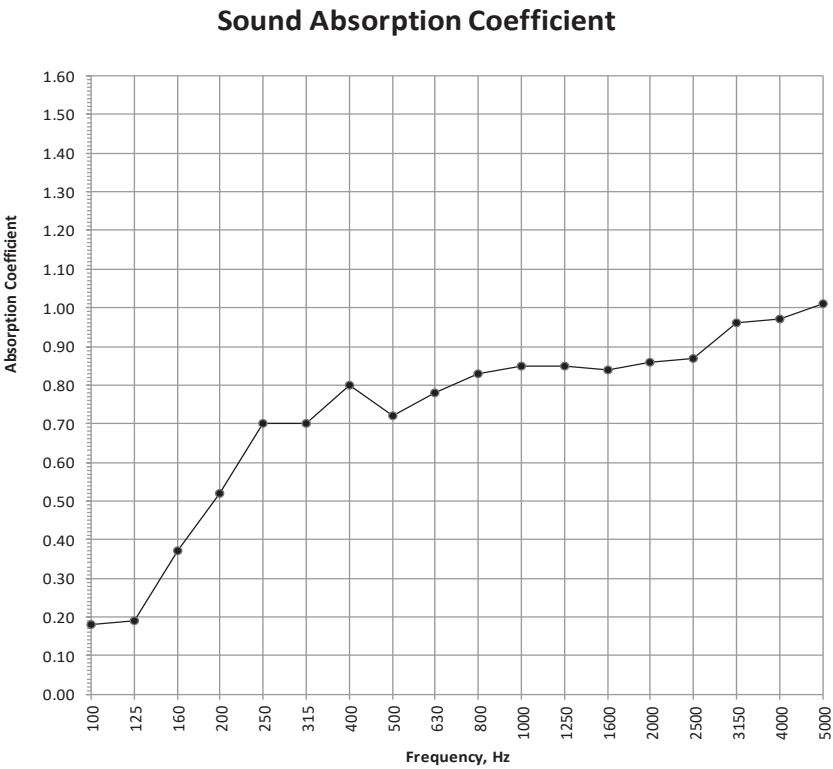


Data Sheet 1

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 08/03/2019
Empty Room: Temperature: 15.7 °C Humidity: 55 %RH Pressure: 1004 mbar
Room with Sample: Temperature: 15.8 °C Humidity: 50 %RH Pressure: 1003 mbar
Sample Description: Single Layer Banner System - Bonded Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Bonded Layers of 565g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 9				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	4.90	4.48	0.10	
63*	5.23	4.96	0.06	n/a
80*	6.95	6.36	0.07	
100	7.63	6.09	0.18	
125	7.10	5.69	0.19	0.25
160	6.60	4.56	0.37	
200	6.85	4.12	0.52	
250	7.10	3.69	0.70	0.65
315	6.87	3.63	0.70	
400	6.65	3.36	0.80	
500	5.64	3.22	0.72	0.75
630	4.96	2.90	0.78	
800	5.19	2.89	0.83	
1000	5.67	3.00	0.85	0.85
1250	5.64	2.98	0.85	
1600	5.32	2.90	0.84	
2000	4.86	2.71	0.86	0.85
2500	4.14	2.45	0.87	
3150	3.41	2.08	0.96	
4000	2.75	1.79	0.97	1.00
5000	2.14	1.47	1.01	
6300*	1.46	1.07	1.14	
8000*	1.18	0.90	1.12	n/a
10000*	0.83	0.67	1.13	



αw	0.85(H)
Class B	
Calculated to EN ISO 11654:1997	
NRC	0.80
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Bonded Coloured Wool Serge
Fullness: Single Layer Banner System
Cavity from Wall: 150mm

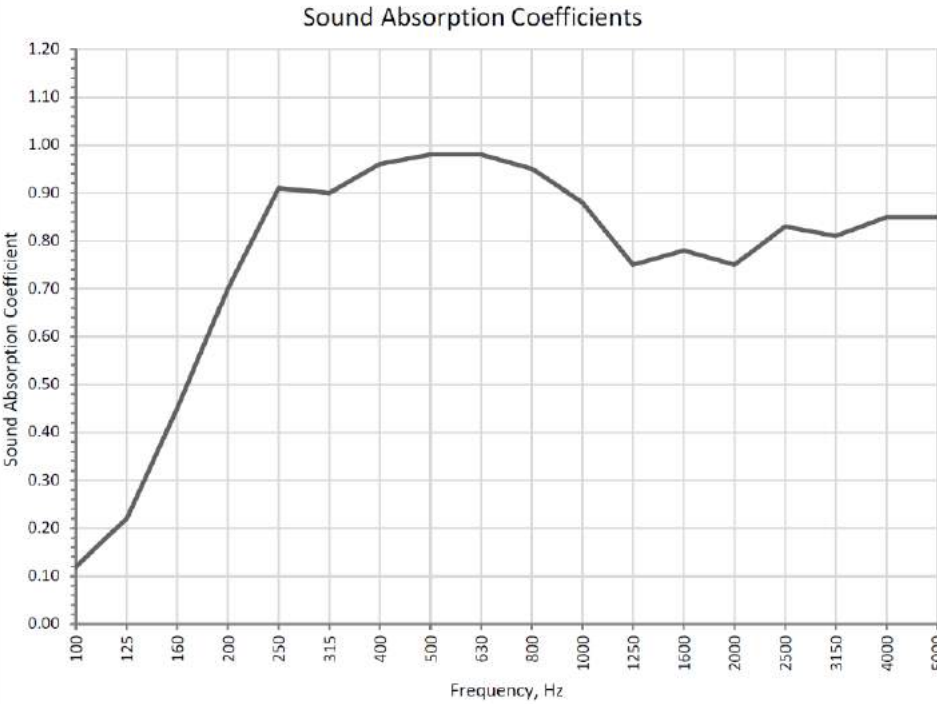


Data Sheet 8

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 8
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-150
Sample Description: Bonded Coloured Wool Serge - single layer
Test Room: Empty
Air Temperature: 15.6 °C
Air Humidity: 48 % RH
Air Pressure: 1021 mbar
Sample Area: 9 m²
With Sample
Air Temperature: 15.5 °C
Air Humidity: 46 % RH
Air Pressure: 1019 mbar

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient αs	Practical Sound Absorption Coefficient αp
50*	4.45	4.48	-0.01	
63*	4.18	4.10	0.02	
80*	7.24	6.23	0.12	
100	6.90	5.96	0.12	
125	6.66	5.25	0.22	0.25
160	6.03	4.02	0.45	
200	6.46	3.51	0.70	
250	6.79	3.17	0.91	0.85
315	6.54	3.13	0.90	
400	6.06	2.92	0.96	
500	5.54	2.77	0.98	0.95
630	4.90	2.60	0.98	
800	4.93	2.64	0.95	
1000	5.32	2.86	0.88	0.85
1250	5.11	2.99	0.75	
1600	4.79	2.83	0.78	
2000	4.33	2.69	0.75	0.80
2500	3.79	2.38	0.83	
3150	3.01	2.05	0.81	
4000	2.38	1.70	0.85	0.85
5000	1.84	1.40	0.85	
6300*	1.30	1.05	0.87	
8000*	1.06	0.88	0.90	n/a
10000*	0.73	0.63	0.98	



αw	0.85
Class B	
Calculated to BS EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	

Double Layer Banner

Duet (Variable Layer Banner)

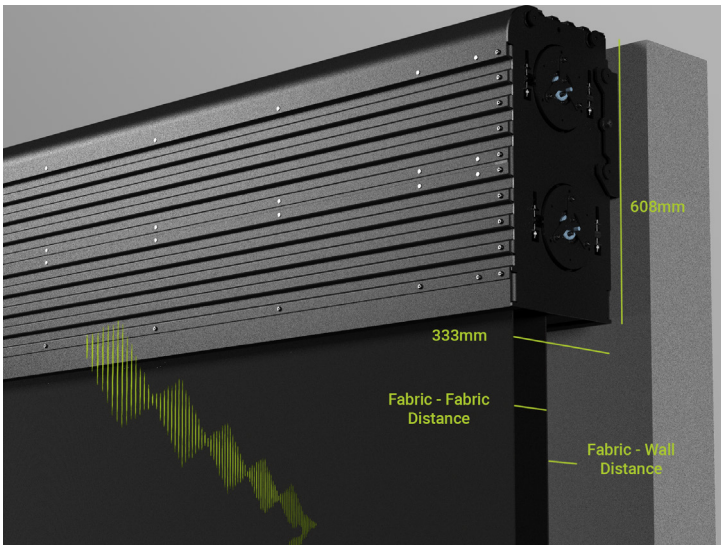
The Duet Acoustic Banner is the mid-tier of the J&C Joel variable acoustic range. Deploying two layers of Bonded Wool Serge it achieves a A acoustic absorption rating according to EN ISO 11654:1997.

The Duet can offer an absorbent area of up to 48m². With 6m as the maximum width, and 10m as the maximum drop. Custom sizes are available on request.

Works with Bonded Wool Serge*, available in 1,130gsm, 1000gsm, or 840gsm to achieve different acoustic requirements. Standard fabric colour is black, with a range 10 colours available on 1,000gsm, custom colours available subject to MoQ. *100% recycled wool product. Other fabrics are available for acoustic or decorative purposes.

Standard operating speed is around 140mm/s which enables a 5m tall banner to deploy in 35s.

Designed and Manufactured in the UK.



*For use with Bonded Wool Serge, please see page 190.

Fabric	Fabric-Wall Distance mm	Acoustic Absorption Co-efficient					
		125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
Bonded Wool Serge 1130 gsm	100	0.30	0.70	1.00	1.00	1.00	1.00
	350	0.40	0.70	1.00	0.90	0.90	0.95
Bonded Wool Serge 1130 gsm - Enclosed	100	0.41	0.79	0.95	0.88	0.84	0.85
	350	0.38	0.79	1.01	1.00	0.95	1.00
Bonded Coloured Wool Serge	100	0.30	0.50	0.80	0.90	0.80	0.90
	350	0.30	0.50	0.90	1.00	0.95	1.00
Bonded Coloured Wool Serge - Enclosed	100	0.46	0.87	1.01	0.95	0.87	0.87
	350	0.38	0.83	1.04	1.04	0.96	0.98

Class A EN ISO 11654:1997 (SAC)	NRC 1.00 ASTM C 423-01 (SAC)	Drop up to 10m Width up to 6m 48m ² Absorbent Surface	Single Phase 240v
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Legato (Double Layer Banner)

The Legato Acoustic Banner is a budget-friendly option within the J&C Joel variable acoustic range. Deploying two layers of Bonded Wool Serge it achieves an EN ISO 11654:1997 Class A acoustic absorption rating.

The Legato can offer an absorbent area of up to 30m² of double layered absorbent fabric. With 6m as the maximum width, and 5m as the maximum drop. Custom sizes are available on request.

Works with Bonded Wool Serge*, available in 1,130gsm, 1000gsm, or 840gsm to achieve different acoustic requirements. Standard fabric colour is black, with a range 10 colours available on 1,000gsm, custom colours available subject to MOQ. *100% recycled wool product. Other fabrics available for acoustic & decorative purposes.

Standard operating speed is around 80mm/s which enables a 5m tall banner to deploy in 60s.

Designed and Manufactured in the UK.



Fabric	Fabric-Wall Distance mm	Acoustic Absorption Co-efficient					
		125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
Bonded Wool Serge 1130 gsm	100	0.30	0.70	1.00	1.00	1.00	1.00
	350	0.40	0.70	1.00	0.90	0.90	0.95
Bonded Wool Serge 1130 gsm - Enclosed	100	0.41	0.79	0.95	0.88	0.84	0.85
	350	0.38	0.79	1.01	1.00	0.95	1.00
Bonded Coloured Wool Serge	100	0.30	0.50	0.80	0.90	0.80	0.90
	350	0.30	0.50	0.90	1.00	0.95	1.00
Bonded Coloured Wool Serge - Enclosed	100	0.46	0.87	1.01	0.95	0.87	0.87
	350	0.38	0.83	1.04	1.04	0.96	0.98

Class A EN ISO 11654:1997 (SAC)	NRC 0.90 ASTM C 423-01 (SAC)	Drop up to 5m Width up to 6m 30m ² Absorbent Surface	Single Phase 240v
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Contents

Fabric	Wall Cavity	Class	SAC Classification	Page
Bonded Coloured Wool Serge	100mm	B	0.80	30
Bonded Coloured Wool Serge	350mm	B	0.80	31
Bonded Coloured Wool Serge	100mm	A	0.95	32
Bonded Coloured Wool Serge	350mm	A	1.00	33
Bonded Wool Serge 565 (100mm Cavity Between Material)	100mm	A	1.00	34
Bonded Wool Serge 565 (150mm Cavity Between Material)	150mm	A	0.95	35
Bonded Wool Serge 565 (100mm Cavity Between Material)	350mm	A	1.00	36
Bonded Wool Serge 565	100mm	A	0.90	37
Bonded Wool Serge 565	350mm	A	1.00	38
Bonded & Theatre Canvas	350mm	A	1.00	39
Bonded & Theatre Canvas	150mm	A	0.90	40

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Bonded Coloured Wool Serge
Fullness: Double Layer Banner System
Cavity from Wall: 100mm



Data Sheet 5

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

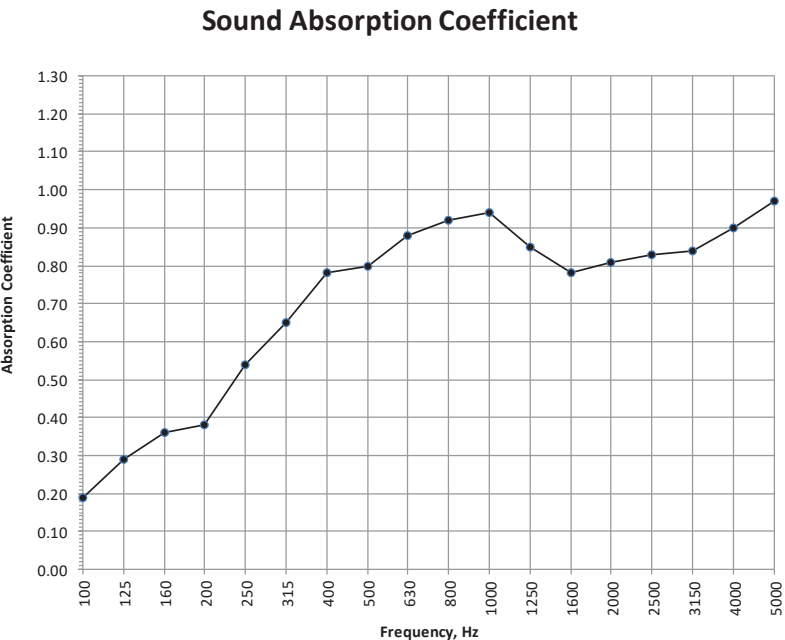
Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.8 °C Humidity: 56 %RH Pressure: 1015 mbar
Sample Description: Double Layer Banner System (100mm Cavity Between Material) - Bonded Coloured Wool Serge (Approx. Weight 1000g/m² Made up of 2 Bonded Layers of 500g/m² Fabric) - 100mm Cavity From Wall
Mounting Method: G - 200
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 5				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.77	0.08	
63*	4.83	4.79	0.01	n/a
80*	7.33	6.36	0.11	
100	7.42	5.88	0.19	
125	7.17	5.20	0.29	0.30
160	6.75	4.67	0.36	
200	6.77	4.61	0.38	
250	6.80	4.05	0.54	0.50
315	6.65	3.70	0.65	
400	6.46	3.35	0.78	
500	5.63	3.08	0.80	0.80
630	5.00	2.77	0.88	
800	5.22	2.77	0.92	
1000	5.79	2.89	0.94	0.90
1250	5.75	3.03	0.85	
1600	5.33	3.02	0.78	
2000	4.93	2.83	0.81	0.80
2500	4.35	2.60	0.83	
3150	3.55	2.27	0.84	
4000	2.92	1.94	0.90	0.90
5000	2.34	1.62	0.97	
6300*	1.60	1.23	0.92	
8000*	1.30	1.01	1.06	n/a
10000*	0.93	0.76	1.11	

α _w	0.80
Class B	
Calculated to EN ISO 11654:1997	
NRC	0.75
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Bonded Coloured Wool Serge
Fullness: Double Layer Banner System
Cavity from Wall: 350mm



Data Sheet 6

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

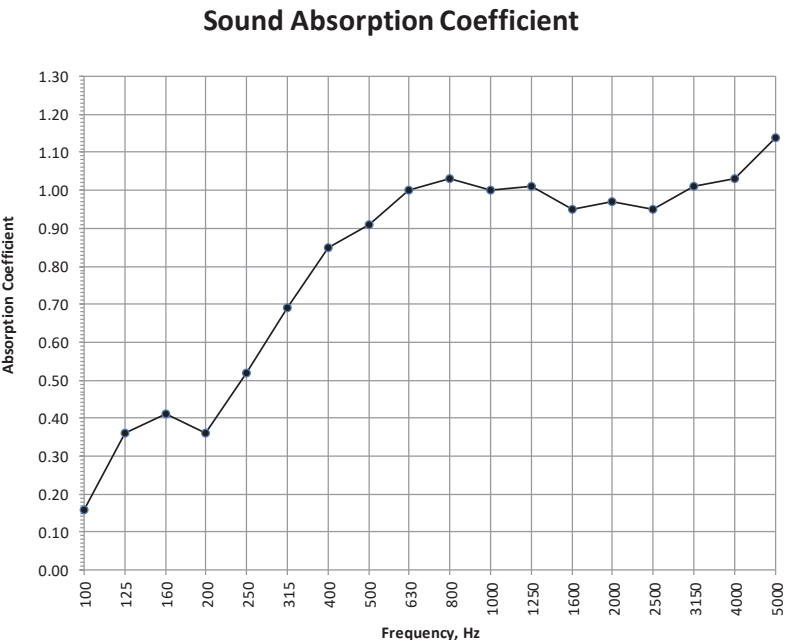
Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 56 %RH Pressure: 1015 mbar
Sample Description: Double Layer Banner System (100mm Cavity Between Material) - Bonded Coloured Wool Serge (Approx. Weight 1000g/m² Made up of 2 Bonded Layers of 500g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G - 450
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 6				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.95	0.04	
63*	4.83	4.70	0.03	n/a
80*	7.33	5.90	0.18	
100	7.42	6.10	0.16	
125	7.17	4.87	0.36	0.30
160	6.75	4.46	0.41	
200	6.77	4.67	0.36	
250	6.80	4.12	0.52	0.50
315	6.65	3.60	0.69	
400	6.46	3.22	0.85	
500	5.63	2.90	0.91	0.90
630	5.00	2.61	1.00	
800	5.22	2.62	1.03	
1000	5.79	2.80	1.00	1.00
1250	5.75	2.77	1.01	
1600	5.33	2.76	0.95	
2000	4.93	2.61	0.97	0.95
2500	4.35	2.45	0.95	
3150	3.55	2.12	1.01	
4000	2.92	1.85	1.03	1.00
5000	2.34	1.54	1.14	
6300*	1.60	1.19	1.06	
8000*	1.30	0.98	1.21	n/a
10000*	0.93	0.73	1.38	

α _w	0.80(H)
Class B	
Calculated to EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997

Fabric: Bonded Coloured Wool Serge
- Enclosed
Fullness: Double Layer Banner System
Cavity from Wall: 100mm



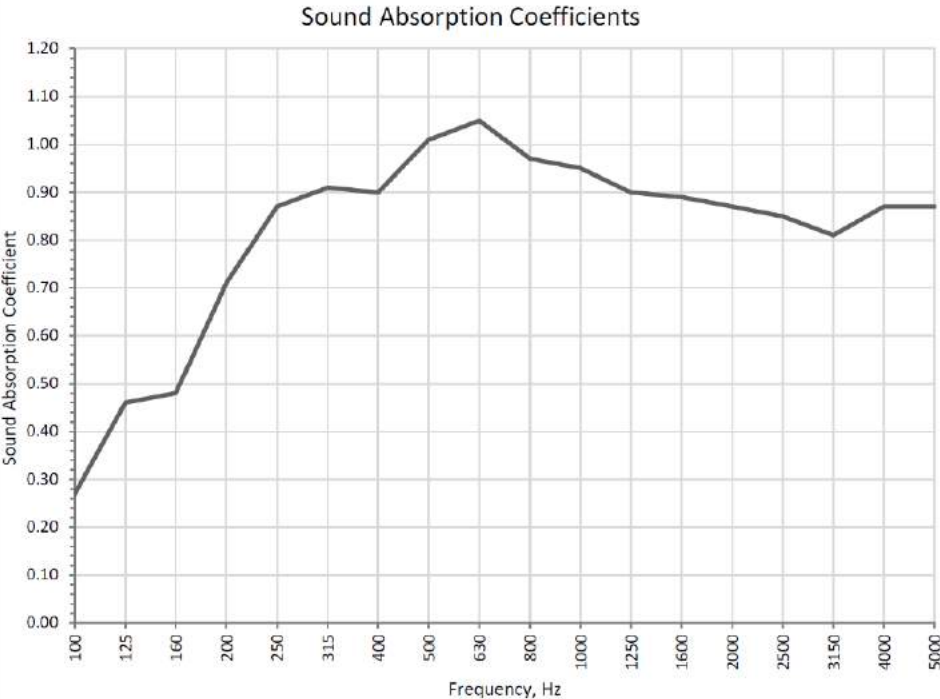
Data Sheet 9

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number:	9	Test Room:	Empty	With Sample
Client:	J & C Joel Ltd	Air Temperature:	15.6 °C	15.5 °C
Test Date:	01/03/2023	Air Humidity:	48 % RH	46 % RH
Chamber Volume:	300.1 m³	Air Pressure:	1021 mbar	1019 mbar
Mounting Method:	G-100	Sample Area:	9 m²	
Sample Description: Bonded Coloured Wool Serge - double Layer – enclosed edge detail at 100mm from wall				

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.22	0.07	n/a
63*	4.18	4.01	0.06	
80*	7.24	5.30	0.27	
100	6.90	5.12	0.27	0.40
125	6.66	4.25	0.46	
160	6.03	3.93	0.48	
200	6.46	3.50	0.71	0.85
250	6.79	3.25	0.87	
315	6.54	3.11	0.91	
400	6.06	3.02	0.90	1.00
500	5.54	2.73	1.01	
630	4.90	2.51	1.05	
800	4.93	2.62	0.97	0.95
1000	5.32	2.75	0.95	
1250	5.11	2.75	0.90	
1600	4.79	2.67	0.89	0.85
2000	4.33	2.53	0.87	
2500	3.79	2.35	0.85	
3150	3.01	2.05	0.81	0.85
4000	2.38	1.69	0.87	
5000	1.84	1.39	0.87	
6300*	1.30	1.06	0.83	n/a
8000*	1.06	0.88	0.91	
10000*	0.73	0.63	0.93	

α_w	0.95
Class A	
Calculated to BS EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	



Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997

Fabric: Bonded Coloured Wool Serge
- Enclosed
Fullness: Double Layer Banner System
Cavity from Wall: 350mm



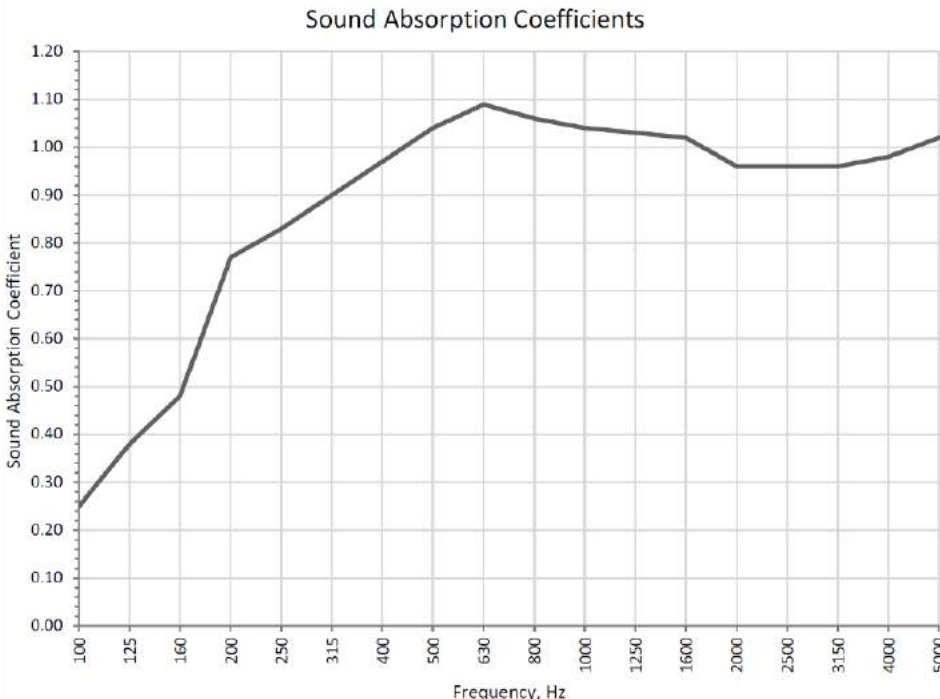
Data Sheet 10

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number:	10	Test Room:	Empty	With Sample
Client:	J & C Joel Ltd	Air Temperature:	15.6 °C	15.5 °C
Test Date:	01/03/2023	Air Humidity:	48 % RH	46 % RH
Chamber Volume:	300.1 m³	Air Pressure:	1021 mbar	1019 mbar
Mounting Method:	G-350	Sample Area:	9 m²	
Sample Description: Bonded Coloured Wool Serge - double Layer – enclosed edge detail at 350mm from wall				

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.19	0.08	n/a
63*	4.18	3.95	0.08	
80*	7.24	5.03	0.33	
100	6.90	5.26	0.25	0.35
125	6.66	4.54	0.38	
160	6.03	3.92	0.48	
200	6.46	3.38	0.77	0.85
250	6.79	3.33	0.83	
315	6.54	3.14	0.90	
400	6.06	2.91	0.97	1.00
500	5.54	2.69	1.04	
630	4.90	2.47	1.09	
800	4.93	2.51	1.06	1.00
1000	5.32	2.64	1.04	
1250	5.11	2.59	1.03	
1600	4.79	2.51	1.02	1.00
2000	4.33	2.43	0.96	
2500	3.79	2.25	0.96	
3150	3.01	1.94	0.96	1.00
4000	2.38	1.63	0.98	
5000	1.84	1.34	1.02	
6300*	1.30	1.01	1.06	n/a
8000*	1.06	0.88	0.90	
10000*	0.73	0.63	1	

α_w	1.00
Class A	
Calculated to BS EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Bonded Wool Serge 565
Fullness: Double Layer Banner System
Cavity from Wall: 100mm

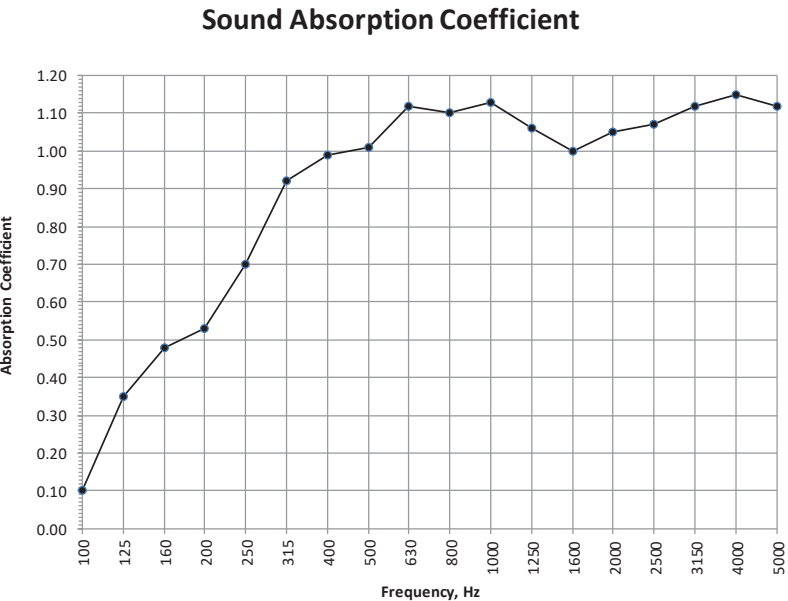


Data Sheet 7

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 15/10/2020
Empty Room: Temperature: 16.1 °C Humidity: 63 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 59 %RH Pressure: 1016 mbar
Sample Description: Double Layer Banner System (100mm Cavity Between Material) - Bonded Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Bonded Layers of 565g/m² Fabric) - 100mm Cavity From Wall
Mounting Method: G - 200
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 7				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.09	4.49	0.14	
63*	4.76	4.57	0.05	n/a
80*	7.42	6.56	0.10	
100	7.54	6.62	0.10	
125	6.85	4.73	0.35	0.30
160	6.65	4.19	0.48	
200	7.05	4.17	0.53	
250	6.89	3.65	0.70	0.70
315	6.51	3.10	0.92	
400	6.32	2.94	0.99	
500	5.53	2.73	1.01	1.00
630	4.91	2.44	1.12	
800	5.18	2.53	1.10	
1000	5.65	2.60	1.13	1.00
1250	5.60	2.67	1.06	
1600	5.16	2.64	1.00	
2000	4.76	2.46	1.05	1.00
2500	4.28	2.30	1.07	
3150	3.59	2.03	1.12	
4000	2.91	1.76	1.15	1.00
5000	2.36	1.54	1.12	
6300*	1.62	1.14	1.24	
8000*	1.33	0.97	1.26	n/a
10000*	0.94	0.72	1.40	



α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Bonded Wool Serge 565
Fullness: Double Layer Banner System
Cavity from Wall: 150mm

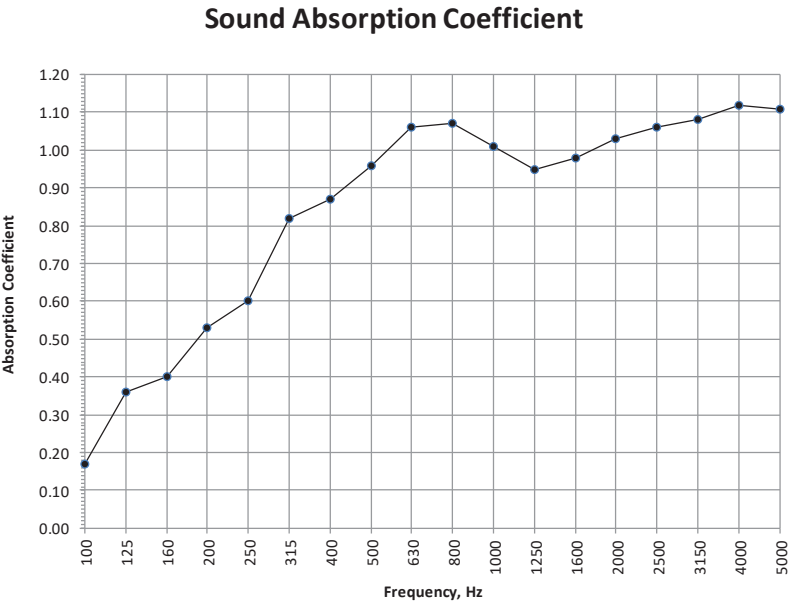


Data Sheet 1

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel
Test Date: 22/01/2020
Empty Room: Temperature: 15.1 °C Humidity: 54 %RH Pressure: 1028 mbar
Room with Sample: Temperature: 15.1 °C Humidity: 54 %RH Pressure: 1028 mbar
Sample Description: Double Layer Banner System (150mm Cavity Between Material) - Bonded Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Bonded Layers of 565g/m² Fabric) - 150mm Cavity From Wall
Mounting Method: G - 300
Sample Area: 9.3 m²
Chamber Volume: 300 m³

Test 2				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.67	5.25	0.07	
63*	6.03	5.51	0.08	n/a
80*	8.27	7.33	0.08	
100	8.34	6.53	0.17	
125	8.07	5.21	0.36	0.30
160	6.88	4.51	0.40	
200	6.85	4.04	0.53	
250	6.86	3.84	0.60	0.65
315	6.44	3.21	0.82	
400	6.11	3.04	0.87	
500	5.53	2.75	0.96	0.95
630	4.96	2.48	1.06	
800	5.07	2.49	1.07	
1000	5.55	2.68	1.01	1.00
1250	5.53	2.76	0.95	
1600	5.18	2.63	0.98	
2000	4.76	2.46	1.03	1.00
2500	4.15	2.26	1.06	
3150	3.35	1.98	1.08	
4000	2.69	1.71	1.12	1.00
5000	2.09	1.45	1.11	
6300*	1.43	1.08	1.19	
8000*	1.20	0.95	1.15	n/a
10000*	0.84	0.72	1.04	



α _w	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Bonded Wool Serge 565
Fullness: Double Layer Banner System
Cavity from Wall: 350mm

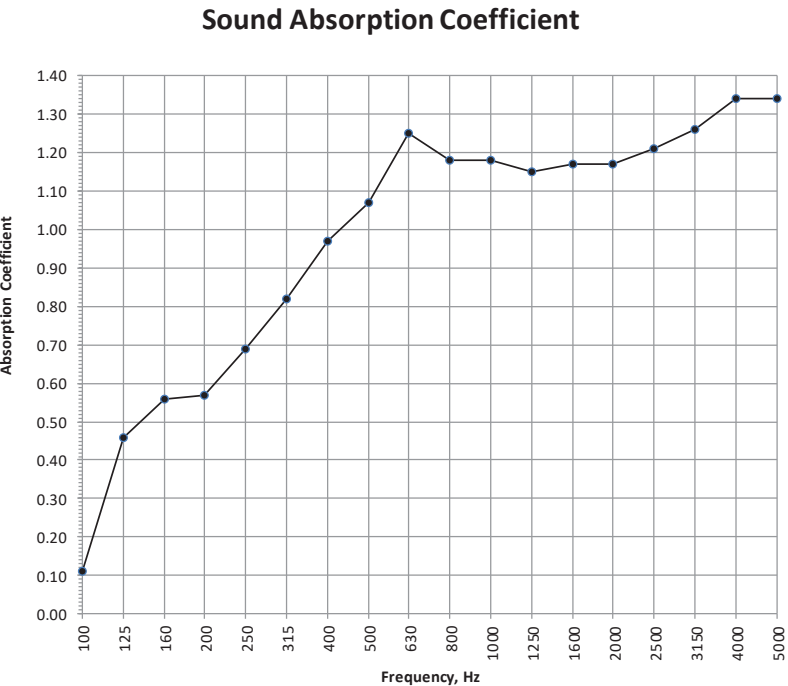


Data Sheet 8

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 15/10/2020
Empty Room: Temperature: 16.1 °C Humidity: 63 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 59 %RH Pressure: 1016 mbar
Sample Description: Double Layer Banner System (100mm Cavity Between Material) - Bonded Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Bonded Layers of 565g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G - 450
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 8				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.09	3.99	0.29	
63*	4.76	4.47	0.07	n/a
80*	7.42	5.89	0.19	
100	7.54	6.50	0.11	
125	6.85	4.34	0.46	0.40
160	6.65	3.94	0.56	
200	7.05	4.04	0.57	
250	6.89	3.68	0.69	0.70
315	6.51	3.27	0.82	
400	6.32	2.96	0.97	
500	5.53	2.64	1.07	1.00
630	4.91	2.30	1.25	
800	5.18	2.44	1.18	
1000	5.65	2.54	1.18	1.00
1250	5.60	2.56	1.15	
1600	5.16	2.44	1.17	
2000	4.76	2.34	1.17	1.00
2500	4.28	2.17	1.21	
3150	3.59	1.93	1.26	
4000	2.91	1.66	1.34	1.00
5000	2.36	1.45	1.34	
6300*	1.62	1.10	1.42	
8000*	1.33	0.92	1.57	n/a
10000*	0.94	0.70	1.62	



α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.05
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Bonded Wool Serge 565
- Enclosed
Fullness: Double Layer Banner System
Cavity from Wall: 100mm

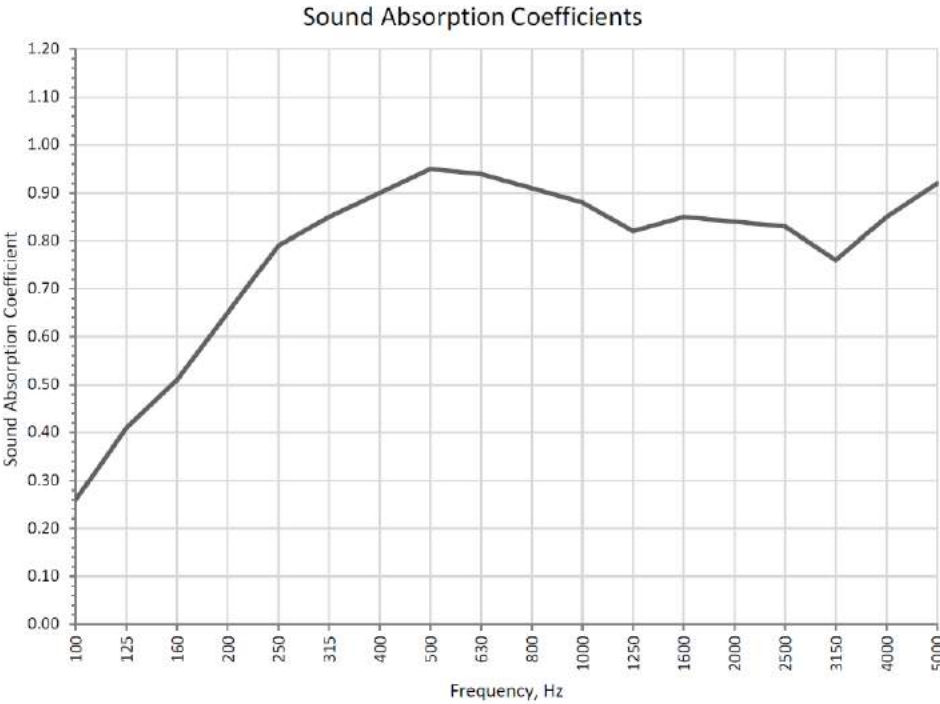


Data Sheet 5

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 5
Client: J & C Joel
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-100
Sample Description: Bonded Wool Serge 565g/m² - double layer - enclosed edge detail at 100mm from wall
Test Room: Empty
Air Temperature: 15.6 °C
Air Humidity: 48 % RH
Air Pressure: 1021 mbar
Sample Area: 9 m²
With Sample: 15.4 °C
46 % RH
1019 mbar

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α _s	Practical Sound Absorption Coefficient α _p
50*	4.45	4.33	0.04	
63*	4.18	3.90	0.09	n/a
80*	7.24	5.27	0.28	
100	6.90	5.20	0.26	
125	6.66	4.42	0.41	0.40
160	6.03	3.83	0.51	
200	6.46	3.65	0.65	
250	6.79	3.40	0.79	0.75
315	6.54	3.22	0.85	
400	6.06	3.02	0.90	
500	5.54	2.82	0.95	0.95
630	4.90	2.65	0.94	
800	4.93	2.70	0.91	
1000	5.32	2.85	0.88	0.85
1250	5.11	2.88	0.82	
1600	4.79	2.72	0.85	
2000	4.33	2.57	0.84	0.85
2500	3.79	2.37	0.83	
3150	3.01	2.09	0.76	0.85
4000	2.38	1.70	0.85	
5000	1.84	1.37	0.92	
6300*	1.30	1.05	0.84	
8000*	1.06	0.89	0.83	n/a
10000*	0.73	0.63	0.95	



α _w	0.90
Class A	
Calculated to BS EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997

Fabric: Bonded Wool Serge 565
- Enclosed
Fullness: Double Layer Banner System
Cavity from Wall: 350mm



Data Sheet 6

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

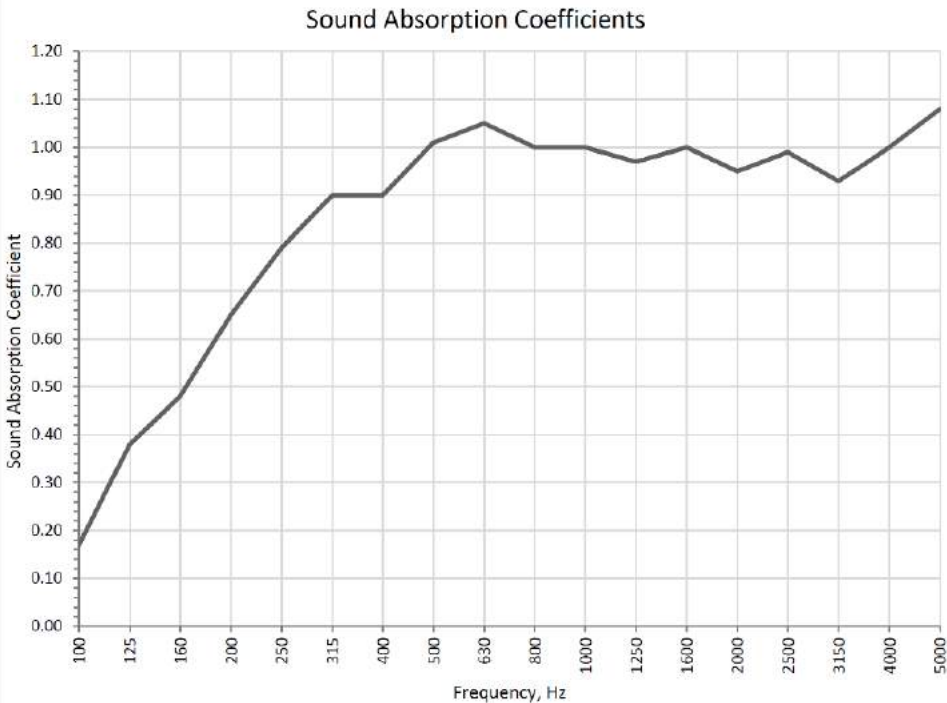
Test Number: 6
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-350
Sample Description: Bonded Wool Serge 565g/m² - double layer – enclosed edge detail at 350mm from wall

Test Room: Empty
Air Temperature: 15.6 °C
Air Humidity: 48 % RH
Air Pressure: 1021 mbar
Sample Area: 9 m²

With Sample
Air Temperature: 15.4 °C
Air Humidity: 46 % RH
Air Pressure: 1019 mbar

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.07	0.11	n/a
63*	4.18	3.92	0.09	
80*	7.24	5.05	0.33	
100	6.90	5.66	0.17	
125	6.66	4.55	0.38	0.35
160	6.03	3.93	0.48	
200	6.46	3.64	0.65	
250	6.79	3.41	0.79	0.80
315	6.54	3.13	0.90	
400	6.06	3.02	0.90	
500	5.54	2.73	1.01	1.00
630	4.90	2.52	1.05	
800	4.93	2.58	1.00	
1000	5.32	2.68	1.00	1.00
1250	5.11	2.67	0.97	
1600	4.79	2.54	1.00	
2000	4.33	2.45	0.95	1.00
2500	3.79	2.22	0.99	
3150	3.01	1.96	0.93	
4000	2.38	1.62	1.00	1.00
5000	1.84	1.32	1.08	
6300*	1.30	1.02	1.03	
8000*	1.06	0.86	1.04	
10000*	0.73	0.62	1.15	n/a

α_w	1.00
Class A	
Calculated to BS EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997

Fabric: Bonded Wool Serge 565 & Printed
Theatre Canvas
Fullness: Double Layer Banner System
Cavity from Wall: 350mm



Data Sheet 2

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 08/03/2019

Empty Room: Temperature: 15.7 °C Humidity: 55 %RH Pressure: 1004 mbar

Room with Sample: Temperature: 15.6 °C Humidity: 51 %RH Pressure: 1003 mbar

Sample Description: Double Layer Banner System (150mm Cavity Between Material) - Bonded Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Bonded Layers of 565g/m² Fabric) + Printed Theatre Canvas (Approx. Weight 340g/m²) - 350mm Cavity From Wall

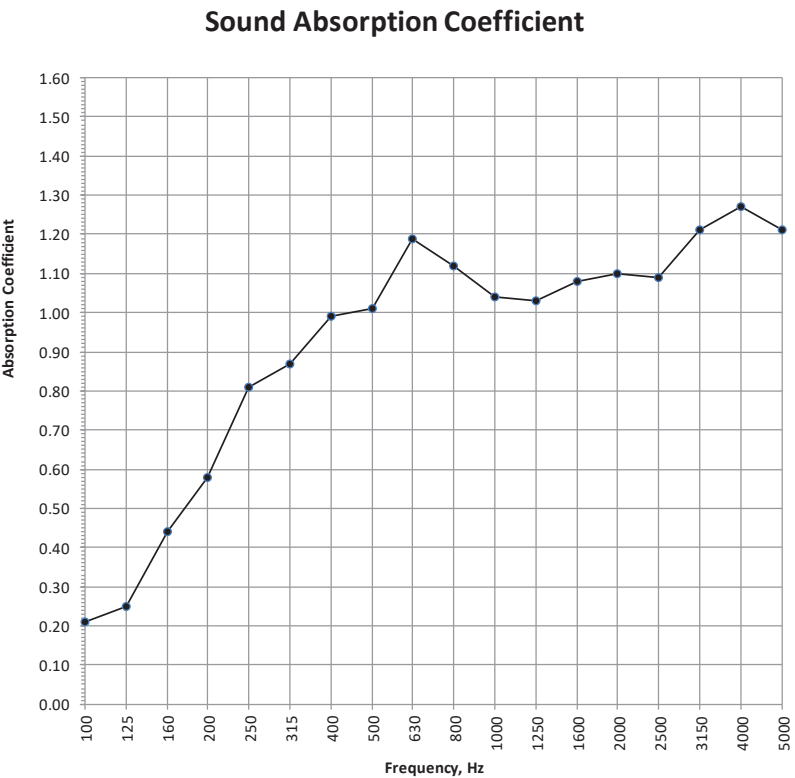
Mounting Method: G - 500

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 10				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	4.90	4.29	0.16	n/a
63*	5.23	4.95	0.06	
80*	6.95	5.99	0.12	
100	7.63	5.86	0.21	
125	7.10	5.37	0.25	0.30
160	6.60	4.28	0.44	
200	6.85	3.94	0.58	
250	7.10	3.44	0.81	0.75
315	6.87	3.27	0.87	
400	6.65	3.00	0.99	
500	5.64	2.75	1.01	1.00
630	4.96	2.37	1.19	
800	5.19	2.50	1.12	
1000	5.67	2.72	1.04	1.00
1250	5.64	2.71	1.03	
1600	5.32	2.57	1.08	
2000	4.86	2.43	1.10	1.00
2500	4.14	2.23	1.09	
3150	3.41	1.90	1.21	
4000	2.75	1.63	1.27	1.00
5000	2.14	1.40	1.21	
6300*	1.46	1.02	1.41	
8000*	1.18	0.87	1.36	
10000*	0.83	0.65	1.43	n/a

α_w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.00
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997

Fabric: Bonded Wool Serge 565 & Printed Theatre Canvas - Enclosed
Fullness: Double Layer Banner System
Cavity from Wall: 150mm

J&C Joel
Inspiration in every performance

Showcase

Data Sheet 2

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 24/05/2019
Empty Room: Temperature: 17.0 °C Humidity: 61 %RH Pressure: 1009 mbar
Room with Sample: Temperature: 17.3 °C Humidity: 60 %RH Pressure: 1009 mbar
Sample Description: Double Layer Banner System (150mm Cavity Between Material) - Bonded Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Bonded Layers of 565g/m² Fabric) + Printed Theatre Canvas (Approx. Weight 340g/m²) - 150mm Cavity From Wall, Enclosed Sides
Mounting Method: G - 300
Sample Area: 9.3 m²
Chamber Volume: 300 m³

Test 3

Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.94	3.56	0.41	
63*	5.49	3.88	0.39	n/a
80*	7.42	3.66	0.72	
100	7.41	4.42	0.48	
125	7.29	3.57	0.75	0.70
160	7.27	3.14	0.94	
200	6.72	3.25	0.83	
250	7.06	3.50	0.75	0.80
315	7.10	3.50	0.76	
400	6.53	3.16	0.85	
500	5.76	2.86	0.92	0.90
630	5.13	2.71	0.91	
800	5.15	2.77	0.87	
1000	5.82	3.02	0.83	0.85
1250	5.69	2.98	0.83	
1600	5.42	2.69	0.98	
2000	5.01	2.63	0.94	0.95
2500	4.43	2.42	0.98	
3150	3.70	2.21	0.95	
4000	2.98	1.91	0.98	0.95
5000	2.41	1.66	0.97	
6300*	1.69	1.29	0.95	
8000*	1.37	1.10	0.93	n/a
10000*	0.98	0.84	0.87	

α_w 0.90

Class A

Calculated to EN ISO 11654:1997

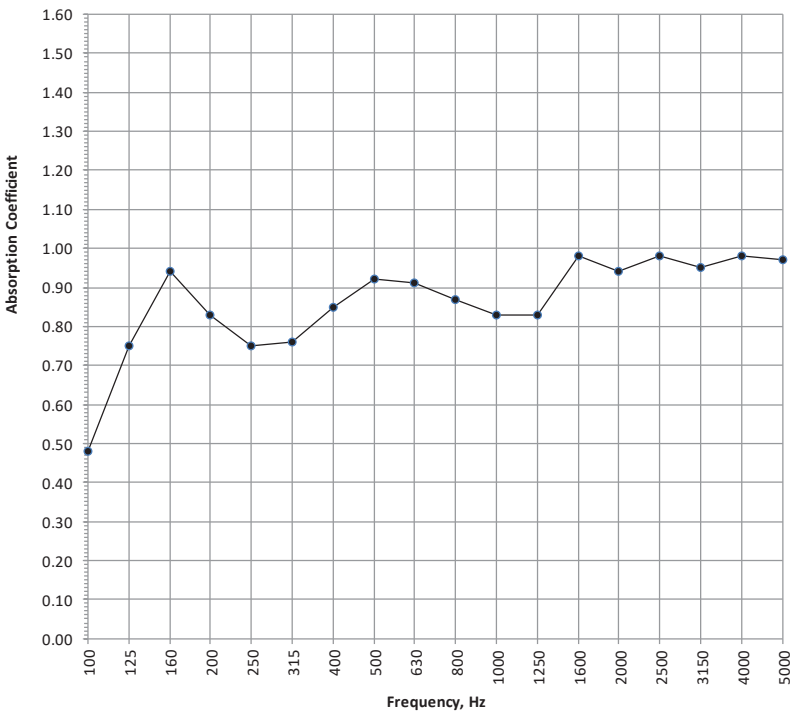
NRC 0.85

Calculated to ASTM C423-01

* Denotes frequencies outside the range covered
by BS EN ISO 354:2003

T1, empty room reverberation time
T2, room reverberation time with sample

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Concertina Banner

Concerto

The preferred option when large-scale acoustic absorption performance is required. The absorption is achieved by two layers of Tay Wool Serge, held together at regular intervals by horizontal slats. This achieves a Class A acoustic absorption rating according to EN ISO 11654:1997. These keep the air gap between the layers constant and help the fabric stack neatly as it is raised.

The Concerto offers up to 50m² of absorbent material, with a maximum width of 6m or a maximum drop of 20m.

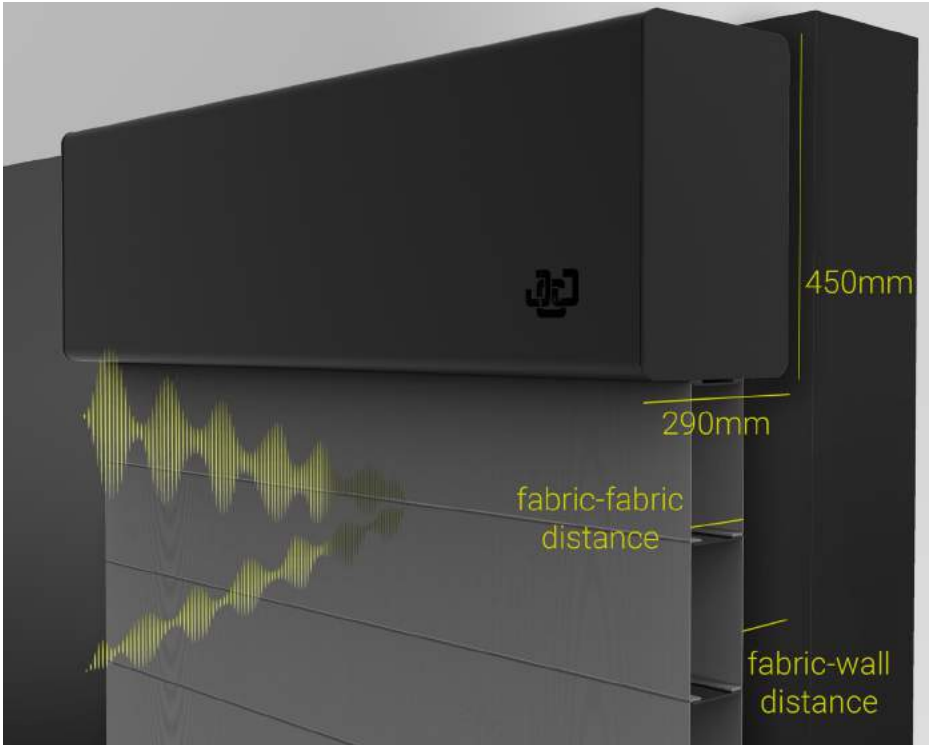
Standard operating speed is 100-150mm/s which enables a 6m banner to deploy in 60s.

Designed and Manufactured in the UK.



Technical Data

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For use with Tay Wool Serge & Pressed Wool Serge, please see page 19.

Features

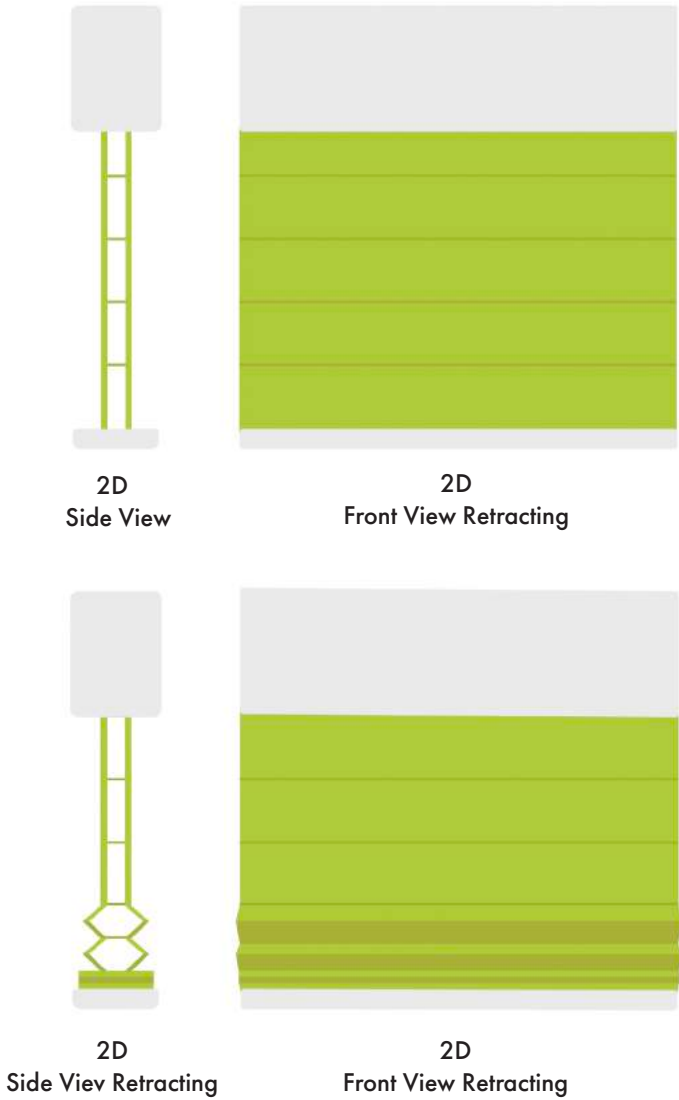
- NORD IE3 3 Phase Braked Geared Motor
- Localised NORD Inverter Drive
- Mayr ROBA Stop Stage Safety Brake
- TER Limit Switch - End of Travel & Ultimate
- Absolute Rotary Encoder
- Overheat prevention
- Requires a single phase 13 amp 230V power supply per banner.
- E-Stops compliant with ISO 13850
- Tay Wool Serge is our standard fabric which has tested acoustic reports. Other fabric options and colours are also available upon request for varying aesthetic and acoustic performance.

Installation

- Two Unistrut P1000 channels along the full length of the top of the banner enable simple mounting.
- J&C Joel can install the banners or can provide mechanical and electrical drawings to aid your installation.

Fabric	Fabric-Fabric Distance mm	Fabric-Wall Distance mm	Acoustic Absorption Co-efficient					
			125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
Pressed Tay Wool Serge - Enclosed	100	100	0.75	0.90	1.00	0.95	0.85	0.90
	100	350	0.65	0.85	1.00	1.00	0.95	0.95
Pressed Tay Wool Serge	100	100	0.40	0.80	1.00	1.00	0.90	0.95
	100	350	0.50	0.70	1.00	1.00	1.00	0.95

Class A EN ISO 11654:1997 (SAC)	NRC 0.95 ASTM C 423-01 (SAC)	Drop upto 20m Width 1.2m - 6m 50m ² Absorbent Surface	Single Phase 240v 13amp
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Fabric	Wall Cavity	Class	SAC Classification	Page
Pressed Coloured Wool Serge	100mm	A	0.90	45
Pressed Coloured Wool Serge	350mm	A	0.95	46
Pressed Wool Serge 565	100mm	A	0.90	47
Pressed Wool Serge 565	160mm	A	0.95	48
Pressed Wool Serge 565	350mm	A	0.90	49
Pressed Tay Wool Serge (100mm Cavity Between Material)	100mm	A	1.00	50
Pressed Tay Wool Serge (100mm Cavity Between Material, Enclosed)	100mm	A	0.95	51
Pressed Tay Wool Serge (100mm Cavity Between Material)	350mm	A	1.00	52
Pressed Tay Wool Serge (100mm Cavity Between Material, Enclosed)	350mm	A	1.00	53
Pressed Tay Wool Serge (150mm Cavity Between Material)	100mm	A	1.00	54
Pressed Tay Wool Serge (150mm Cavity Between Material, Enclosed)	100mm	A	0.95	55
Pressed Tay Wool Serge (150mm Cavity Between Material)	350mm	A	1.00	56
Pressed Tay Wool Serge (150mm Cavity Between Material, Enclosed)	350mm	A	1.00	57
Pressed Wool Serge 800	100mm	A	0.95	58
Pressed Wool Serge 800	350mm	A	0.95	59

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Coloured Wool Serge
Fullness: Concertina Banner System
Cavity from Wall: 100mm



Data Sheet 10

See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel

Test Date: 21/08/2020

Empty Room: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 996 mbar

Room with Sample: Temperature: 21.7 °C Humidity: 66 %RH Pressure: 997 mbar

Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats)
- Pressed Coloured Wool Serge (Approx. Weight 1000g/m² Made up of 2 Layers of 500g/m² Fabric) -
100mm Cavity From Wall

Mounting Method: G - 200

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 12				
Freq Hz	T1 sec	T2 sec	Absorp Coeff a _s	Practical Absorp Coeff #
50*	4.83	5.00	-0.04	
63*	5.22	4.85	0.08	n/a
80*	7.65	6.44	0.13	
100	7.54	6.20	0.15	
125	7.75	5.57	0.27	0.25
160	6.51	4.74	0.31	
200	6.93	4.37	0.45	
250	6.80	3.92	0.58	0.60
315	6.68	3.56	0.70	
400	6.35	3.22	0.82	
500	5.57	2.69	1.03	1.00
630	4.92	2.42	1.12	
800	4.94	2.52	1.04	
1000	5.40	2.66	1.02	1.00
1250	5.54	2.67	1.04	
1600	5.12	2.68	0.95	
2000	4.79	2.58	0.96	0.95
2500	4.39	2.43	0.98	
3150	3.74	2.16	1.04	
4000	3.17	1.93	1.08	1.00
5000	2.59	1.71	1.06	
6300*	1.95	1.34	1.24	
8000*	1.57	1.17	1.15	n/a
10000*	1.11	0.92	0.98	

α_w 0.90

Class A

Calculated to EN ISO 11654:1997

NRC 0.90

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Sound Absorption Coefficient

Frequency (Hz)	Absorption Coefficient
100	0.15
125	0.28
160	0.32
200	0.45
250	0.58
315	0.70
400	0.82
500	1.03
630	1.12
800	1.04
1000	1.02
1250	1.04
1600	0.95
2000	0.96
2500	0.98
3150	1.04
4000	1.08
5000	1.06

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Coloured Wool Serge
Fullness: Concertina Banner System
Cavity from Wall: 350mm



Data Sheet 11

See SRL report 24694-SRL-RP-XT-001-P1 for full details

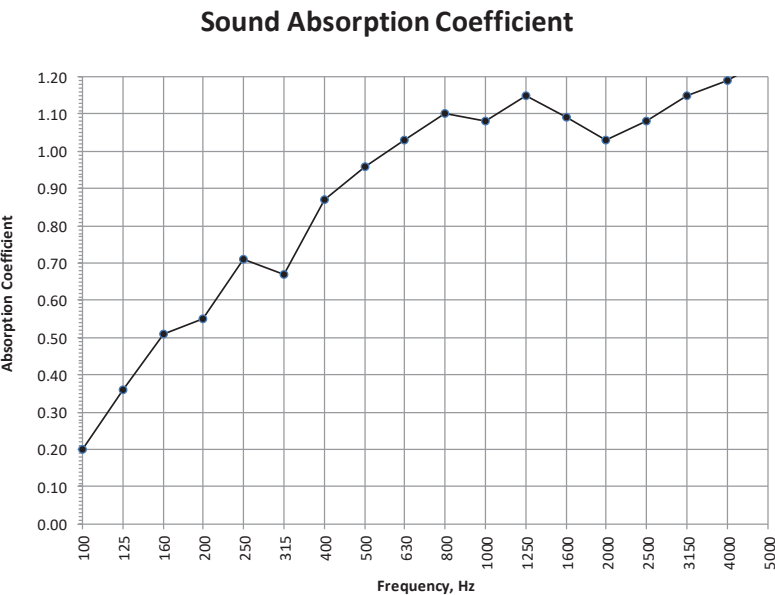
The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 996 mbar
Room with Sample: Temperature: 21.6 °C Humidity: 66 %RH Pressure: 997 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Coloured Wool Serge (Approx. Weight 1000g/m² Made up of 2 Layers of 500g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G - 450
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 13				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.83	4.64	0.05	
63*	5.22	4.89	0.07	n/a
80*	7.65	6.08	0.18	
100	7.54	5.87	0.20	
125	7.75	5.11	0.36	0.35
160	6.51	4.01	0.51	
200	6.93	4.05	0.55	
250	6.80	3.57	0.71	0.65
315	6.68	3.64	0.67	
400	6.35	3.13	0.87	
500	5.57	2.79	0.96	0.95
630	4.92	2.53	1.03	
800	4.94	2.45	1.10	
1000	5.40	2.59	1.08	1.00
1250	5.54	2.53	1.15	
1600	5.12	2.51	1.09	
2000	4.79	2.49	1.03	1.00
2500	4.39	2.33	1.08	
3150	3.74	2.07	1.15	
4000	3.17	1.86	1.19	1.00
5000	2.59	1.61	1.25	
6300*	1.95	1.32	1.30	
8000*	1.57	1.14	1.27	n/a
10000*	1.11	0.87	1.30	

α _w	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997 v5



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Wool Serge 565
Fullness: Concertina Banner System
Cavity from Wall: 100mm



Data Sheet 2

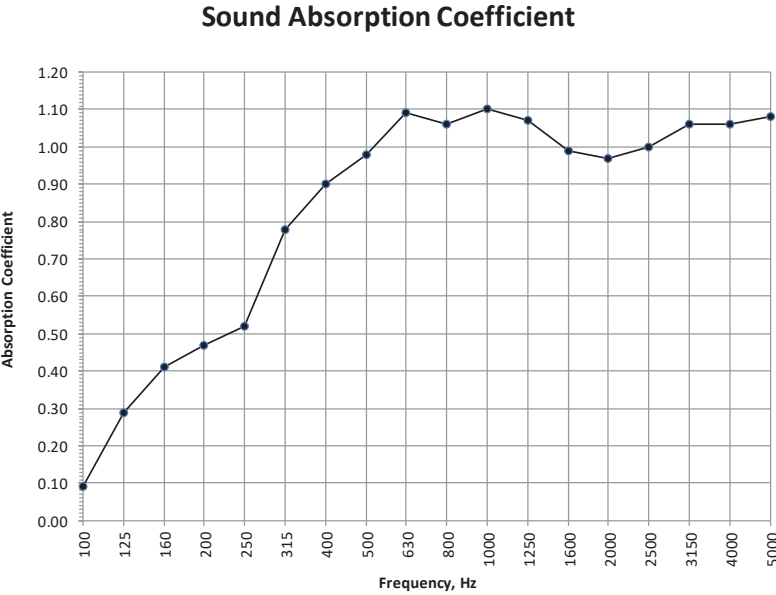
The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 15/10/2020
Empty Room: Temperature: 16.1 °C Humidity: 63 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.9 °C Humidity: 62 %RH Pressure: 1016 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Layers of 565g/m² Fabric) - 100mm Cavity From Wall
Mounting Method: G - 200
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 2				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.09	4.62	0.11	
63*	4.76	4.52	0.06	n/a
80*	7.42	6.58	0.09	
100	7.54	6.70	0.09	
125	6.85	4.99	0.29	0.25
160	6.65	4.42	0.41	
200	7.05	4.38	0.47	
250	6.89	4.14	0.52	0.60
315	6.51	3.36	0.78	
400	6.32	3.09	0.90	
500	5.53	2.76	0.98	1.00
630	4.91	2.47	1.09	
800	5.18	2.57	1.06	
1000	5.65	2.63	1.10	1.00
1250	5.60	2.66	1.07	
1600	5.16	2.65	0.99	
2000	4.76	2.56	0.97	1.00
2500	4.28	2.38	1.00	
3150	3.59	2.10	1.06	
4000	2.91	1.84	1.06	1.00
5000	2.36	1.59	1.08	
6300*	1.62	1.19	1.16	
8000*	1.33	1.00	1.27	n/a
10000*	0.94	0.78	1.08	

α _w	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997 v5



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Wool Serge 565
Fullness: Concertina Banner System
Cavity from Wall: 160mm

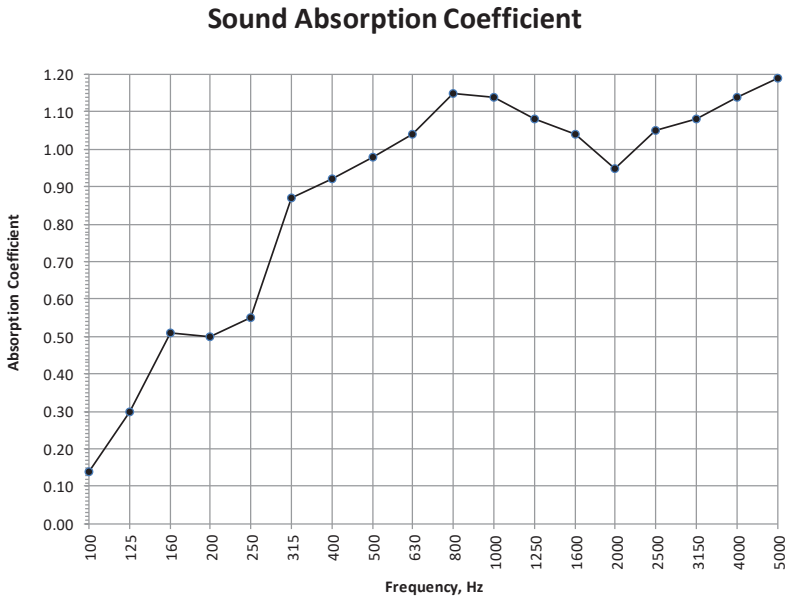


Data Sheet 1

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 15/10/2020
Empty Room: Temperature: 16.1 °C Humidity: 63 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.9 °C Humidity: 63 %RH Pressure: 1016 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Layers of 565g/m² Fabric) - 160mm Cavity From Wall
Mounting Method: G - 260
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 1				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	5.09	4.45	0.15	
63*	4.76	4.50	0.07	n/a
80*	7.42	6.52	0.10	
100	7.54	6.33	0.14	
125	6.85	4.95	0.30	0.30
160	6.65	4.08	0.51	
200	7.05	4.26	0.50	
250	6.89	4.05	0.55	0.65
315	6.51	3.18	0.87	
400	6.32	3.05	0.92	
500	5.53	2.76	0.98	1.00
630	4.91	2.53	1.04	
800	5.18	2.47	1.15	
1000	5.65	2.58	1.14	1.00
1250	5.60	2.64	1.08	
1600	5.16	2.59	1.04	
2000	4.76	2.59	0.95	1.00
2500	4.28	2.34	1.05	
3150	3.59	2.09	1.08	
4000	2.91	1.80	1.14	1.00
5000	2.36	1.55	1.19	
6300*	1.62	1.19	1.19	
8000*	1.33	1.01	1.26	n/a
10000*	0.94	0.76	1.33	



αw	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Wool Serge 565
Fullness: Concertina Banner System
Cavity from Wall: 350mm

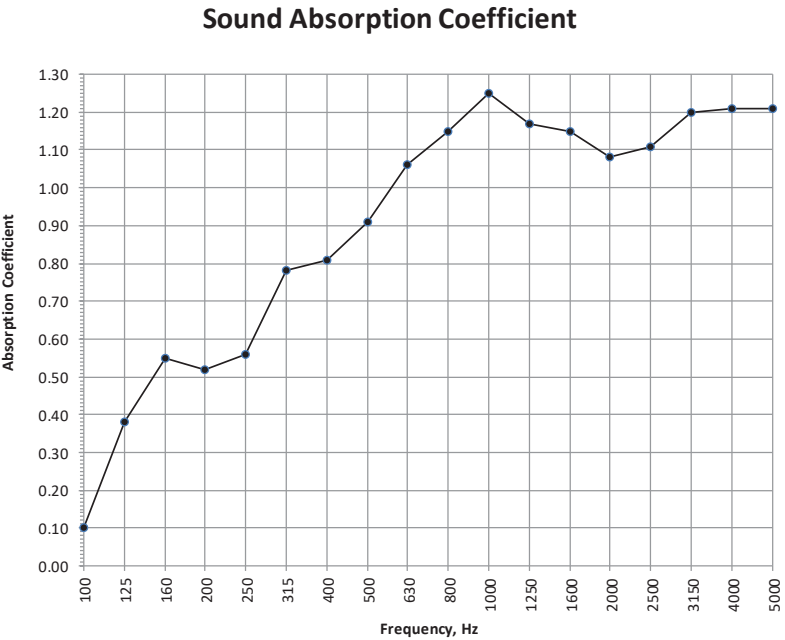


Data Sheet 3

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 15/10/2020
Empty Room: Temperature: 16.1 °C Humidity: 63 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.9 °C Humidity: 62 %RH Pressure: 1016 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Wool Serge 565 (Approx. Weight 1130g/m² Made up of 2 Layers of 565g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G - 450
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 3				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	5.09	4.08	0.26	
63*	4.76	4.43	0.09	n/a
80*	7.42	6.03	0.17	
100	7.54	6.60	0.10	
125	6.85	4.63	0.38	0.35
160	6.65	3.97	0.55	
200	7.05	4.21	0.52	
250	6.89	4.02	0.56	0.60
315	6.51	3.37	0.78	
400	6.32	3.24	0.81	
500	5.53	2.87	0.91	0.95
630	4.91	2.51	1.06	
800	5.18	2.47	1.15	
1000	5.65	2.45	1.25	1.00
1250	5.60	2.54	1.17	
1600	5.16	2.46	1.15	
2000	4.76	2.44	1.08	1.00
2500	4.28	2.27	1.11	
3150	3.59	1.99	1.20	
4000	2.91	1.75	1.21	1.00
5000	2.36	1.53	1.21	
6300*	1.62	1.16	1.28	
8000*	1.33	0.97	1.44	n/a
10000*	0.94	0.74	1.45	



αw	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Tay Wool Serge
Fullness: Concertina Banner System
Cavity from Wall: 100mm



Data Sheet 1

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

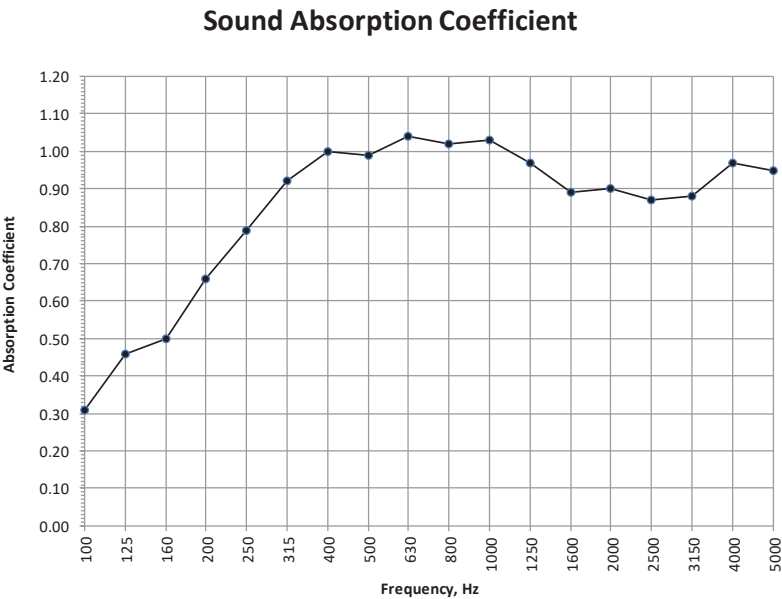
Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 16.1 °C Humidity: 57 %RH Pressure: 1015 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Tay Wool Serge (Approx. Weight 1250g/m² Made up of 2 Layers of 625g/m² Fabric) - 100mm Cavity From Wall
Mounting Method: G - 200
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 1				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	5.15	4.97	0.04	
63*	4.83	4.37	0.12	n/a
80*	7.33	5.46	0.25	
100	7.42	5.22	0.31	
125	7.17	4.47	0.46	0.40
160	6.75	4.17	0.50	
200	6.77	3.72	0.66	
250	6.80	3.42	0.79	0.80
315	6.65	3.12	0.92	
400	6.46	2.95	1.00	
500	5.63	2.77	0.99	1.00
630	5.00	2.55	1.04	
800	5.22	2.63	1.02	
1000	5.79	2.75	1.03	1.00
1250	5.75	2.84	0.97	
1600	5.33	2.84	0.89	
2000	4.93	2.71	0.90	0.90
2500	4.35	2.56	0.87	
3150	3.55	2.25	0.88	
4000	2.92	1.91	0.97	0.95
5000	2.34	1.65	0.95	
6300*	1.60	1.24	0.95	
8000*	1.30	1.03	1.05	n/a
10000*	0.93	0.77	1.15	

αw	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Tay Wool Serge - Enclosed
Fullness: Concertina Banner System
Cavity from Wall: 100mm



Data Sheet 11

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

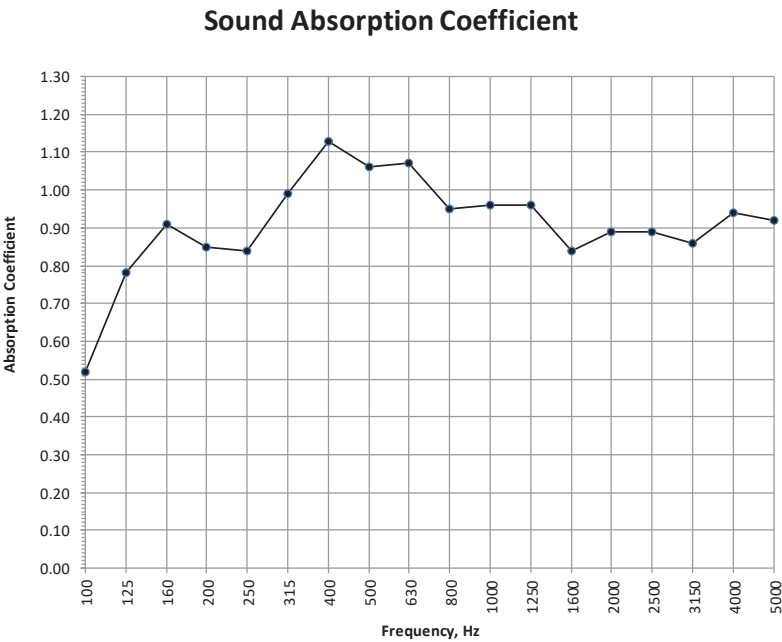
Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.6 °C Humidity: 56 %RH Pressure: 1011 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Tay Wool Serge (Approx. Weight 1250g/m² Made up of 2 Layers of 625g/m² Fabric) - 100mm Cavity From Wall, Enclosed Sides
Mounting Method: G - 200
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 11				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	5.15	3.69	0.42	
63*	4.83	3.75	0.32	n/a
80*	7.33	4.74	0.40	
100	7.42	4.33	0.52	
125	7.17	3.52	0.78	0.75
160	6.75	3.17	0.91	
200	6.77	3.28	0.85	
250	6.80	3.32	0.84	0.90
315	6.65	3.00	0.99	
400	6.46	2.75	1.13	
500	5.63	2.69	1.06	1.00
630	5.00	2.52	1.07	
800	5.22	2.73	0.95	
1000	5.79	2.86	0.96	0.95
1250	5.75	2.85	0.96	
1600	5.33	2.91	0.84	
2000	4.93	2.72	0.89	0.85
2500	4.35	2.52	0.89	
3150	3.55	2.25	0.86	
4000	2.92	1.91	0.94	0.90
5000	2.34	1.64	0.92	
6300*	1.60	1.22	0.94	
8000*	1.30	1.02	0.98	n/a
10000*	0.93	0.77	0.98	

αw	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Tay Wool Serge
Fullness: Concertina Banner System
Cavity from Wall: 350mm



Data Sheet 2

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

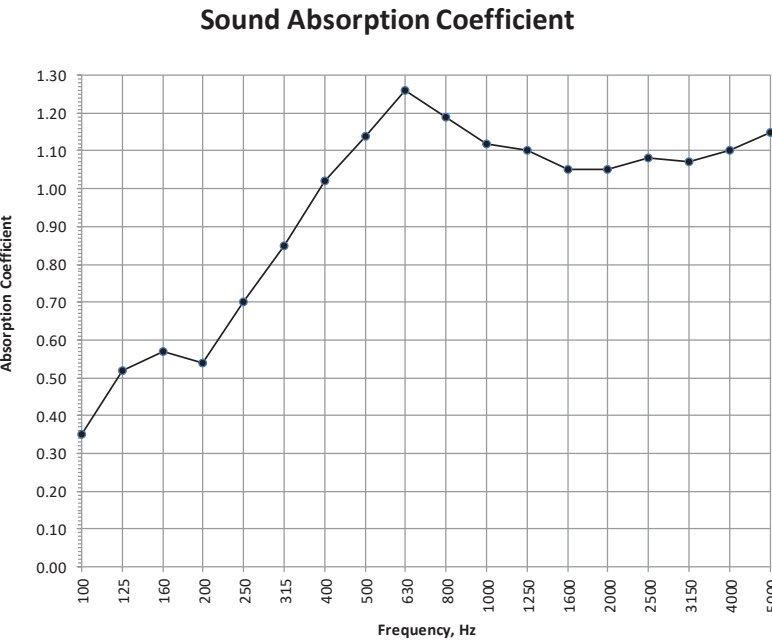
Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.9 °C Humidity: 57 %RH Pressure: 1016 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Tay Wool Serge (Approx. Weight 1250g/m² Made up of 2 Layers of 625g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G - 450
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 2				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.59	0.13	
63*	4.83	4.23	0.16	n/a
80*	7.33	4.87	0.37	
100	7.42	5.01	0.35	
125	7.17	4.24	0.52	0.50
160	6.75	3.95	0.57	
200	6.77	4.03	0.54	
250	6.80	3.62	0.70	0.70
315	6.65	3.26	0.85	
400	6.46	2.91	1.02	
500	5.63	2.58	1.14	1.00
630	5.00	2.31	1.26	
800	5.22	2.43	1.19	
1000	5.79	2.64	1.12	1.00
1250	5.75	2.65	1.10	
1600	5.33	2.62	1.05	
2000	4.93	2.52	1.05	1.00
2500	4.35	2.32	1.08	
3150	3.55	2.08	1.07	
4000	2.92	1.82	1.10	1.00
5000	2.34	1.55	1.15	
6300*	1.60	1.19	1.12	
8000*	1.30	0.98	1.29	n/a
10000*	0.93	0.75	1.30	

α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.00
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Tay Wool Serge - Enclosed
Fullness: Concertina Banner System
Cavity from Wall: 350mm



Data Sheet 12

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

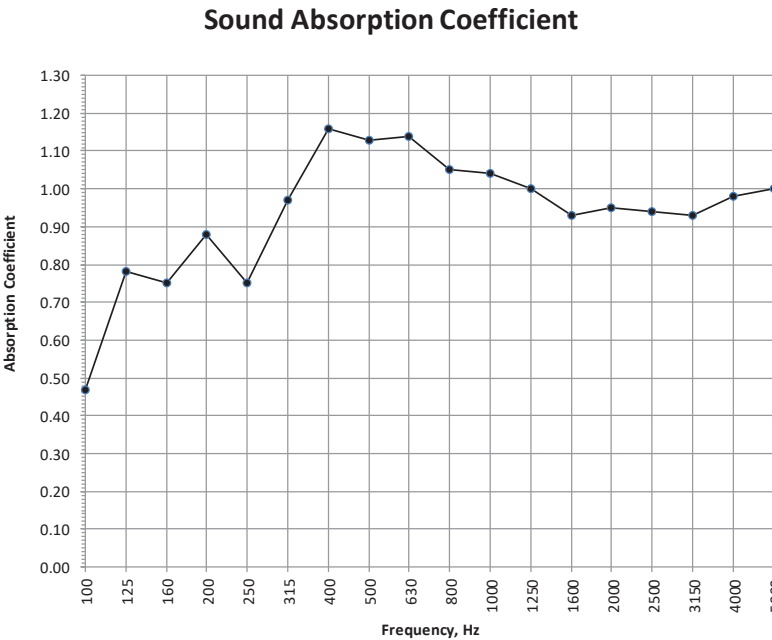
Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.6 °C Humidity: 56 %RH Pressure: 1011 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Tay Wool Serge (Approx. Weight 1250g/m² Made up of 2 Layers of 625g/m² Fabric) - 350mm Cavity From Wall, Enclosed Sides
Mounting Method: G - 450
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 12				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	3.35	0.57	
63*	4.83	3.76	0.32	n/a
80*	7.33	4.62	0.43	
100	7.42	4.52	0.47	
125	7.17	3.54	0.78	0.65
160	6.75	3.49	0.75	
200	6.77	3.22	0.88	
250	6.80	3.51	0.75	0.85
315	6.65	3.04	0.97	
400	6.46	2.71	1.16	
500	5.63	2.59	1.13	1.00
630	5.00	2.44	1.14	
800	5.22	2.60	1.05	
1000	5.79	2.75	1.04	1.00
1250	5.75	2.79	1.00	
1600	5.33	2.78	0.93	
2000	4.93	2.64	0.95	0.95
2500	4.35	2.46	0.94	
3150	3.55	2.18	0.93	
4000	2.92	1.88	0.98	0.95
5000	2.34	1.60	1.00	
6300*	1.60	1.18	1.09	
8000*	1.30	0.99	1.14	n/a
10000*	0.93	0.75	1.17	

α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Tay Wool Serge
Fullness: Concertina Banner System
Cavity from Wall: 100mm

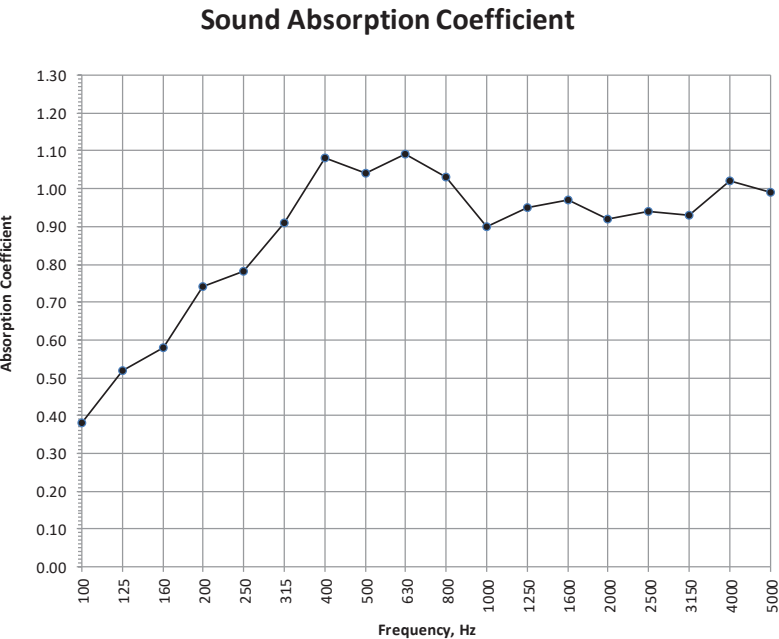


Data Sheet 3

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.8 °C Humidity: 56 %RH Pressure: 1016 mbar
Sample Description: Concertina Banner System (150mm Cavity Between Material) (Including Lightweight Aluminium Slats)
- Pressed Tay Wool Serge (Approx. Weight 1250g/m² Made up of 2 Layers of 625g/m² Fabric) - 100mm Cavity From Wall
Mounting Method: G - 250
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 3				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.62	0.12	
63*	4.83	4.40	0.11	n/a
80*	7.33	5.32	0.28	
100	7.42	4.89	0.38	
125	7.17	4.26	0.52	0.50
160	6.75	3.92	0.58	
200	6.77	3.52	0.74	
250	6.80	3.44	0.78	0.80
315	6.65	3.15	0.91	
400	6.46	2.83	1.08	
500	5.63	2.71	1.04	1.00
630	5.00	2.50	1.09	
800	5.22	2.62	1.03	
1000	5.79	2.96	0.90	0.95
1250	5.75	2.86	0.95	
1600	5.33	2.73	0.97	
2000	4.93	2.67	0.92	0.95
2500	4.35	2.47	0.94	
3150	3.55	2.19	0.93	
4000	2.92	1.86	1.02	1.00
5000	2.34	1.61	0.99	
6300*	1.60	1.21	1.00	
8000*	1.30	1.00	1.11	n/a
10000*	0.93	0.74	1.30	



α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Tay Wool Serge - Enclosed
Fullness: Concertina Banner System
Cavity from Wall: 100mm

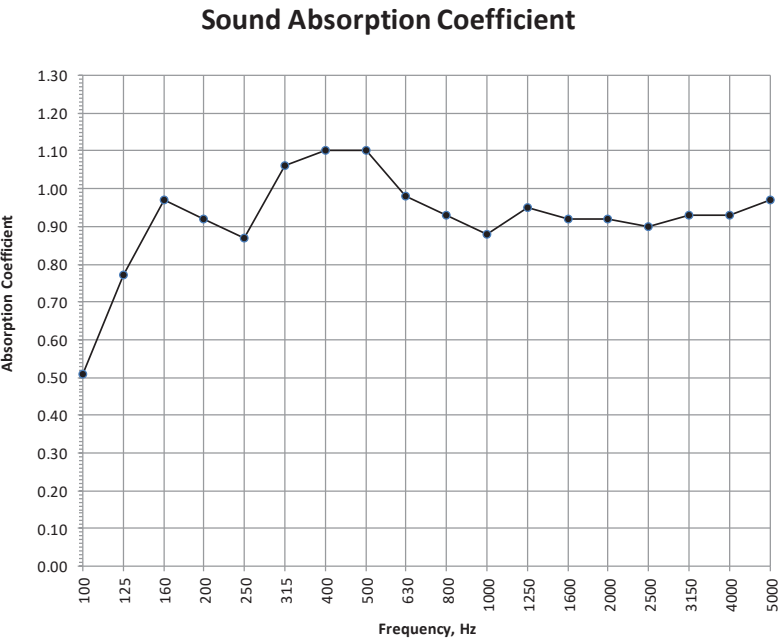


Data Sheet 13

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.9 °C Humidity: 56 %RH Pressure: 1011 mbar
Sample Description: Concertina Banner System (150mm Cavity Between Material) (Including Lightweight Aluminium Slats)
- Pressed Tay Wool Serge (Approx. Weight 1250g/m² Made up of 2 Layers of 625g/m² Fabric) - 100mm Cavity From Wall, Enclosed Sides
Mounting Method: G - 250
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 13				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	3.41	0.54	
63*	4.83	3.57	0.40	n/a
80*	7.33	4.91	0.36	
100	7.42	4.37	0.51	
125	7.17	3.54	0.77	0.75
160	6.75	3.06	0.97	
200	6.77	3.15	0.92	
250	6.80	3.25	0.87	0.95
315	6.65	2.89	1.06	
400	6.46	2.80	1.10	
500	5.63	2.63	1.10	1.00
630	5.00	2.63	0.98	
800	5.22	2.76	0.93	
1000	5.79	2.98	0.88	0.90
1250	5.75	2.87	0.95	
1600	5.33	2.80	0.92	
2000	4.93	2.68	0.92	0.90
2500	4.35	2.51	0.90	
3150	3.55	2.19	0.93	
4000	2.92	1.92	0.93	0.95
5000	2.34	1.62	0.97	
6300*	1.60	1.20	1.05	
8000*	1.30	1.01	1.07	n/a
10000*	0.93	0.76	1.13	



α _w	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Tay Wool Serge
Fullness: Concertina Banner System
Cavity from Wall: 350mm

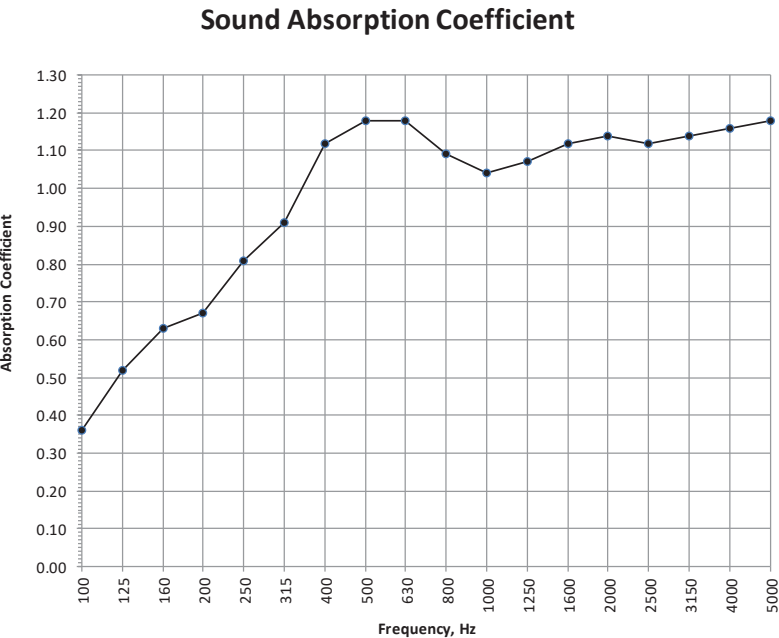


Data Sheet 4

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.6 °C Humidity: 56 %RH Pressure: 1016 mbar
Sample Description: Concertina Banner System (150mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Tay Wool Serge (Approx. Weight 1250g/m² Made up of 2 Layers of 625g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G - 500
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 4				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.61	0.12	
63*	4.83	4.38	0.12	n/a
80*	7.33	5.44	0.26	
100	7.42	4.98	0.36	
125	7.17	4.24	0.52	0.50
160	6.75	3.78	0.63	
200	6.77	3.68	0.67	
250	6.80	3.38	0.81	0.80
315	6.65	3.14	0.91	
400	6.46	2.77	1.12	
500	5.63	2.53	1.18	1.00
630	5.00	2.40	1.18	
800	5.22	2.55	1.09	
1000	5.79	2.74	1.04	1.00
1250	5.75	2.70	1.07	
1600	5.33	2.53	1.12	
2000	4.93	2.41	1.14	1.00
2500	4.35	2.28	1.12	
3150	3.55	2.01	1.14	
4000	2.92	1.77	1.16	1.00
5000	2.34	1.52	1.18	
6300*	1.60	1.13	1.30	
8000*	1.30	0.96	1.31	n/a
10000*	0.93	0.71	1.57	



α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.05
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Tay Wool Serge - Enclosed
Fullness: Concertina Banner System
Cavity from Wall: 350mm

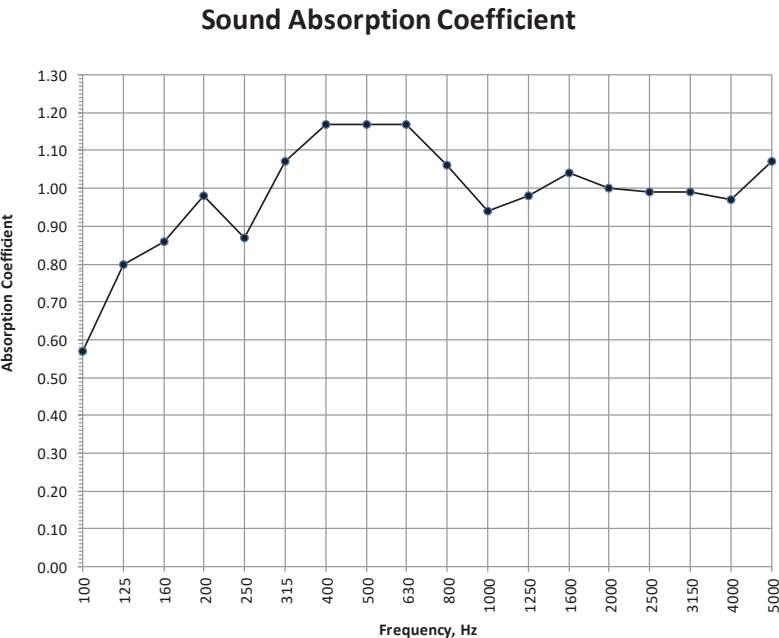


Data Sheet 14

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 56 %RH Pressure: 1011 mbar
Sample Description: Concertina Banner System (150mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Tay Wool Serge (Approx. Weight 1250g/m² Made up of 2 Layers of 625g/m² Fabric) - 350mm Cavity From Wall, Enclosed Sides
Mounting Method: G - 500
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 14				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	3.12	0.69	
63*	4.83	3.58	0.39	n/a
80*	7.33	3.87	0.66	
100	7.42	4.18	0.57	
125	7.17	3.48	0.80	0.75
160	6.75	3.25	0.86	
200	6.77	3.04	0.98	
250	6.80	3.25	0.87	0.95
315	6.65	2.88	1.07	
400	6.46	2.70	1.17	
500	5.63	2.54	1.17	1.00
630	5.00	2.41	1.17	
800	5.22	2.59	1.06	
1000	5.79	2.89	0.94	1.00
1250	5.75	2.82	0.98	
1600	5.33	2.63	1.04	
2000	4.93	2.58	1.00	1.00
2500	4.35	2.41	0.99	
3150	3.55	2.13	0.99	
4000	2.92	1.89	0.97	1.00
5000	2.34	1.57	1.07	
6300*	1.60	1.18	1.10	
8000*	1.30	1.00	1.10	n/a
10000*	0.93	0.76	1.09	



α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.00
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Wool Serge 800
Fullness: Concertina Banner System
Cavity from Wall: 100mm



Data Sheet 7

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 56 %RH Pressure: 1014 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Wool Serge 800 (Approx. Weight 1600g/m² Made up of 2 Layers of 800g/m² Fabric) - 100mm Cavity From Wall
Mounting Method: G - 200
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 7				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	5.15	5.06	0.02	
63*	4.83	4.73	0.02	n/a
80*	7.33	5.95	0.17	
100	7.42	5.51	0.25	
125	7.17	5.02	0.32	0.35
160	6.75	4.28	0.46	
200	6.77	4.11	0.52	
250	6.80	3.80	0.63	0.65
315	6.65	3.39	0.78	
400	6.46	2.99	0.98	
500	5.63	2.81	0.97	1.00
630	5.00	2.61	1.00	
800	5.22	2.58	1.07	
1000	5.79	2.66	1.10	1.00
1250	5.75	2.70	1.07	
1600	5.33	2.64	1.03	
2000	4.93	2.64	0.95	1.00
2500	4.35	2.45	0.95	
3150	3.55	2.11	1.02	
4000	2.92	1.81	1.10	1.00
5000	2.34	1.57	1.07	
6300*	1.60	1.20	1.03	
8000*	1.30	0.99	1.15	n/a
10000*	0.93	0.75	1.18	

αw 0.95

Class A

Calculated to EN ISO 11654:1997

NRC 0.90

Calculated to ASTM C 423-01

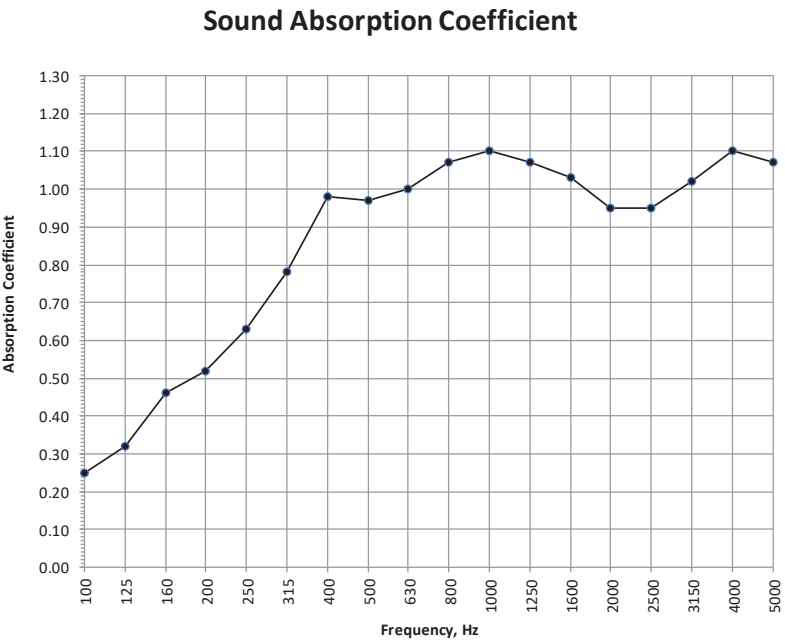
* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Pressed Wool Serge 800
Fullness: Concertina Banner System
Cavity from Wall: 350mm



Data Sheet 9

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 15/10/2020
Empty Room: Temperature: 16.1 °C Humidity: 63 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 58 %RH Pressure: 1015 mbar
Sample Description: Concertina Banner System (100mm Cavity Between Material) (Including Lightweight Aluminium Slats) - Pressed Wool Serge 800 (Approx. Weight 1600g/m² Made up of 2 Layers of 800g/m² Fabric) - 350mm Cavity From Wall
Mounting Method: G - 450
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 9				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	5.09	4.17	0.24	
63*	4.76	4.41	0.09	n/a
80*	7.42	6.24	0.14	
100	7.54	6.67	0.09	
125	6.85	4.37	0.45	0.35
160	6.65	3.91	0.57	
200	7.05	4.10	0.55	
250	6.89	3.94	0.59	0.65
315	6.51	3.30	0.81	
400	6.32	3.13	0.87	
500	5.53	2.67	1.05	1.00
630	4.91	2.37	1.19	
800	5.18	2.37	1.24	
1000	5.65	2.40	1.30	1.00
1250	5.60	2.53	1.17	
1600	5.16	2.40	1.20	
2000	4.76	2.37	1.13	1.00
2500	4.28	2.23	1.14	
3150	3.59	1.93	1.25	
4000	2.91	1.67	1.30	1.00
5000	2.36	1.45	1.31	
6300*	1.62	1.12	1.29	
8000*	1.33	0.94	1.39	n/a
10000*	0.94	0.71	1.43	

αw 0.95

Class A

Calculated to EN ISO 11654:1997

NRC 1.00

Calculated to ASTM C 423-01

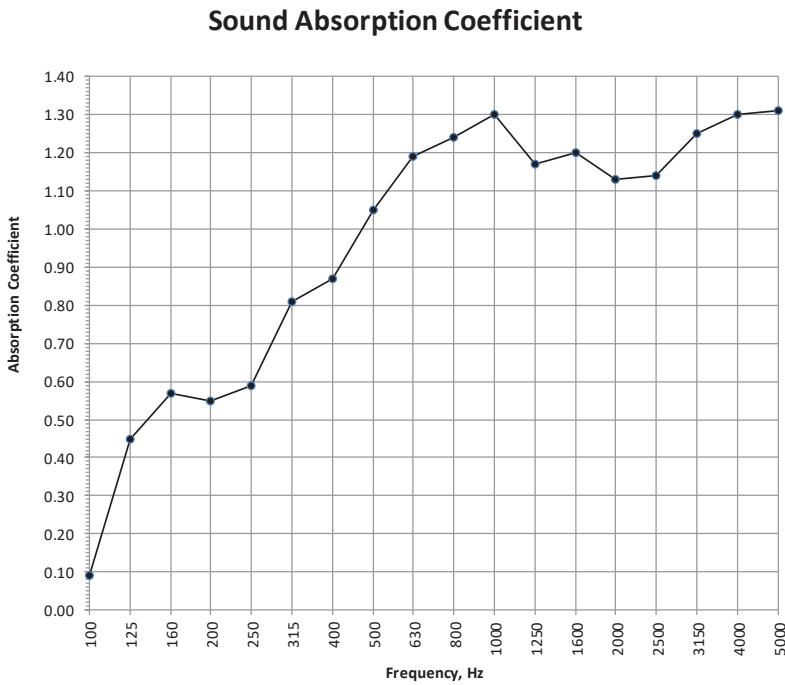
* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Drapery Absorption Reports

Product	Page
Wool Serge	62
Velvet	116
Other Fabrics	146



Wool Serge

Product	Page
Wool Serge 420	65
Wool Serge 565	72
Wool Serge 650	79
Wool Serge 800	86
Wool Serge 1000	93
Wool Serge 1.8	100
Euro Wool Serge	104
Coloured Wool Serge	110

Showcase



Bonus Arena - Wool Serge 565 (WS090)

Wool Serge 420

A lightweight cost-effective IFR wool serge suitable for a variety of applications.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	D	0.50	66
Flat	350mm	C	0.65	67
50%	100mm	C	0.75	68
50%	350mm	B	0.85	69
100%	100mm	B	0.85	70
100%	350mm	A	0.95	71

Black
WS100

1

Colour Available

Approx Roll Length:
57m / 187ft

Width:
150cm / 59"

Weight:
420 g/m²

FR Rating:
IFR

FR Certification:
BS5867

Fabric Thickness:
*1.35 mm

Custom Dye
N/A

*FABRIC THICKNESS Measured in-house with digital callipers, not under laboratory conditions



Cardinal Heenan Catholic High School, Liverpool - Wool Serge 420 (WS100)

Acoustic Test Report - Absorption

Absorption Class: D
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 420
Fullness: Flat
Cavity from Wall: 100mm

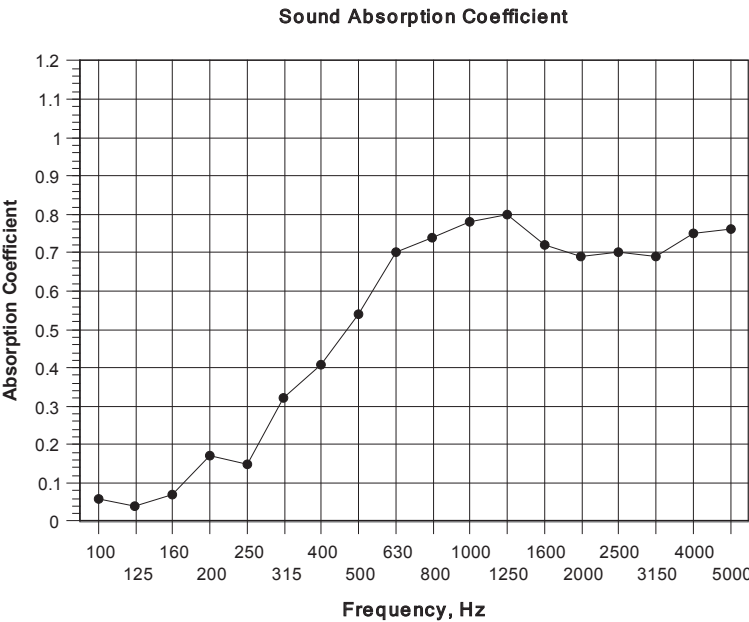


Data Sheet 21

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 18.9 °C Humidity: 61 %RH Pressure: 999 mbar
Sample Description: Wool Serge 420 - Single Layer – Flat (Approx. weight 420g/m²) – 100mm cavity from wall
Mounting Method: G-100
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 23				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	5.07	0.05	
63*	5.40	5.44	-0.01	n/a
80*	6.56	6.54	0.00	
100	7.57	6.94	0.06	
125	7.11	6.72	0.04	0.05
160	6.42	5.94	0.07	
200	7.12	5.83	0.17	
250	7.07	5.89	0.15	0.20
315	6.84	4.88	0.32	
400	6.46	4.32	0.41	
500	5.45	3.53	0.54	0.55
630	4.96	3.02	0.70	
800	5.47	3.13	0.74	
1000	5.91	3.18	0.78	0.75
1250	5.59	3.05	0.80	
1600	5.06	3.01	0.72	
2000	4.75	2.95	0.69	0.70
2500	4.34	2.77	0.70	
3150	3.64	2.48	0.69	
4000	3.09	2.15	0.75	0.75
5000	2.44	1.80	0.76	
6300*	1.79	1.44	0.70	
8000*	1.51	1.23	0.76	n/a
10000*	1.06	0.88	0.96	



α_w 0.50(MH)
Class D
Calculated to EN ISO 11654:1997
NRC 0.55
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 420
Fullness: Flat
Cavity from Wall: 350mm

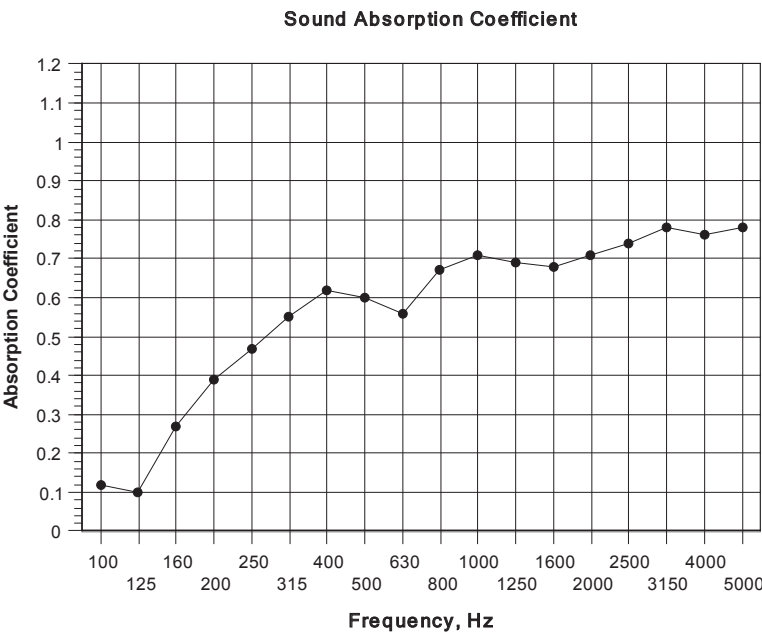


Data Sheet 22

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 18.9 °C Humidity: 61 %RH Pressure: 999 mbar
Sample Description: Wool Serge 420 - Single Layer – Flat (Approx. weight 420g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 24				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	5.20	0.03	
63*	5.40	4.60	0.17	n/a
80*	6.56	5.99	0.08	
100	7.57	6.44	0.12	
125	7.11	6.26	0.10	0.15
160	6.42	4.86	0.27	
200	7.12	4.70	0.39	
250	7.07	4.37	0.47	0.45
315	6.84	4.04	0.55	
400	6.46	3.71	0.62	
500	5.45	3.40	0.60	0.60
630	4.96	3.27	0.56	
800	5.47	3.26	0.67	
1000	5.91	3.33	0.71	0.70
1250	5.59	3.26	0.69	
1600	5.06	3.09	0.68	
2000	4.75	2.92	0.71	0.70
2500	4.34	2.72	0.74	
3150	3.64	2.38	0.78	
4000	3.09	2.14	0.76	0.75
5000	2.44	1.79	0.78	
6300*	1.79	1.40	0.81	
8000*	1.51	1.20	0.87	n/a
10000*	1.06	0.89	0.89	



α_w 0.65
Class C
Calculated to EN ISO 11654:1997
NRC 0.60
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 420
Fullness: 50%
Cavity from Wall: 100mm

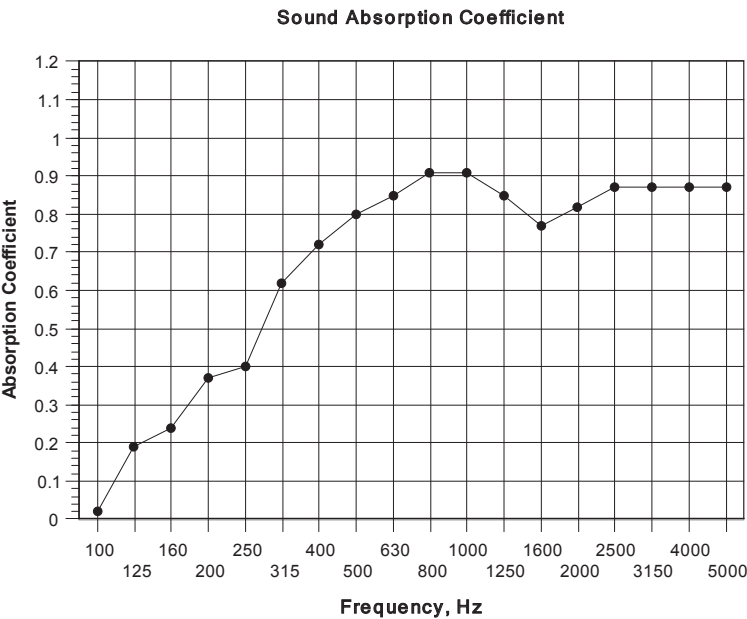


Data Sheet 24

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 18.9 °C Humidity: 61 %RH Pressure: 1000 mbar
Sample Description: Wool Serge 420 – Single Layer – 50% fullness (Approx. weight 420g/m²) – 100mm cavity from wall
Mounting Method: G-100
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 26				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	5.23	0.02	
63*	5.40	4.74	0.14	n/a
80*	6.56	5.88	0.09	
100	7.57	7.39	0.02	
125	7.11	5.71	0.19	0.15
160	6.42	4.98	0.24	
200	7.12	4.80	0.37	
250	7.07	4.62	0.40	0.45
315	6.84	3.83	0.62	
400	6.46	3.46	0.72	
500	5.45	3.01	0.80	0.80
630	4.96	2.79	0.85	
800	5.47	2.84	0.91	
1000	5.91	2.96	0.91	0.90
1250	5.59	2.97	0.85	
1600	5.06	2.94	0.77	
2000	4.75	2.75	0.82	0.80
2500	4.34	2.55	0.87	
3150	3.64	2.29	0.87	
4000	3.09	2.05	0.87	0.85
5000	2.44	1.74	0.87	
6300*	1.79	1.37	0.89	
8000*	1.51	1.17	0.98	n/a
10000*	1.06	0.84	1.25	



α_w 0.75
Class C
Calculated to EN ISO 11654:1997
NRC 0.75
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 420
Fullness: 50%
Cavity from Wall: 350mm

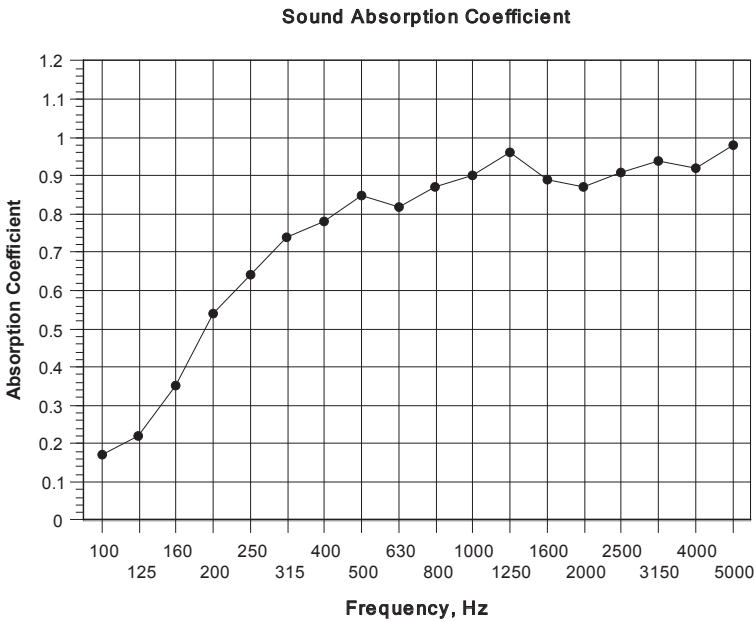


Data Sheet 23

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 18.9 °C Humidity: 61 %RH Pressure: 999 mbar
Sample Description: Wool Serge 420 – Single Layer – 50% fullness (Approx. weight 420g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 25				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	4.39	0.22	
63*	5.40	4.79	0.13	n/a
80*	6.56	5.79	0.11	
100	7.57	6.13	0.17	
125	7.11	5.52	0.22	0.25
160	6.42	4.52	0.35	
200	7.12	4.14	0.54	
250	7.07	3.85	0.64	0.65
315	6.84	3.52	0.74	
400	6.46	3.34	0.78	
500	5.45	2.93	0.85	0.80
630	4.96	2.83	0.82	
800	5.47	2.90	0.87	
1000	5.91	2.97	0.90	0.90
1250	5.59	2.80	0.96	
1600	5.06	2.75	0.89	
2000	4.75	2.68	0.87	0.90
2500	4.34	2.50	0.91	
3150	3.64	2.22	0.94	
4000	3.09	2.01	0.92	0.95
5000	2.44	1.68	0.98	
6300*	1.79	1.34	0.98	
8000*	1.51	1.16	1.02	n/a
10000*	1.06	0.81	1.49	



α_w 0.85
Class B
Calculated to EN ISO 11654:1997
NRC 0.80
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 420
Fullness: 100%
Cavity from Wall: 100mm

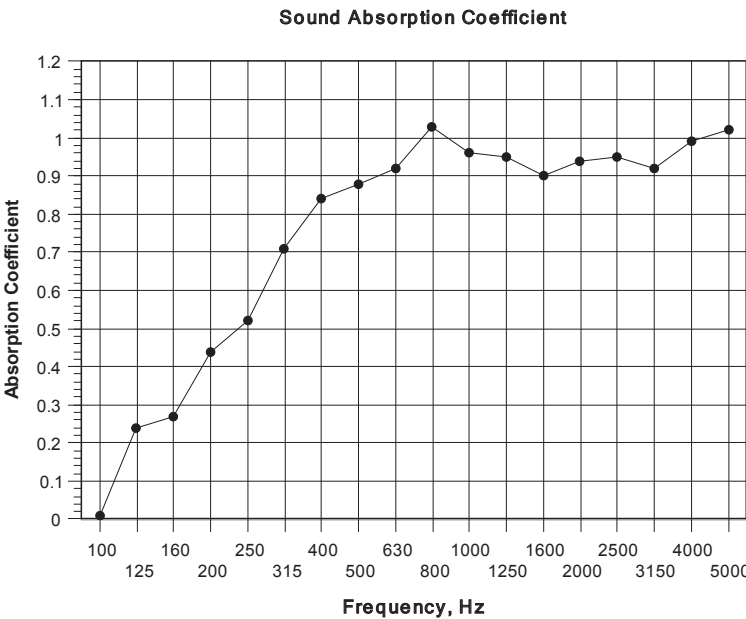


Data Sheet 25

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 19.0 °C Humidity: 61 %RH Pressure: 1001 mbar
Sample Description: Wool Serge 420 – Single Layer – 100% fullness (Approx. weight 420g/m²) – 100mm cavity from wall
Mounting Method: G-100
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 27				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	4.43	0.21	
63*	5.40	4.61	0.17	n/a
80*	6.56	5.86	0.10	
100	7.57	7.50	0.01	
125	7.11	5.42	0.24	0.15
160	6.42	4.84	0.27	
200	7.12	4.51	0.44	
250	7.07	4.20	0.52	0.55
315	6.84	3.60	0.71	
400	6.46	3.22	0.84	
500	5.45	2.89	0.88	0.90
630	4.96	2.68	0.92	
800	5.47	2.67	1.03	
1000	5.91	2.88	0.96	1.00
1250	5.59	2.82	0.95	
1600	5.06	2.74	0.90	
2000	4.75	2.60	0.94	0.95
2500	4.34	2.45	0.95	
3150	3.64	2.24	0.92	
4000	3.09	1.96	0.99	1.00
5000	2.44	1.66	1.02	
6300*	1.79	1.35	0.95	
8000*	1.51	1.15	1.08	n/a
10000*	1.06	0.82	1.42	



α_w 0.85(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.85
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 420
Fullness: 100%
Cavity from Wall: 350mm

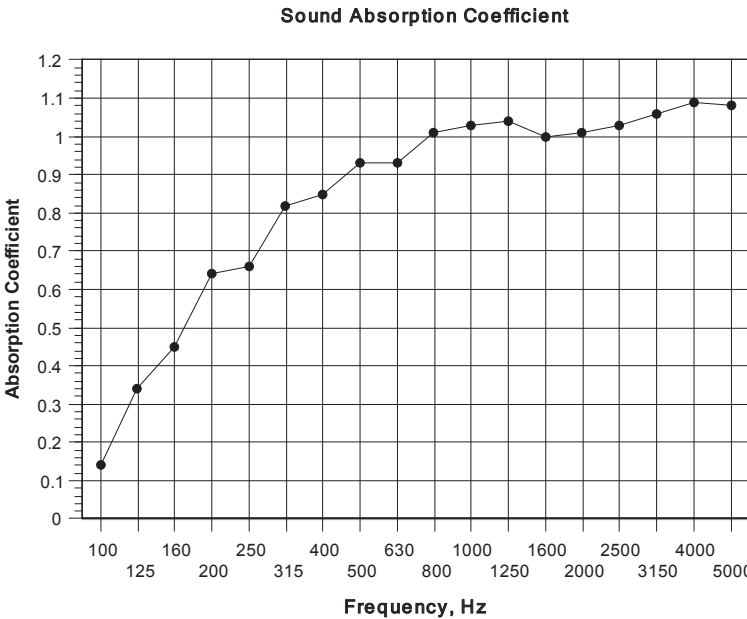


Data Sheet 26

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 19.0 °C Humidity: 60 %RH Pressure: 1001 mbar
Sample Description: Wool Serge 420 – Single Layer – 100% fullness (Approx. weight 420g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 28				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	4.60	0.16	
63*	5.40	4.50	0.20	n/a
80*	6.56	5.35	0.19	
100	7.57	6.30	0.14	
125	7.11	4.92	0.34	0.30
160	6.42	4.18	0.45	
200	7.12	3.86	0.64	
250	7.07	3.78	0.66	0.70
315	6.84	3.35	0.82	
400	6.46	3.19	0.85	
500	5.45	2.81	0.93	0.90
630	4.96	2.67	0.93	
800	5.47	2.70	1.01	
1000	5.91	2.78	1.03	1.00
1250	5.59	2.69	1.04	
1600	5.06	2.61	1.00	
2000	4.75	2.51	1.01	1.00
2500	4.34	2.36	1.03	
3150	3.64	2.11	1.06	
4000	3.09	1.89	1.09	1.00
5000	2.44	1.62	1.08	
6300*	1.79	1.30	1.08	
8000*	1.51	1.11	1.20	n/a
10000*	1.06	0.81	1.44	



α_w 0.95
Class A
Calculated to EN ISO 11654:1997
NRC 0.90
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Wool Serge 565

The workhorse for on stage masking, perimeter and acoustic drapery in the entertainment and events industry.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	D	0.55	73
Flat	350mm	C	0.70	74
50%	100mm	B	0.80	75
50%	350mm	B	0.85	76
100%	100mm	A	0.90	77
100%	350mm	A	0.90	78

Black
WS090

1

Colour Available

Approx Roll Length:
57m / 187ft

Width:
150cm / 59"

Weight:
565 g/m²

FR Rating:
IFR

FR Certification:
BS5867, NFPA 701,
IMO, AS1530.2/3

Fabric Thickness:
*1.90 mm

Custom Dye
N/A

*FABRIC THICKNESS Measured in-house with digital callipers, not under laboratory conditions



Bonus Arena, Hull - Wool Serge 565 (WS090)

Acoustic Test Report - Absorption

Absorption Class: D
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 565
Fullness: Flat
Cavity from Wall: 100mm

J&C Joel
Inspiration in every performance

Data Sheet 9

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd

Test Date: 12/04/2014

Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar

Room with Sample: Temperature: 16.7 °C Humidity: 50 %RH Pressure: 1009 mbar

Sample Description: Wool Serge 565 - Single Layer - Flat (Approx. weight 565g/m²) - 100mm cavity from wall

Mounting Method: G-100

Sample Area: 9 m2

Chamber Volume: 300 m3

Test 10				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	5.34	-0.05	
63*	4.60	4.75	-0.04	n/a
80*	5.86	5.27	0.10	
100	6.96	6.70	0.03	
125	7.22	6.73	0.05	0.05
160	6.82	5.92	0.12	
200	6.37	5.61	0.11	
250	7.19	5.28	0.27	0.25
315	7.06	4.95	0.33	
400	6.40	4.16	0.46	
500	5.35	3.50	0.54	0.55
630	5.03	3.02	0.72	
800	5.43	3.01	0.80	
1000	5.96	3.06	0.86	0.80
1250	5.70	3.09	0.80	
1600	5.08	2.98	0.74	
2000	4.62	2.96	0.63	0.70
2500	4.17	2.61	0.73	
3150	3.50	2.26	0.77	
4000	2.85	1.90	0.82	0.85
5000	2.25	1.51	0.97	
6300*	1.66	1.16	1.09	
8000*	1.38	0.98	1.13	n/a
10000*	0.93	0.69	1.36	

α_w 0.55(MH)

Class D

Calculated to EN ISO 11654:1997

NRC 0.60

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Sound Absorption Coefficient

Frequency (Hz)	Absorption Coefficient
100	0.05
125	0.10
160	0.12
200	0.11
250	0.25
315	0.33
400	0.46
500	0.55
630	0.72
800	0.80
1000	0.86
1250	0.80
1600	0.74
2000	0.63
2500	0.73
3150	0.77
4000	0.82
5000	0.97

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Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 565
Fullness: Flat
Cavity from Wall: 350mm

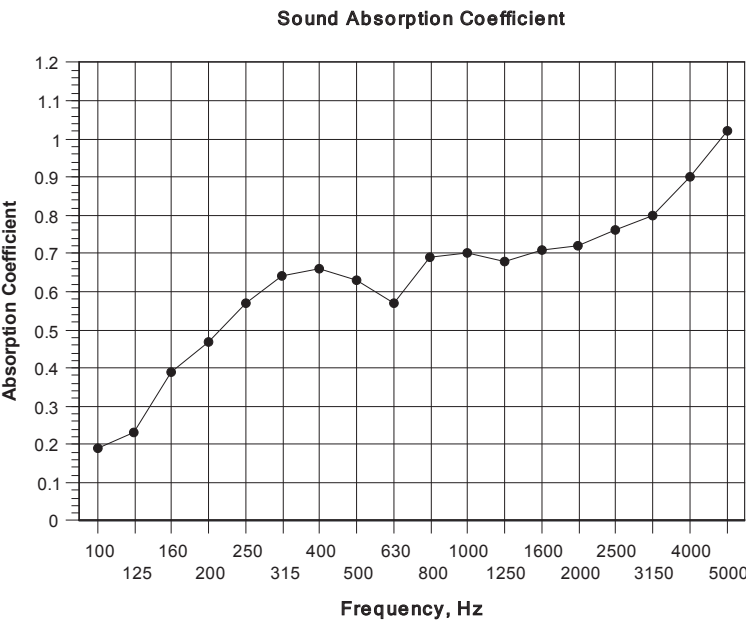


Data Sheet 10

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.7 °C Humidity: 50 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 565 - Single Layer – Flat (Approx. weight 565g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 11				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	4.92	0.03	
63*	4.60	3.97	0.19	n/a
80*	5.86	5.00	0.16	
100	6.96	5.59	0.19	
125	7.22	5.50	0.23	0.25
160	6.82	4.58	0.39	
200	6.37	4.11	0.47	
250	7.19	4.08	0.57	0.55
315	7.06	3.86	0.64	
400	6.40	3.60	0.66	
500	5.35	3.31	0.63	0.60
630	5.03	3.30	0.57	
800	5.43	3.21	0.69	
1000	5.96	3.37	0.70	0.70
1250	5.70	3.31	0.68	
1600	5.08	3.02	0.71	
2000	4.62	2.83	0.72	0.75
2500	4.17	2.57	0.76	
3150	3.50	2.23	0.80	
4000	2.85	1.85	0.90	0.90
5000	2.25	1.49	1.02	
6300*	1.66	1.16	1.09	
8000*	1.38	0.98	1.13	n/a
10000*	0.93	0.69	1.36	



α_w 0.70(H)
Class C
Calculated to EN ISO 11654:1997
NRC 0.65
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 565
Fullness: 50%
Cavity from Wall: 100mm

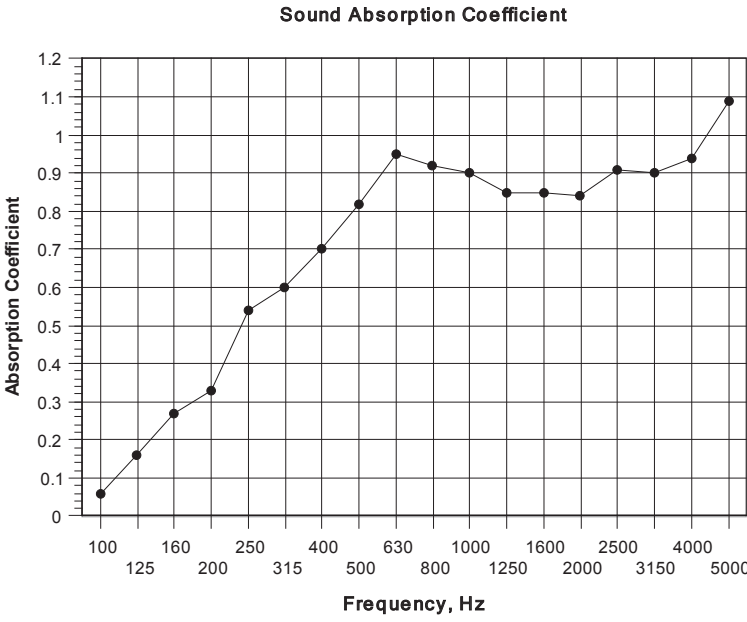


Data Sheet 13

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.7 °C Humidity: 49 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 565 – Single Layer – 50% fullness (Approx. weight 565g/m²) – 100mm cavity from wall
Mounting Method: G-100
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 14				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	5.19	-0.02	
63*	4.60	4.16	0.12	n/a
80*	5.86	5.26	0.10	
100	6.96	6.42	0.06	
125	7.22	5.91	0.16	0.15
160	6.82	5.07	0.27	
200	6.37	4.60	0.33	
250	7.19	4.18	0.54	0.50
315	7.06	3.96	0.60	
400	6.40	3.51	0.70	
500	5.35	2.96	0.82	0.80
630	5.03	2.67	0.95	
800	5.43	2.83	0.92	
1000	5.96	2.99	0.90	0.90
1250	5.70	2.99	0.85	
1600	5.08	2.80	0.85	
2000	4.62	2.65	0.84	0.85
2500	4.17	2.39	0.91	
3150	3.50	2.13	0.90	
4000	2.85	1.81	0.94	1.00
5000	2.25	1.45	1.09	
6300*	1.66	1.11	1.25	
8000*	1.38	0.94	1.30	n/a
10000*	0.93	0.66	1.62	



α_w 0.80(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.80
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 565
Fullness: 50%
Cavity from Wall: 350mm

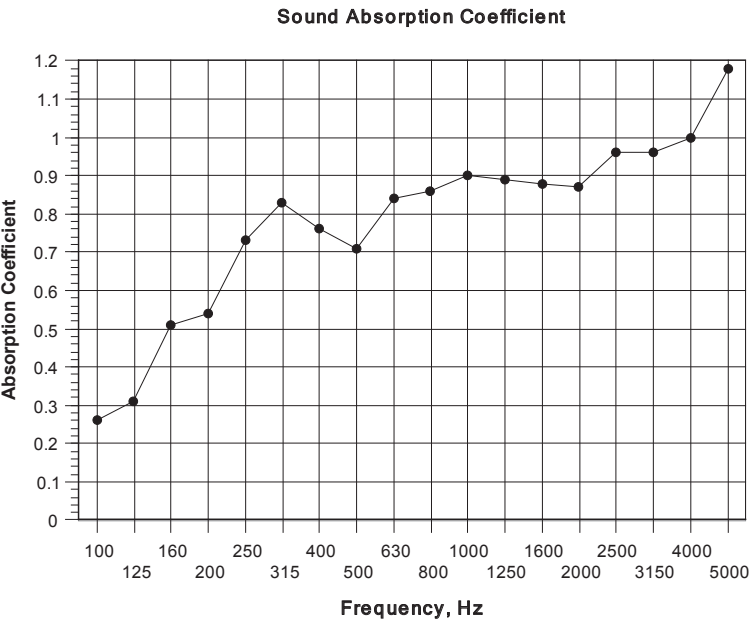


Data Sheet 14

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.1 °C Humidity: 49 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 565 – Single Layer – 50% fullness (Approx. weight 565g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 15				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	4.88	0.04	
63*	4.60	4.17	0.12	n/a
80*	5.86	4.93	0.17	
100	6.96	5.24	0.26	
125	7.22	5.11	0.31	0.35
160	6.82	4.16	0.51	
200	6.37	3.89	0.54	
250	7.19	3.64	0.73	0.70
315	7.06	3.40	0.83	
400	6.40	3.37	0.76	
500	5.35	3.15	0.71	0.75
630	5.03	2.84	0.84	
800	5.43	2.92	0.86	
1000	5.96	2.99	0.90	0.90
1250	5.70	2.93	0.89	
1600	5.08	2.76	0.88	
2000	4.62	2.61	0.87	0.90
2500	4.17	2.33	0.96	
3150	3.50	2.07	0.96	
4000	2.85	1.76	1.00	1.00
5000	2.25	1.40	1.18	
6300*	1.66	1.08	1.32	
8000*	1.38	0.94	1.21	n/a
10000*	0.93	0.66	1.50	



α_w 0.85(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.80
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 565
Fullness: 100%
Cavity from Wall: 100mm

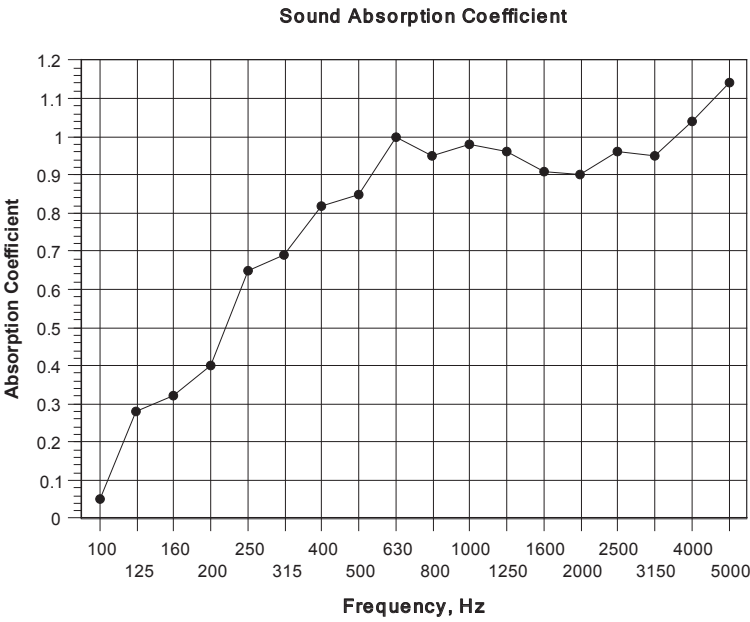


Data Sheet 16

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.7 °C Humidity: 49 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 565 – Single Layer – 100% fullness (Approx. weight 565g/m²) – 100mm cavity from wall
Mounting Method: G-100
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 17				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	5.35	-0.06	
63*	4.60	3.67	0.30	n/a
80*	5.86	5.36	0.09	
100	6.96	6.57	0.05	
125	7.22	5.26	0.28	0.20
160	6.82	4.85	0.32	
200	6.37	4.32	0.40	
250	7.19	3.85	0.65	0.60
315	7.06	3.71	0.69	
400	6.40	3.25	0.82	
500	5.35	2.91	0.85	0.90
630	5.03	2.61	1.00	
800	5.43	2.78	0.95	
1000	5.96	2.87	0.98	0.95
1250	5.70	2.82	0.96	
1600	5.08	2.72	0.91	
2000	4.62	2.58	0.90	0.90
2500	4.17	2.34	0.96	
3150	3.50	2.09	0.95	
4000	2.85	1.75	1.04	1.00
5000	2.25	1.43	1.14	
6300*	1.66	1.11	1.25	
8000*	1.38	0.95	1.24	n/a
10000*	0.93	0.67	1.50	



α_w 0.90
Class A
Calculated to EN ISO 11654:1997
NRC 0.85
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 565
Fullness: 100%
Cavity from Wall: 350mm

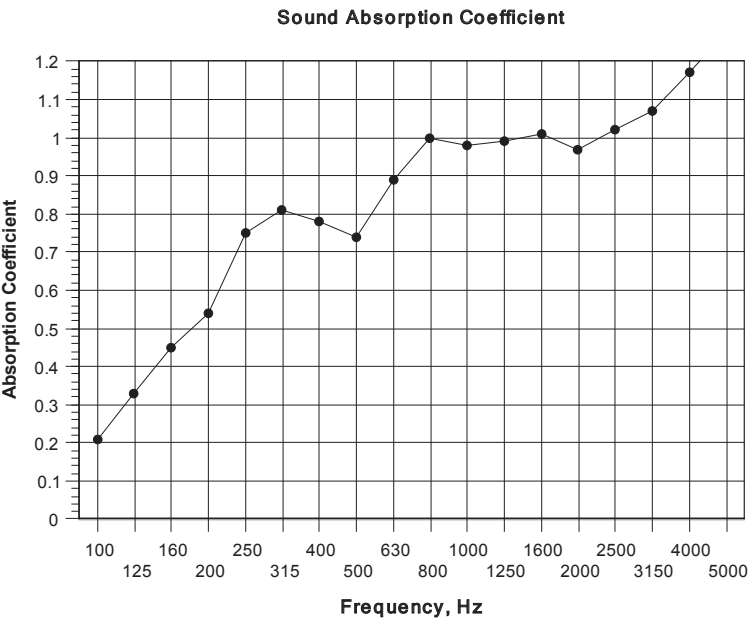


Data Sheet 15

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.7 °C Humidity: 49 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 565 – Single Layer – 100% fullness (Approx. weight 565g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 16				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	4.93	0.03	
63*	4.60	3.72	0.28	n/a
80*	5.86	5.22	0.11	
100	6.96	5.48	0.21	
125	7.22	5.02	0.33	0.35
160	6.82	4.33	0.45	
200	6.37	3.89	0.54	
250	7.19	3.60	0.75	0.70
315	7.06	3.43	0.81	
400	6.40	3.34	0.78	
500	5.35	3.09	0.74	0.80
630	5.03	2.76	0.89	
800	5.43	2.71	1.00	
1000	5.96	2.86	0.98	1.00
1250	5.70	2.78	0.99	
1600	5.08	2.59	1.01	
2000	4.62	2.49	0.97	1.00
2500	4.17	2.28	1.02	
3150	3.50	2.00	1.07	
4000	2.85	1.68	1.17	1.00
5000	2.25	1.38	1.28	
6300*	1.66	1.08	1.39	
8000*	1.38	0.93	1.36	n/a
10000*	0.93	0.67	1.50	



α_w 0.90
Class A
Calculated to EN ISO 11654:1997
NRC 0.85
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Wool Serge 650

A heavy-duty fabric with excellent acoustic properties whether flat or sewn with fullness.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	C	0.60	80
Flat	350mm	C	0.75	81
50%	100mm	B	0.80	82
50%	350mm	A	0.95	83
100%	100mm	A	0.90	84
100%	350mm	A	1.00	85

Black
WS041

1

Colour Available

Approx Roll Length:
57m / 187ft

Width:
150cm / 59"

Weight:
650 g/m²

FR Rating:
IFR

FR Certification:
BS5867

Fabric Thickness:
*2.00 mm

Custom Dye
N/A

* FABRIC THICKNESS Measured in-house with digital callipers, not under laboratory conditions



Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 650
Fullness: Flat
Cavity from Wall: 100mm



Data Sheet 9

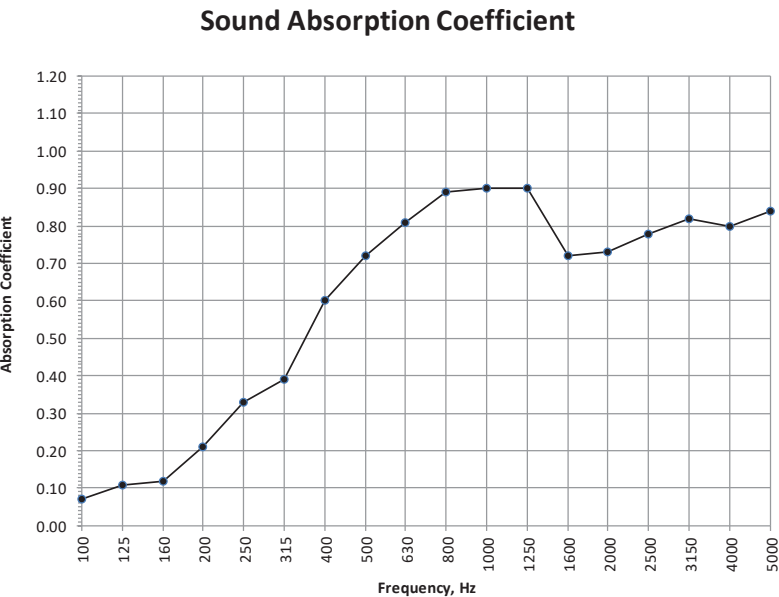
See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.2 °C Humidity: 67 %RH Pressure: 994 mbar
Room with Sample: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 996 mbar
Sample Description: Wool Serge 650 - Single Layer - Flat (Approx. Weight 650g/m²) - 100mm cavity from wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 10				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.50	4.83	-0.08	
63*	5.34	5.00	0.07	n/a
80*	7.80	7.20	0.06	
100	7.45	6.78	0.07	
125	7.52	6.51	0.11	0.10
160	6.43	5.60	0.12	
200	7.00	5.47	0.21	
250	6.85	4.80	0.33	0.30
315	6.50	4.40	0.39	
400	6.17	3.64	0.60	
500	5.51	3.16	0.72	0.70
630	4.84	2.80	0.81	
800	5.03	2.74	0.89	
1000	5.39	2.83	0.90	0.90
1250	5.59	2.88	0.90	
1600	5.17	3.05	0.72	
2000	4.85	2.91	0.73	0.75
2500	4.42	2.69	0.78	
3150	3.75	2.38	0.82	
4000	3.16	2.15	0.80	0.80
5000	2.58	1.84	0.84	
6300*	1.92	1.48	0.84	
8000*	1.54	1.24	0.86	n/a
10000*	1.12	0.96	0.83	



α _w	0.60(MH)
Class C	
Calculated to EN ISO 11654:1997	
NRC	0.65
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 650
Fullness: Flat
Cavity from Wall: 350mm



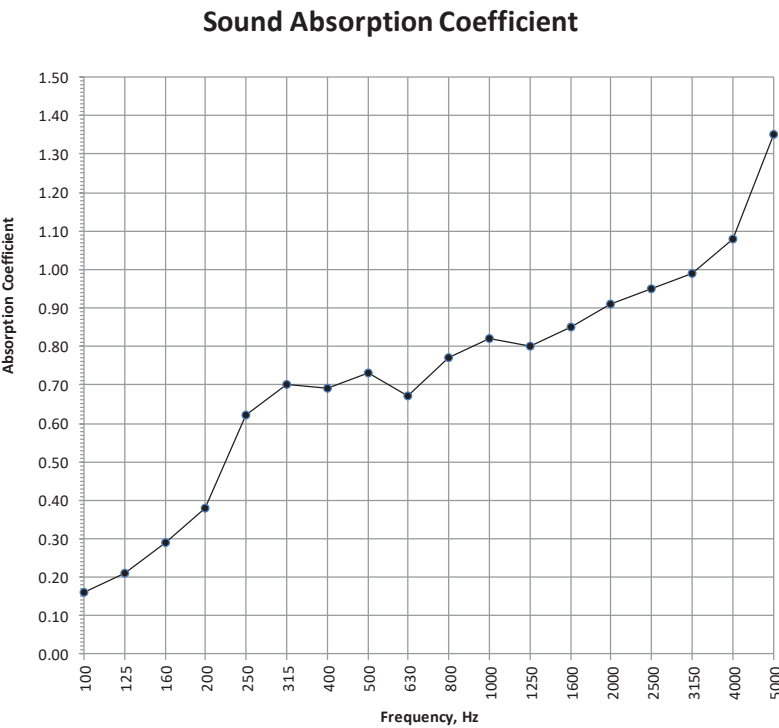
Data Sheet 14

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 43 %RH Pressure: 1001 mbar
Sample Description: Wool Serge 650 - Single Layer - flat (Approx. weight 650g/m2) - 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 15				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.72	0.06	
63*	5.39	4.75	0.14	n/a
80*	7.08	5.95	0.15	
100	9.00	7.07	0.16	
125	7.30	5.69	0.21	0.20
160	6.60	4.88	0.29	
200	6.86	4.62	0.38	
250	7.22	3.96	0.62	0.55
315	6.99	3.69	0.70	
400	6.36	3.53	0.69	
500	5.64	3.21	0.73	0.70
630	5.09	3.13	0.67	
800	5.10	2.96	0.77	
1000	5.74	3.07	0.82	0.80
1250	5.63	3.07	0.80	
1600	5.18	2.84	0.85	
2000	4.76	2.60	0.91	0.90
2500	4.22	2.37	0.95	
3150	3.35	2.01	0.99	
4000	2.59	1.63	1.08	1.00
5000	2.04	1.28	1.35	
6300*	1.39	0.96	1.41	
8000*	1.14	0.81	1.47	n/a
10000*	0.80	0.59	1.83	



α _w	0.75(H)
Class C	
Calculated to EN ISO 11654:1997	
NRC	0.75
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 650
Fullness: 50%
Cavity from Wall: 100mm



Data Sheet 8

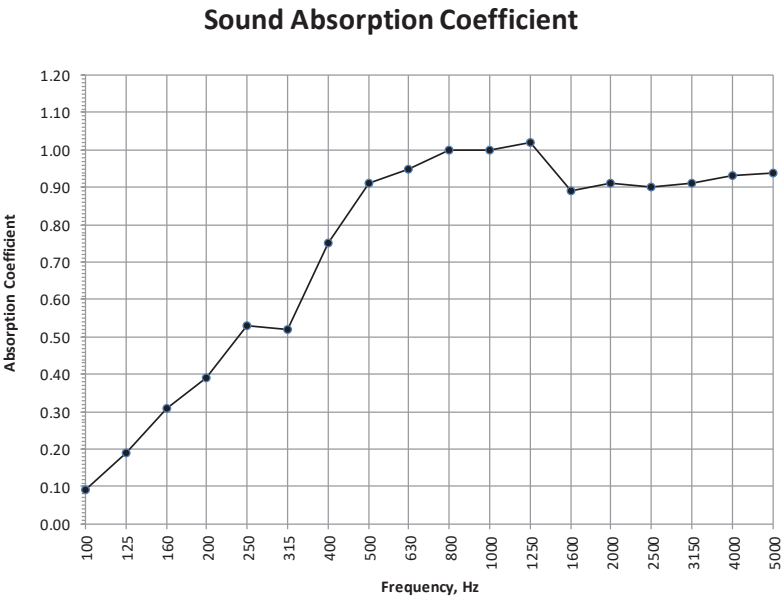
See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.2 °C Humidity: 67 %RH Pressure: 994 mbar
Room with Sample: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 996 mbar
Sample Description: Wool Serge 650 - Single Layer - 50% Fullness (Approx. Weight 650g/m²) - 100mm cavity from wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 9				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.50	4.76	-0.07	
63*	5.34	4.96	0.08	n/a
80*	7.80	6.83	0.10	
100	7.45	6.58	0.09	
125	7.52	5.94	0.19	0.20
160	6.43	4.70	0.31	
200	7.00	4.62	0.39	
250	6.85	4.09	0.53	0.50
315	6.50	3.99	0.52	
400	6.17	3.31	0.75	
500	5.51	2.85	0.91	0.85
630	4.84	2.60	0.95	
800	5.03	2.59	1.00	
1000	5.39	2.68	1.00	1.00
1250	5.59	2.71	1.02	
1600	5.17	2.78	0.89	
2000	4.85	2.66	0.91	0.90
2500	4.42	2.53	0.90	
3150	3.75	2.29	0.91	
4000	3.16	2.04	0.93	0.95
5000	2.58	1.78	0.94	
6300*	1.92	1.42	1.00	
8000*	1.54	1.24	0.86	n/a
10000*	1.12	0.95	0.89	



α _w	0.80(H)
Class B	
Calculated to EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1 empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 650
Fullness: 50%
Cavity from Wall: 350mm



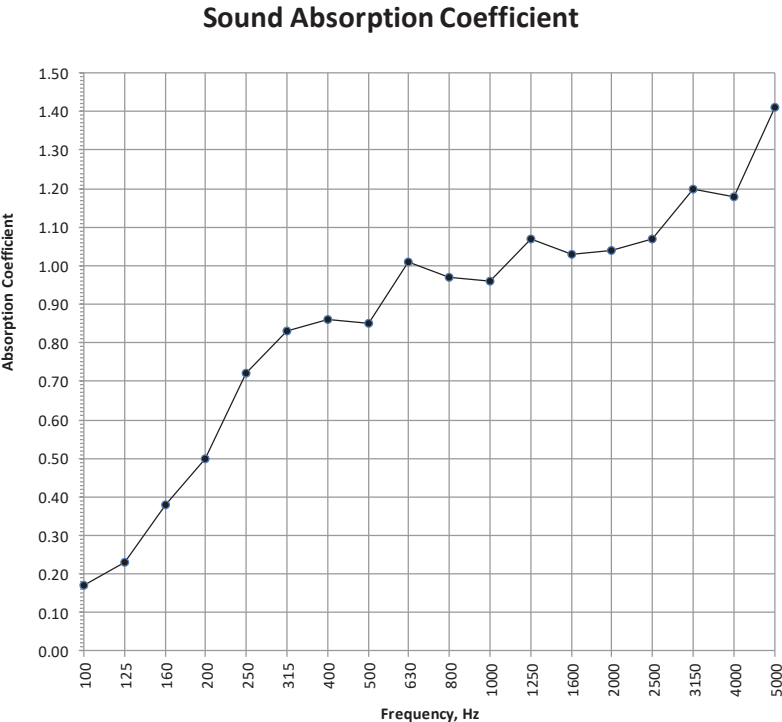
Data Sheet 13

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.6 °C Humidity: 43 %RH Pressure: 1001 mbar
Sample Description: Wool Serge 650 - Single Layer - 50% fullness (Approx. weight 650g/m2) - 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 14				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.41	0.14	
63*	5.39	4.47	0.21	n/a
80*	7.08	5.55	0.21	
100	9.00	7.05	0.17	
125	7.30	5.58	0.23	0.25
160	6.60	4.52	0.38	
200	6.86	4.22	0.50	
250	7.22	3.69	0.72	0.70
315	6.99	3.39	0.83	
400	6.36	3.17	0.86	
500	5.64	3.01	0.85	0.90
630	5.09	2.62	1.01	
800	5.10	2.67	0.97	
1000	5.74	2.85	0.96	1.00
1250	5.63	2.66	1.07	
1600	5.18	2.59	1.03	
2000	4.76	2.45	1.04	1.00
2500	4.22	2.25	1.07	
3150	3.35	1.86	1.20	
4000	2.59	1.58	1.18	1.00
5000	2.04	1.26	1.41	
6300*	1.39	0.92	1.64	
8000*	1.14	0.79	1.63	n/a
10000*	0.80	0.58	1.97	



α _w	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1 empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 650
Fullness: 100%
Cavity from Wall: 100mm



Data Sheet 7

See SRL report 24694-SRL-RP-XT-001-P1 for full details

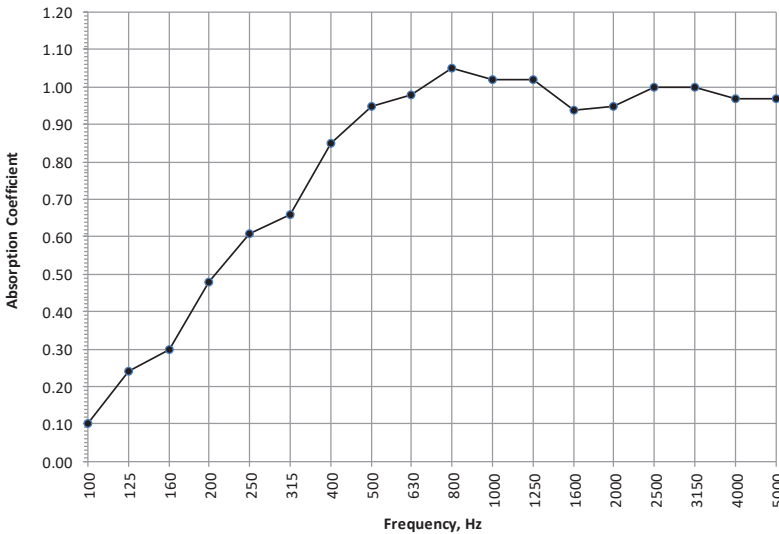
The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.2 °C Humidity: 67 %RH Pressure: 994 mbar
Room with Sample: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 995 mbar
Sample Description: Wool Serge 650 - Single Layer - 100% Fullness (Approx. Weight 650g/m²) - 100mm cavity from wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 8				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.50	4.59	-0.02	
63*	5.34	4.94	0.08	n/a
80*	7.80	6.97	0.08	
100	7.45	6.53	0.10	
125	7.52	5.61	0.24	0.20
160	6.43	4.71	0.30	
200	7.00	4.31	0.48	
250	6.85	3.85	0.61	0.60
315	6.50	3.60	0.66	
400	6.17	3.11	0.85	
500	5.51	2.78	0.95	0.95
630	4.84	2.57	0.98	
800	5.03	2.53	1.05	
1000	5.39	2.66	1.02	1.00
1250	5.59	2.71	1.02	
1600	5.17	2.71	0.94	
2000	4.85	2.60	0.95	0.95
2500	4.42	2.42	1.00	
3150	3.75	2.21	1.00	
4000	3.16	2.01	0.97	1.00
5000	2.58	1.76	0.97	
6300*	1.92	1.39	1.08	
8000*	1.54	1.20	1.01	n/a
10000*	1.12	0.91	1.14	

Sound Absorption Coefficient



α _w	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 650
Fullness: 100%
Cavity from Wall: 350mm



Data Sheet 12

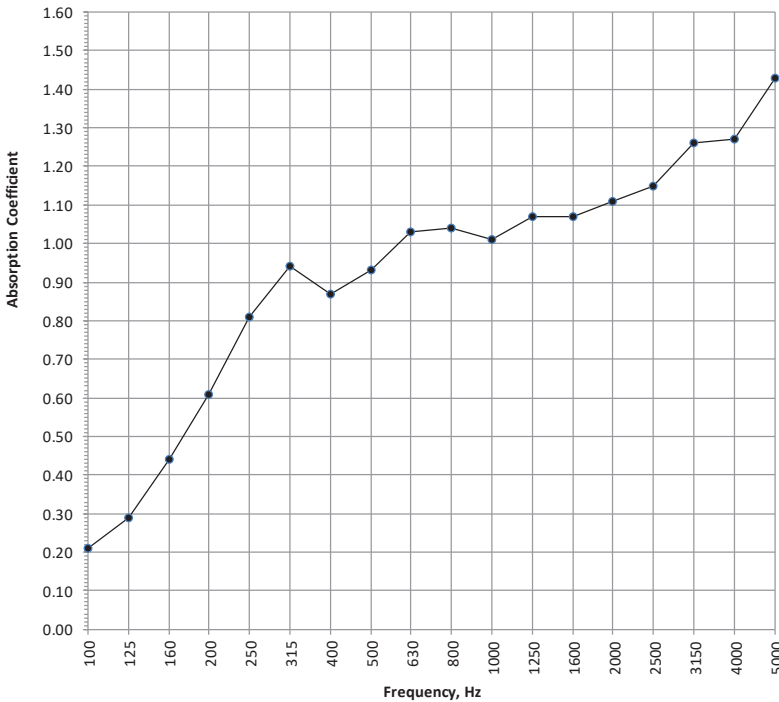
The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.5 °C Humidity: 43 %RH Pressure: 1001 mbar
Sample Description: Wool Serge 650 - Single Layer - 100% fullness (Approx. weight 650g/m²) - 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 13				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.41	0.14	
63*	5.39	4.48	0.21	n/a
80*	7.08	5.69	0.19	
100	9.00	6.72	0.21	
125	7.30	5.28	0.29	0.30
160	6.60	4.29	0.44	
200	6.86	3.88	0.61	
250	7.22	3.48	0.81	0.80
315	6.99	3.16	0.94	
400	6.36	3.15	0.87	
500	5.64	2.87	0.93	0.95
630	5.09	2.60	1.03	
800	5.10	2.58	1.04	
1000	5.74	2.77	1.01	1.00
1250	5.63	2.66	1.07	
1600	5.18	2.54	1.07	
2000	4.76	2.38	1.11	1.00
2500	4.22	2.17	1.15	
3150	3.35	1.82	1.26	
4000	2.59	1.54	1.27	1.00
5000	2.04	1.25	1.43	
6300*	1.39	0.92	1.63	
8000*	1.14	0.79	1.61	n/a
10000*	0.80	0.58	1.95	

Sound Absorption Coefficient



α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Wool Serge 800

A hard-wearing fabric perfect for creating a black box on stage or masking offstage areas and equipment.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	C	0.65	87
Flat	350mm	C	0.75	88
50%	100mm	B	0.85	89
50%	350mm	A	0.95	90
100%	100mm	A	0.95	91
100%	350mm	A	1.00	92

Black

WS022

1

Colour Available

Approx Roll Length: 38m / 125ft

Width: 150cm / 59"

Weight: 800 g/m²

FR Rating: IFR

FR Certification: BS5867

Fabric Thickness: *2.10 mm

Custom Dye N/A

*FABRIC THICKNESS Measured in-house with digital callipers, not under laboratory conditions



Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 800
Fullness: Flat
Cavity from Wall: 100mm

J&C Joel
Inspiration in every performance

Data Sheet 11

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd

Test Date: 12/04/2014

Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar

Room with Sample: Temperature: 16.7 °C Humidity: 50 %RH Pressure: 1009 mbar

Sample Description: Wool Serge 800 - Single Layer – Flat (Approx. weight 800g/m²) – 100mm cavity from wall

Mounting Method: G-100

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 12				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	5.33	-0.05	
63*	4.60	4.05	0.16	n/a
80*	5.86	5.72	0.02	
100	6.96	6.53	0.05	
125	7.22	6.80	0.05	0.05
160	6.82	5.98	0.11	
200	6.37	5.29	0.17	
250	7.19	4.67	0.41	0.35
315	7.06	4.53	0.43	
400	6.40	3.93	0.53	
500	5.35	3.24	0.66	0.65
630	5.03	2.85	0.83	
800	5.43	2.88	0.88	
1000	5.96	2.98	0.91	0.90
1250	5.70	2.93	0.89	
1600	5.08	2.84	0.83	
2000	4.62	2.81	0.73	0.80
2500	4.17	2.56	0.77	
3150	3.50	2.22	0.81	
4000	2.85	1.86	0.88	0.90
5000	2.25	1.50	1.00	
6300*	1.66	1.12	1.26	
8000*	1.38	0.97	1.19	n/a
10000*	0.93	0.70	1.25	

α_w 0.65(MH)

Class C

Calculated to EN ISO 11654:1997

NRC 0.70

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Sound Absorption Coefficient

Frequency (Hz)	Absorption Coefficient
125	0.05
160	0.11
200	0.17
250	0.41
315	0.43
400	0.53
500	0.66
630	0.83
800	0.88
1000	0.91
1250	0.89
1600	0.83
2000	0.73
2500	0.77
3150	0.81
4000	0.88
5000	1.00

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 800
Fullness: Flat
Cavity from Wall: 350mm

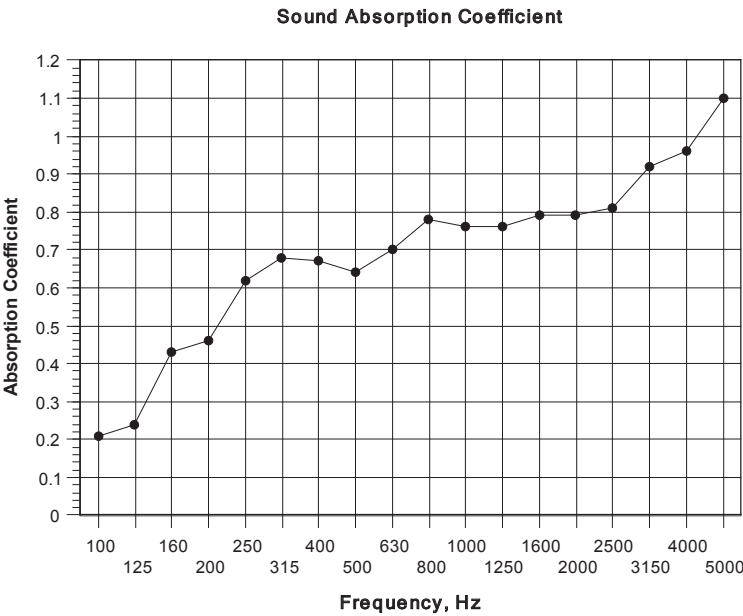


Data Sheet 12

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 12/04/2014
Empty Room: Temperature: 17.0 °C Humidity: 57 %RH Pressure: 1010 mbar
Room with Sample: Temperature: 16.7 °C Humidity: 50 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 800 - Single Layer – Flat (Approx. weight 800g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 13				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.07	5.01	0.01	
63*	4.60	4.10	0.14	n/a
80*	5.86	5.52	0.06	
100	6.96	5.50	0.21	
125	7.22	5.44	0.24	0.30
160	6.82	4.41	0.43	
200	6.37	4.12	0.46	
250	7.19	3.94	0.62	0.60
315	7.06	3.73	0.68	
400	6.40	3.57	0.67	
500	5.35	3.29	0.64	0.65
630	5.03	3.06	0.70	
800	5.43	3.05	0.78	
1000	5.96	3.24	0.76	0.75
1250	5.70	3.16	0.76	
1600	5.08	2.89	0.79	
2000	4.62	2.73	0.79	0.80
2500	4.17	2.51	0.81	
3150	3.50	2.13	0.92	
4000	2.85	1.81	0.96	1.00
5000	2.25	1.46	1.10	
6300*	1.66	1.14	1.17	
8000*	1.38	0.96	1.25	n/a
10000*	0.93	0.68	1.48	



α_w	0.75(H)
Class C	
Calculated to EN ISO 11654:1997	
NRC	0.70
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 800
Fullness: 50%
Cavity from Wall: 100mm



Data Sheet 6

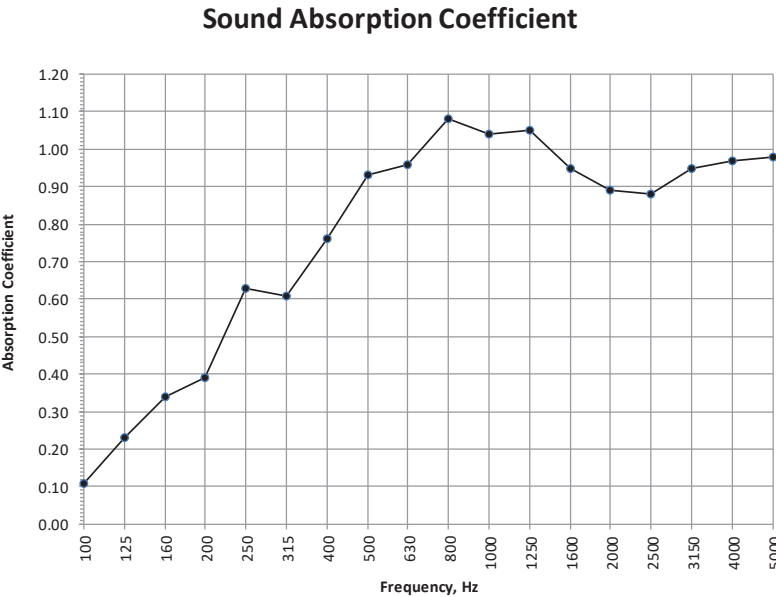
See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.2 °C Humidity: 67 %RH Pressure: 994 mbar
Room with Sample: Temperature: 21.5 °C Humidity: 68 %RH Pressure: 995 mbar
Sample Description: Wool Serge 800 - Single Layer - 50% Fullness (Approx. Weight 800g/m²) - 100mm cavity from wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 7				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	4.50	4.61	-0.03	
63*	5.34	4.67	0.14	n/a
80*	7.80	6.69	0.11	
100	7.45	6.45	0.11	
125	7.52	5.68	0.23	0.25
160	6.43	4.56	0.34	
200	7.00	4.64	0.39	
250	6.85	3.80	0.63	0.55
315	6.50	3.73	0.61	
400	6.17	3.28	0.76	
500	5.51	2.81	0.93	0.90
630	4.84	2.59	0.96	
800	5.03	2.50	1.08	
1000	5.39	2.63	1.04	1.00
1250	5.59	2.67	1.05	
1600	5.17	2.70	0.95	
2000	4.85	2.69	0.89	0.90
2500	4.42	2.56	0.88	
3150	3.75	2.26	0.95	
4000	3.16	2.02	0.97	0.95
5000	2.58	1.76	0.98	
6300*	1.92	1.45	0.94	
8000*	1.54	1.20	1.04	n/a
10000*	1.12	0.93	1.06	



α_w	0.85
Class B	
Calculated to EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 800
Fullness: 50%
Cavity from Wall: 350mm

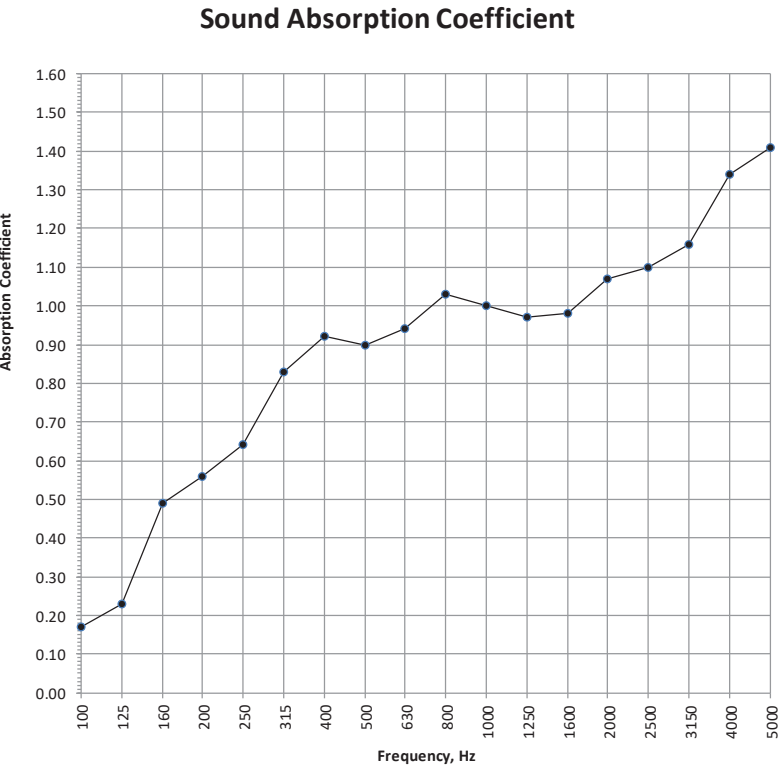


Data Sheet 21

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 20/01/2019
Empty Room: Temperature: 15.7 °C Humidity: 45 %RH Pressure: 1007 mbar
Room with Sample: Temperature: 15.4 °C Humidity: 42 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 800 - Single Layer - 50% fullness (Approx. weight 800g/m2) 350mm cavity from the wall
Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 23				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.89	4.50	0.10	
63*	5.29	4.91	0.08	n/a
80*	7.17	5.97	0.15	
100	8.74	6.82	0.17	
125	7.19	5.48	0.23	0.30
160	6.81	4.20	0.49	
200	6.80	3.98	0.56	
250	6.89	3.79	0.64	0.70
315	6.81	3.33	0.83	
400	6.46	3.09	0.92	
500	5.52	2.88	0.90	0.90
630	5.09	2.71	0.94	
800	5.13	2.60	1.03	
1000	5.66	2.76	1.00	1.00
1250	5.45	2.75	0.97	
1600	5.02	2.61	0.98	
2000	4.54	2.37	1.07	1.00
2500	4.01	2.17	1.10	
3150	3.16	1.84	1.16	
4000	2.47	1.49	1.34	1.00
5000	1.89	1.22	1.41	
6300*	1.26	0.90	1.49	
8000*	1.05	0.75	1.75	n/a
10000*	0.75	0.57	1.90	



α _w	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 800
Fullness: 100%
Cavity from Wall: 100mm



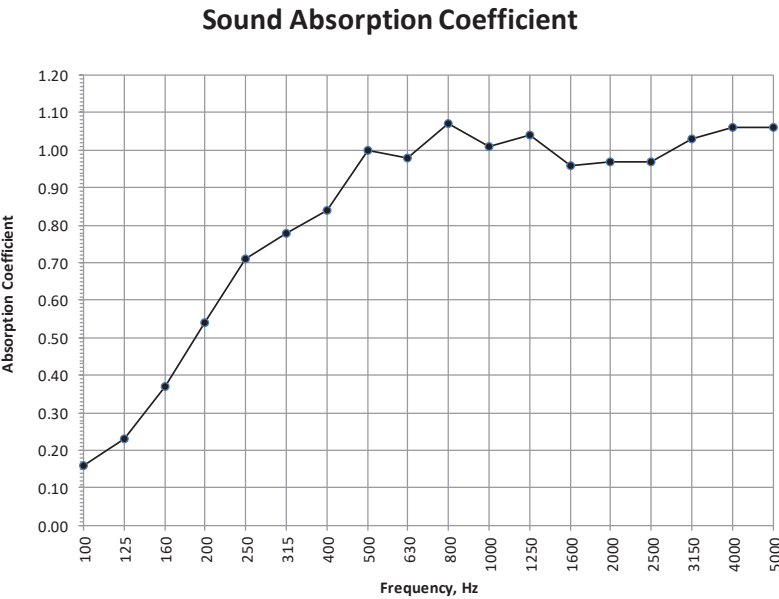
Data Sheet 5

See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.2 °C Humidity: 67 %RH Pressure: 994 mbar
Room with Sample: Temperature: 21.5 °C Humidity: 68 %RH Pressure: 995 mbar
Sample Description: Wool Serge 800 - Single Layer - 100% Fullness (Approx. Weight 800g/m²) - 100mm cavity from wall
Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 6				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.50	4.55	-0.01	
63*	5.34	4.74	0.13	n/a
80*	7.80	6.43	0.15	
100	7.45	6.11	0.16	
125	7.52	5.66	0.23	0.25
160	6.43	4.45	0.37	
200	7.00	4.12	0.54	
250	6.85	3.59	0.71	0.70
315	6.50	3.35	0.78	
400	6.17	3.13	0.84	
500	5.51	2.72	1.00	0.95
630	4.84	2.56	0.98	
800	5.03	2.51	1.07	
1000	5.39	2.67	1.01	1.00
1250	5.59	2.68	1.04	
1600	5.17	2.68	0.96	
2000	4.85	2.58	0.97	0.95
2500	4.42	2.45	0.97	
3150	3.75	2.18	1.03	
4000	3.16	1.95	1.06	1.00
5000	2.58	1.72	1.06	
6300*	1.92	1.39	1.09	
8000*	1.54	1.20	1.04	n/a
10000*	1.12	0.92	1.12	



α _w	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 800
Fullness: 100%
Cavity from Wall: 350mm



Data Sheet 22

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

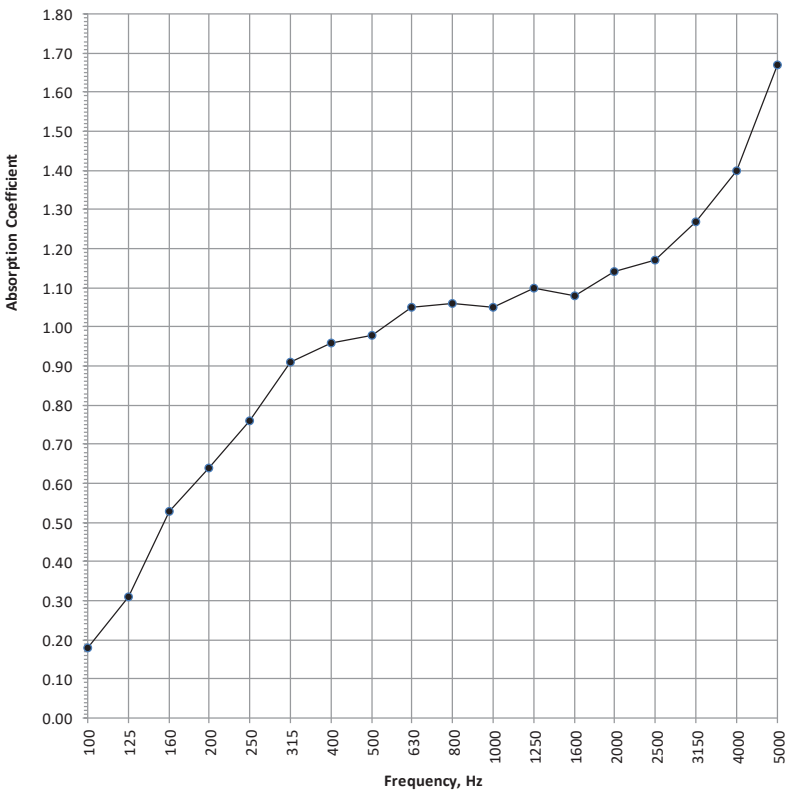
Client: J & C Joel Ltd
Test Date: 20/01/2019
Empty Room: Temperature: 15.7 °C Humidity: 45 %RH Pressure: 1007 mbar
Room with Sample: Temperature: 15.3 °C Humidity: 42 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 800 - Single Layer - 100% fullness (Approx. weight 800g/m2) 350mm cavity from the wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 24				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	4.89	4.55	0.08	
63*	5.29	4.55	0.17	n/a
80*	7.17	6.16	0.12	
100	8.74	6.75	0.18	
125	7.19	5.08	0.31	0.35
160	6.81	4.08	0.53	
200	6.80	3.77	0.64	
250	6.89	3.51	0.76	0.75
315	6.81	3.18	0.91	
400	6.46	3.01	0.96	
500	5.52	2.77	0.98	1.00
630	5.09	2.56	1.05	
800	5.13	2.56	1.06	
1000	5.66	2.69	1.05	1.00
1250	5.45	2.58	1.10	
1600	5.02	2.49	1.08	
2000	4.54	2.30	1.14	1.00
2500	4.01	2.11	1.17	
3150	3.16	1.77	1.27	
4000	2.47	1.46	1.40	1.00
5000	1.89	1.15	1.67	
6300*	1.26	0.86	1.75	
8000*	1.05	0.73	1.93	n/a
10000*	0.75	0.54	2.41	

α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.00
Calculated to ASTM C423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Wool Serge 1000

The heavyweight of the Wool Serge world, offering the best acoustic properties whether flat or sewn with fullness.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	B	0.80	94
Flat	350mm	B	0.80	95
50%	100mm	A	1.00	96
50%	350mm	A	1.00	97
100%	100mm	A	1.00	98
100%	350mm	A	1.00	99

Black
WS055

1

Colour Available

Approx Roll Length: 35m / 115ft

Width: 150cm / 59"

Weight: 1000 g/m²

FR Rating: IFR

FR Certification: BS5867

Fabric Thickness: *3.00 mm

Custom Dye N/A

*FABRIC THICKNESS Measured in-house with digital callipers, not under laboratory conditions



Sample of Wool Serge 1000 (WS055)

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 1000
Fullness: Flat
Cavity from Wall: 100mm



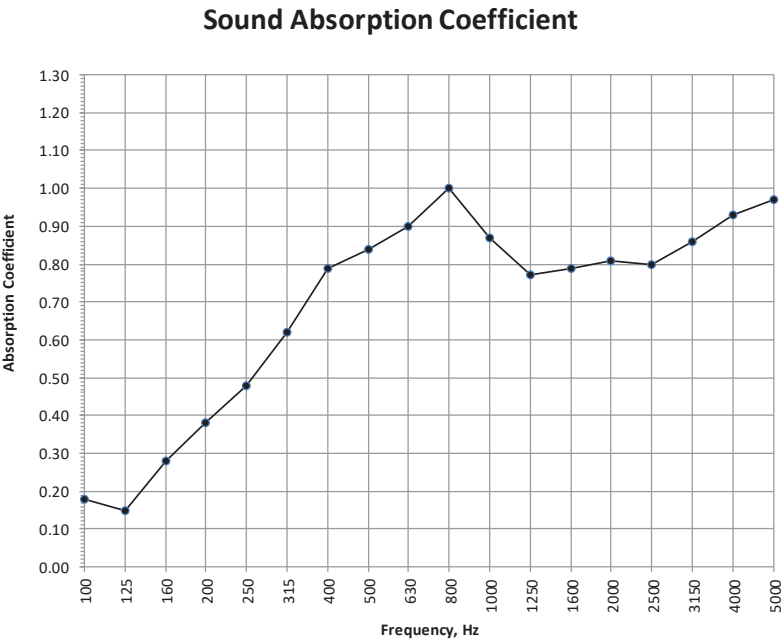
Data Sheet 10

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.8 °C Humidity: 56 %RH Pressure: 1013 mbar
Sample Description: Wool Serge 1000 - Single Layer - Flat (Approx. Weight 1000g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 10				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	5.30	-0.03	
63*	4.83	5.20	-0.08	n/a
80*	7.33	6.54	0.09	
100	7.42	5.98	0.18	
125	7.17	5.97	0.15	0.20
160	6.75	5.02	0.28	
200	6.77	4.58	0.38	
250	6.80	4.25	0.48	0.50
315	6.65	3.78	0.62	
400	6.46	3.32	0.79	
500	5.63	3.01	0.84	0.85
630	5.00	2.73	0.90	
800	5.22	2.66	1.00	
1000	5.79	3.00	0.87	0.90
1250	5.75	3.16	0.77	
1600	5.33	2.99	0.79	
2000	4.93	2.83	0.81	0.80
2500	4.35	2.63	0.80	
3150	3.55	2.25	0.86	
4000	2.92	1.92	0.93	0.90
5000	2.34	1.62	0.97	
6300*	1.60	1.21	1.00	
8000*	1.30	1.02	1.00	n/a
10000*	0.93	0.77	1.02	



α_w 0.80
Class B
Calculated to EN ISO 11654:1997
NRC 0.75
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered
by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 1000
Fullness: Flat
Cavity from Wall: 350mm



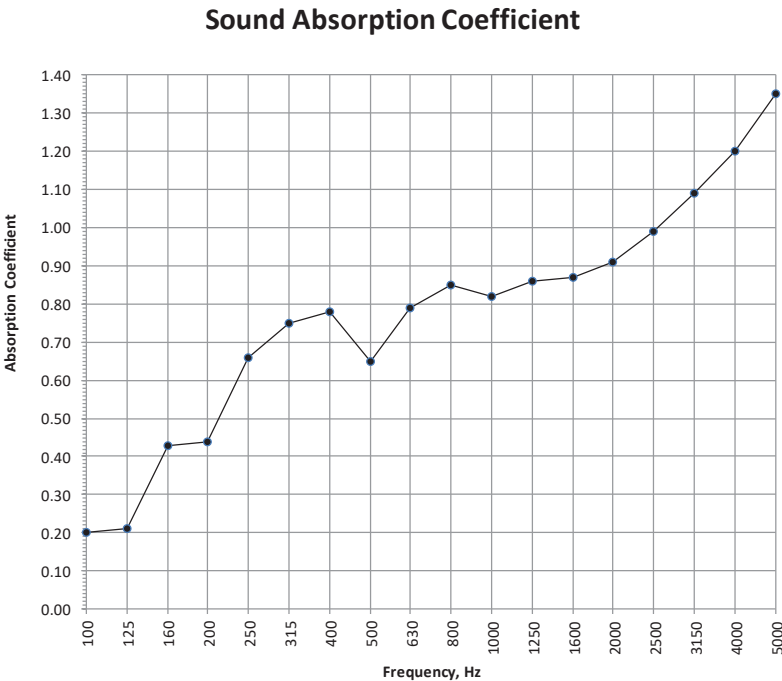
Data Sheet 20

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 20/01/2019
Empty Room: Temperature: 15.7 °C Humidity: 45 %RH Pressure: 1007 mbar
Room with Sample: Temperature: 15.4 °C Humidity: 43 %RH Pressure: 1009 mbar
Sample Description: Wool Serge 1000 - Single Layer - flat (Approx. weight 1000g/m2) 350mm cavity from the wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 22				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.89	4.35	0.14	
63*	5.29	4.84	0.10	n/a
80*	7.17	6.41	0.09	
100	8.74	6.59	0.20	
125	7.19	5.64	0.21	0.30
160	6.81	4.43	0.43	
200	6.80	4.38	0.44	
250	6.89	3.74	0.66	0.60
315	6.81	3.50	0.75	
400	6.46	3.36	0.78	
500	5.52	3.32	0.65	0.75
630	5.09	2.93	0.79	
800	5.13	2.85	0.85	
1000	5.66	3.04	0.82	0.85
1250	5.45	2.91	0.86	
1600	5.02	2.77	0.87	
2000	4.54	2.56	0.91	0.90
2500	4.01	2.29	0.99	
3150	3.16	1.90	1.09	
4000	2.47	1.56	1.20	1.00
5000	1.89	1.25	1.35	
6300*	1.26	0.91	1.49	
8000*	1.05	0.77	1.65	n/a
10000*	0.75	0.58	1.84	



α_w 0.80(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.75
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered
by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 1000
Fullness: 50%
Cavity from Wall: 100mm



SRL Technical Services Limited

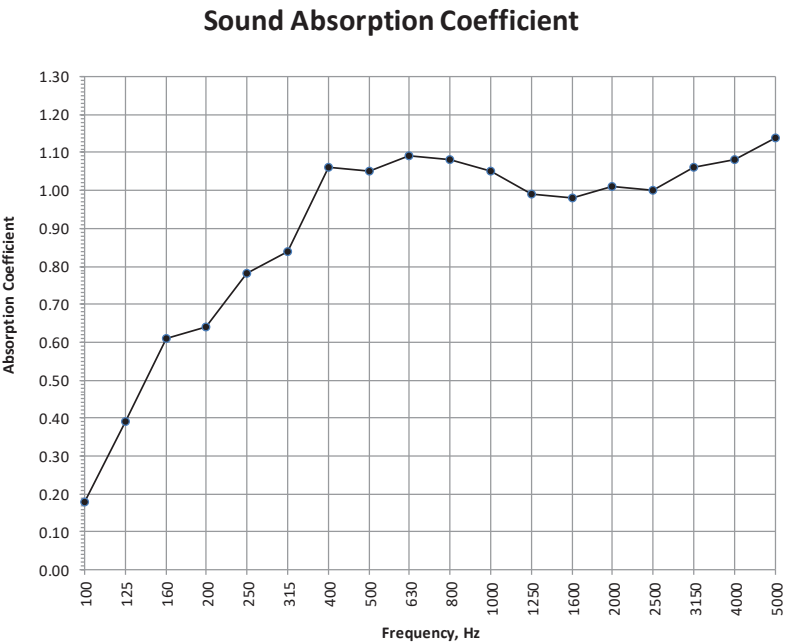
Data Sheet 9

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.8 °C Humidity: 56 %RH Pressure: 1013 mbar
Sample Description: Wool Serge 1000 - Single Layer - 50% Fullness (Approx. Weight 1000g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 9				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.87	0.06	
63*	4.83	4.80	0.01	n/a
80*	7.33	5.99	0.17	
100	7.42	5.93	0.18	
125	7.17	4.75	0.39	0.40
160	6.75	3.84	0.61	
200	6.77	3.77	0.64	
250	6.80	3.44	0.78	0.75
315	6.65	3.27	0.84	
400	6.46	2.85	1.06	
500	5.63	2.69	1.05	1.00
630	5.00	2.50	1.09	
800	5.22	2.56	1.08	
1000	5.79	2.73	1.05	1.00
1250	5.75	2.81	0.99	
1600	5.33	2.71	0.98	
2000	4.93	2.56	1.01	1.00
2500	4.35	2.40	1.00	
3150	3.55	2.08	1.06	
4000	2.92	1.82	1.08	1.00
5000	2.34	1.54	1.14	
6300*	1.60	1.16	1.19	
8000*	1.30	0.96	1.34	n/a
10000*	0.93	0.74	1.30	



α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 1000
Fullness: 50%
Cavity from Wall: 350mm



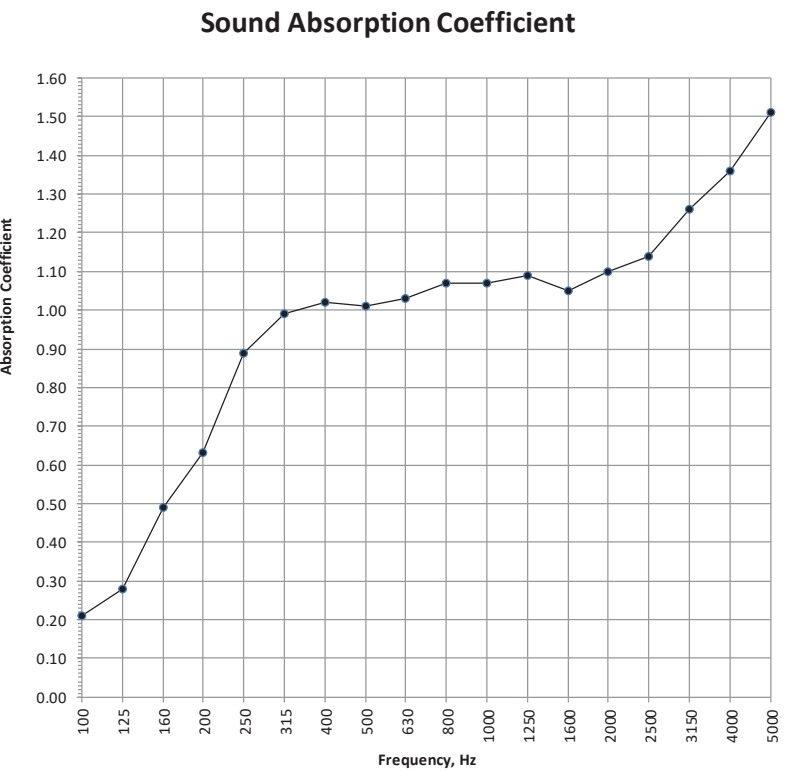
Data Sheet 16

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 42 %RH Pressure: 1002 mbar
Sample Description: Wool Serge 1000 - Single Layer - 50% fullness (Approx. weight 1000g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 17				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.32	0.16	
63*	5.39	4.28	0.26	n/a
80*	7.08	5.64	0.20	
100	9.00	6.64	0.21	
125	7.30	5.32	0.28	0.35
160	6.60	4.12	0.49	
200	6.86	3.83	0.63	
250	7.22	3.31	0.89	0.85
315	6.99	3.07	0.99	
400	6.36	2.91	1.02	
500	5.64	2.76	1.01	1.00
630	5.09	2.59	1.03	
800	5.10	2.54	1.07	
1000	5.74	2.69	1.07	1.00
1250	5.63	2.63	1.09	
1600	5.18	2.56	1.05	
2000	4.76	2.38	1.10	1.00
2500	4.22	2.17	1.14	
3150	3.35	1.81	1.26	
4000	2.59	1.49	1.36	1.00
5000	2.04	1.22	1.51	
6300*	1.39	0.91	1.65	
8000*	1.14	0.77	1.73	n/a
10000*	0.80	0.58	1.87	



α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.00
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 1000
Fullness: 100%
Cavity from Wall: 100mm



Data Sheet 8

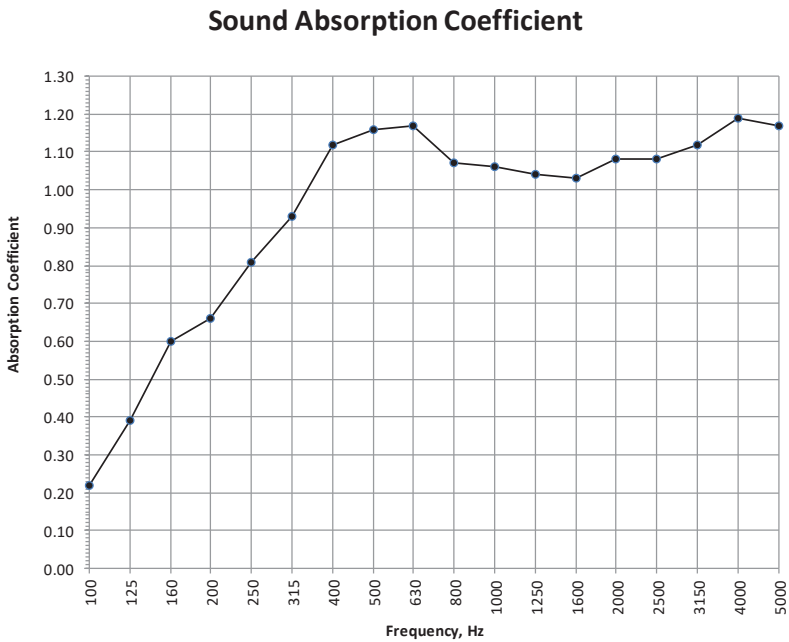
The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.9 °C Humidity: 56 %RH Pressure: 1013 mbar
Sample Description: Wool Serge 1000 - Single Layer - 100% Fullness (Approx. Weight 1000g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 8				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.86	0.06	
63*	4.83	4.66	0.04	n/a
80*	7.33	6.04	0.16	
100	7.42	5.68	0.22	
125	7.17	4.71	0.39	0.40
160	6.75	3.86	0.60	
200	6.77	3.71	0.66	
250	6.80	3.37	0.81	0.80
315	6.65	3.10	0.93	
400	6.46	2.77	1.12	
500	5.63	2.56	1.16	1.00
630	5.00	2.41	1.17	
800	5.22	2.57	1.07	
1000	5.79	2.72	1.06	1.00
1250	5.75	2.74	1.04	
1600	5.33	2.64	1.03	
2000	4.93	2.48	1.08	1.00
2500	4.35	2.32	1.08	
3150	3.55	2.03	1.12	
4000	2.92	1.76	1.19	1.00
5000	2.34	1.53	1.17	
6300*	1.60	1.15	1.24	
8000*	1.30	0.98	1.24	n/a
10000*	0.93	0.73	1.42	

α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.05
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 1000
Fullness: 100%
Cavity from Wall: 350mm



Data Sheet 15

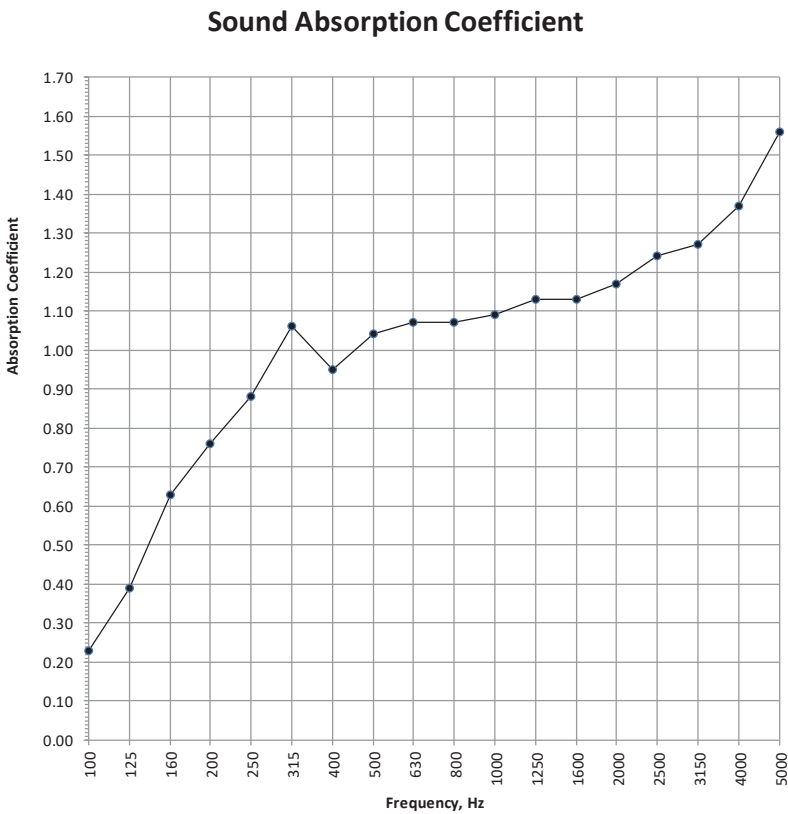
The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 43 %RH Pressure: 1002 mbar
Sample Description: Wool Serge 1000 - Single Layer - 100% fullness (Approx. weight 1000g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 16				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.43	0.13	
63*	5.39	4.69	0.15	n/a
80*	7.08	5.83	0.17	
100	9.00	6.48	0.23	
125	7.30	4.79	0.39	0.40
160	6.60	3.73	0.63	
200	6.86	3.50	0.76	
250	7.22	3.32	0.88	0.90
315	6.99	2.95	1.06	
400	6.36	3.01	0.95	
500	5.64	2.71	1.04	1.00
630	5.09	2.54	1.07	
800	5.10	2.55	1.07	
1000	5.74	2.67	1.09	1.00
1250	5.63	2.58	1.13	
1600	5.18	2.47	1.13	
2000	4.76	2.32	1.17	1.00
2500	4.22	2.10	1.24	
3150	3.35	1.82	1.27	
4000	2.59	1.50	1.37	1.00
5000	2.04	1.22	1.56	
6300*	1.39	0.90	1.79	
8000*	1.14	0.77	1.82	n/a
10000*	0.80	0.57	2.15	

α _w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	1.05
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Wool Serge 1.8

A durable fabric ideal for theatrical application as well as being used for touring shows and hire drapes.

Fullness	Wall Cavity	Class	SAC Classification	Page
50%	100mm	B	0.85	101
100%	100mm	A	0.90	102
100%	350mm	A	0.90	103

Black

WS180

1

Colour Available

Approx Roll Length: 57m / 187ft

Width: 180cm / 71"

Weight: 500 g/m²

FR Rating: IFR

FR Certification: BS5867, IMO, AS1530.2/3

Fabric Thickness: *1.40 mm

Custom Dye N/A

*FABRIC THICKNESS Measured in-house with digital callipers, not under laboratory conditions



Wool Serge 1.8 (WS180)

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 1.8
Fullness: 50%
Cavity from Wall: 100mm

J&C Joel
Inspiration in every performance

Data Sheet 13

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 13
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-100
Sample Description: Wool Serge 500g/m² at 50% fullness at 100mm from wall

Test Room: Empty
Air Temperature: 15.6 °C
Air Humidity: 48 % RH
Air Pressure: 1021 mbar
Sample Area: 9 m²

With Sample
15.5 °C
46 % RH
1018 mbar

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.33	0.03	n/a
63*	4.18	4.22	-0.01	
80*	7.24	6.43	0.09	
100	6.90	6.60	0.04	0.15
125	6.66	5.74	0.13	
160	6.03	4.85	0.22	
200	6.46	4.30	0.42	0.55
250	6.79	4.00	0.56	
315	6.54	3.53	0.71	
400	6.06	3.23	0.78	0.90
500	5.54	2.88	0.90	
630	4.90	2.59	0.99	
800	4.93	2.64	0.95	0.95
1000	5.32	2.76	0.94	
1250	5.11	2.73	0.92	
1600	4.79	2.68	0.89	0.90
2000	4.33	2.49	0.91	
2500	3.79	2.32	0.88	
3150	3.01	2.01	0.87	0.90
4000	2.38	1.66	0.93	
5000	1.84	1.37	0.91	
6300*	1.30	1.04	0.94	n/a
8000*	1.06	0.88	0.89	
10000*	0.73	0.63	0.99	

α_w 0.85

Class B

Calculated to BS EN ISO 11654:1997

NRC 0.85

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited

VI

Sound Absorption Coefficients

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Wool Serge 1.8
Fullness: 100%
Cavity from Wall: 100mm



Data Sheet I4

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 14

Client: J & C Joel Ltd

Test Date: 01/03/2023

Chamber Volume: 300.1 m³

Mounting Method: G-100

Sample Description: Wool Serge 500g/m² at 100% fullness at 100mm from wall

Test Room: Empty

Air Temperature: 15.6 °C

Air Humidity: 48 % RH

Air Pressure: 1021 mbar

Sample Area: 9 m²

With Sample

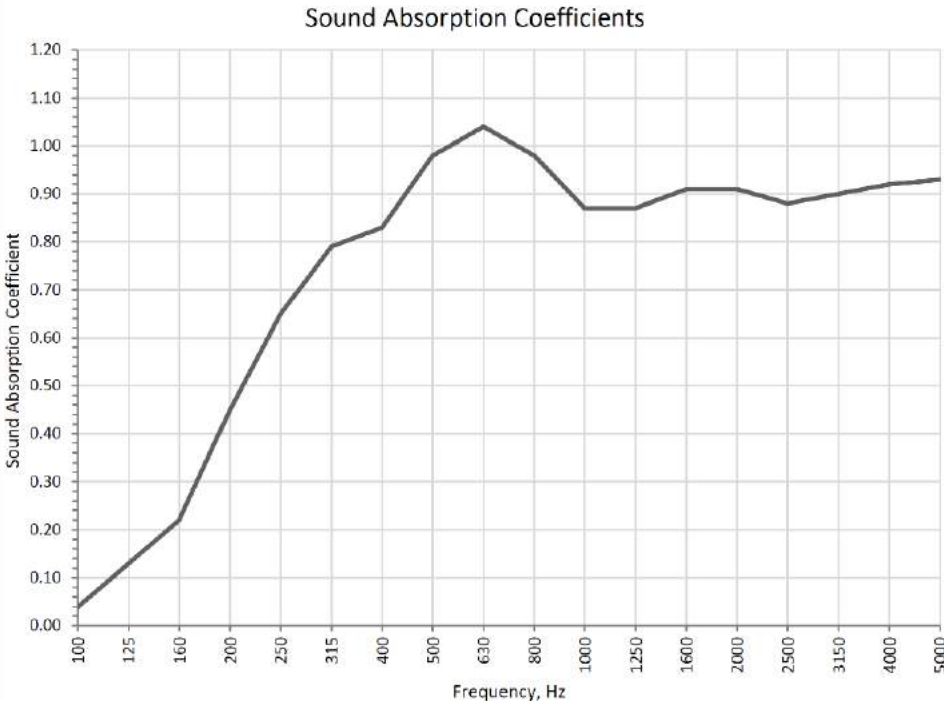
15.5 °C

46 % RH

1018 mbar

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.42	0.01	n/a
63*	4.18	3.95	0.08	
80*	7.24	6.37	0.10	
100	6.90	6.55	0.04	0.15
125	6.66	5.74	0.13	
160	6.03	4.86	0.22	
200	6.46	4.20	0.45	0.65
250	6.79	3.75	0.65	
315	6.54	3.35	0.79	
400	6.06	3.13	0.83	0.95
500	5.54	2.77	0.98	
630	4.90	2.52	1.04	
800	4.93	2.61	0.98	0.90
1000	5.32	2.87	0.87	
1250	5.11	2.80	0.87	
1600	4.79	2.65	0.91	0.90
2000	4.33	2.49	0.91	
2500	3.79	2.33	0.88	
3150	3.01	1.98	0.90	0.90
4000	2.38	1.67	0.92	
5000	1.84	1.37	0.93	
6300*	1.30	1.03	0.99	n/a
8000*	1.06	0.88	0.90	
10000*	0.73	0.63	1.01	

α_w	0.90
Class A	
Calculated to BS EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:199
Fabric: Wool Serge 1.8
Fullness: 100%
Cavity from Wall: 350mm



Data Sheet I5

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 15

Client: J & C Joel Ltd

Test Date: 01/03/2023

Chamber Volume: 300.1 m³

Mounting Method: G-350

Sample Description: Wool Serge 500g/m² at 100% fullness at 350mm from wall

Test Room: Empty

Air Temperature: 15.6 °C

Air Humidity: 48 % RH

Air Pressure: 1021 mbar

Sample Area: 9 m²

With Sample

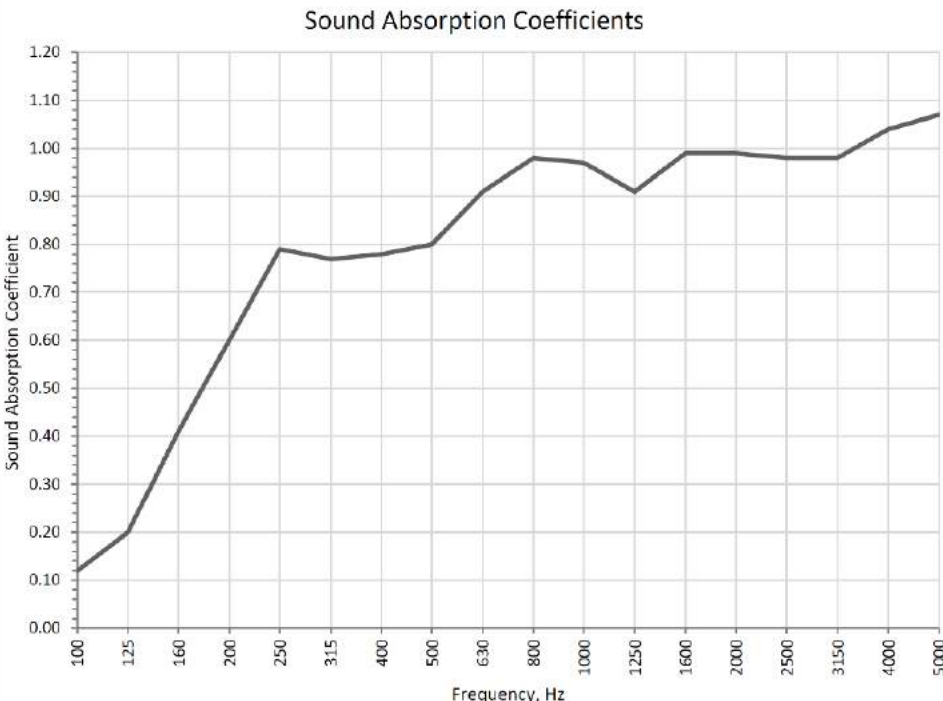
15.5 °C

46 % RH

1018 mbar

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.42	0.01	n/a
63*	4.18	4.08	0.03	
80*	7.24	5.74	0.20	
100	6.90	5.98	0.12	0.25
125	6.66	5.37	0.20	
160	6.03	4.15	0.41	
200	6.46	3.76	0.60	0.70
250	6.79	3.41	0.79	
315	6.54	3.40	0.77	
400	6.06	3.24	0.78	0.85
500	5.54	3.06	0.80	
630	4.90	2.69	0.91	
800	4.93	2.61	0.98	0.95
1000	5.32	2.72	0.97	
1250	5.11	2.75	0.91	
1600	4.79	2.54	0.99	1.00
2000	4.33	2.40	0.99	
2500	3.79	2.23	0.98	
3150	3.01	1.92	0.98	1.00
4000	2.38	1.61	1.04	
5000	1.84	1.32	1.07	
6300*	1.30	0.99	1.17	n/a
8000*	1.06	0.86	1.06	
10000*	0.73	0.62	1.08	

α_w	0.90
Class A	
Calculated to BS EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	



Euro Wool Serge

A hard-wearing fabric perfect for the touring market, manufactured specifically to meet B1 and M1 FR standards.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	350mm	C	0.75	105
50%	100mm	B	0.85	106
50%	350mm	B	0.85	107
100%	100mm	A	0.90	108
100%	350mm	A	1.00	109

Black

WS040

1

Colour Available

Approx Roll Length:
57m / 187ft

Width:
150cm / 59"

Weight:
786 g/m²

FR Rating:
DFR

FR Certification:
BS5867, M1, NFPA 701

Fabric Thickness:
* 1.90 mm

Custom Dye
N/A

*FABRIC THICKNESS Measured in-house with digital callipers, not under laboratory conditions



Sample of Euro Wool Serge (WS040)

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Euro Wool Serge
Fullness: Flat
Cavity from Wall: 350mm

J&C Joel
Inspiration in every performance

Data Sheet 17

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 20/01/2019

Empty Room: Temperature: 15.7 °C Humidity: 45 %RH Pressure: 1007 mbar

Room with Sample: Temperature: 15.6 °C Humidity: 45 %RH Pressure: 1008 mbar

Sample Description: Euro Wool Serge - Single Layer - flat (Approx. weight 786g/m2) 350mm cavity from wall

Mounting Method: G - 350

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 19				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.89	4.64	0.06	
63*	5.29	4.33	0.23	n/a
80*	7.17	6.09	0.13	
100	8.74	6.56	0.21	
125	7.19	5.65	0.21	0.25
160	6.81	4.81	0.33	
200	6.80	4.62	0.38	
250	6.89	3.97	0.58	0.55
315	6.81	3.67	0.68	
400	6.46	3.45	0.73	
500	5.52	3.26	0.68	0.70
630	5.09	3.10	0.68	
800	5.13	2.95	0.78	
1000	5.66	3.16	0.76	0.75
1250	5.45	3.07	0.77	
1600	5.02	2.92	0.78	
2000	4.54	2.70	0.81	0.80
2500	4.01	2.49	0.82	
3150	3.16	2.06	0.91	
4000	2.47	1.73	0.93	0.95
5000	1.89	1.42	0.94	
6300*	1.26	1.04	0.90	
8000*	1.05	0.88	0.98	n/a
10000*	0.75	0.64	1.22	

α_w 0.75(H)

Class C

Calculated to EN ISO 11654:1997

NRC 0.70

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Sound Absorption Coefficient

www.jcjoel.com

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Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Euro Wool Serge
Fullness: 50%
Cavity from Wall: 100mm



Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Euro Wool Serge
Fullness: 50%
Cavity from Wall: 350mm



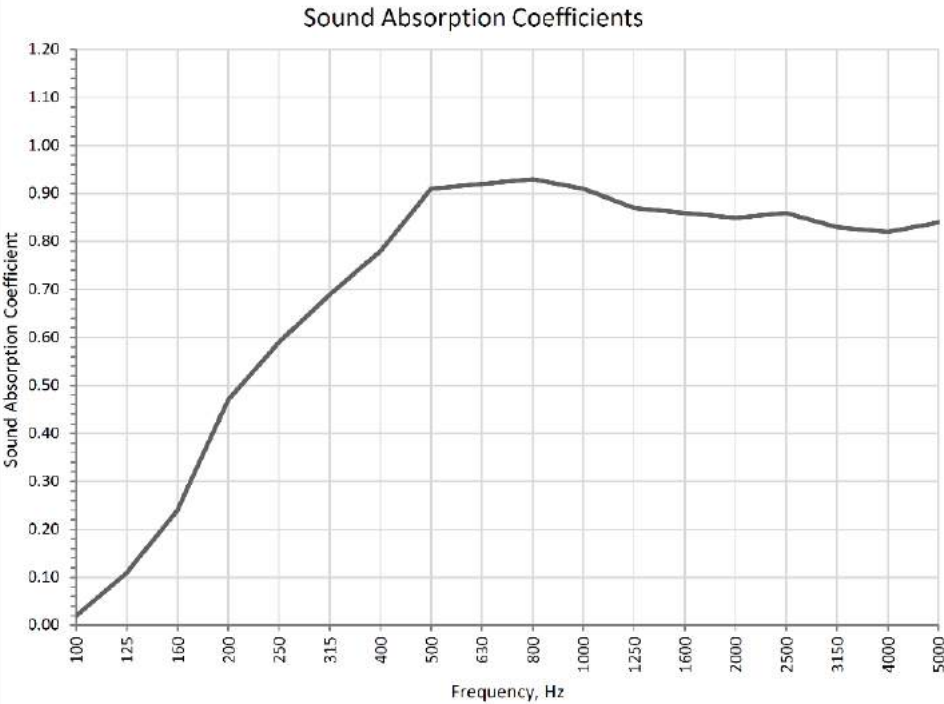
Data Sheet 11

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 11
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-100
Sample Description: Euro Wool Serge at 50% fullness at 100mm from wall
Test Room: Empty
Air Temperature: 15.6 °C
Air Humidity: 48 % RH
Air Pressure: 1021 mbar
Sample Area: 9 m²
With Sample
15.5 °C
46 % RH
1018 mbar

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.45	0.00	n/a
63*	4.18	4.05	0.04	
80*	7.24	6.41	0.10	
100	6.90	6.72	0.02	0.10
125	6.66	5.89	0.11	
160	6.03	4.76	0.24	
200	6.46	4.14	0.47	
250	6.79	3.89	0.59	0.60
315	6.54	3.58	0.69	
400	6.06	3.24	0.78	
500	5.54	2.88	0.91	
630	4.90	2.67	0.92	0.85
800	4.93	2.67	0.93	
1000	5.32	2.80	0.91	
1250	5.11	2.80	0.87	
1600	4.79	2.71	0.86	0.85
2000	4.33	2.56	0.85	
2500	3.79	2.35	0.86	
3150	3.01	2.04	0.83	
4000	2.38	1.72	0.82	0.85
5000	1.84	1.40	0.84	
6300*	1.30	1.06	0.84	
8000*	1.06	0.89	0.83	
10000*	0.73	0.63	1.01	n/a

α_w	0.85
Class B	
Calculated to BS EN ISO 11654:1997	
NRC	0.80
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	



Data Sheet 18

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

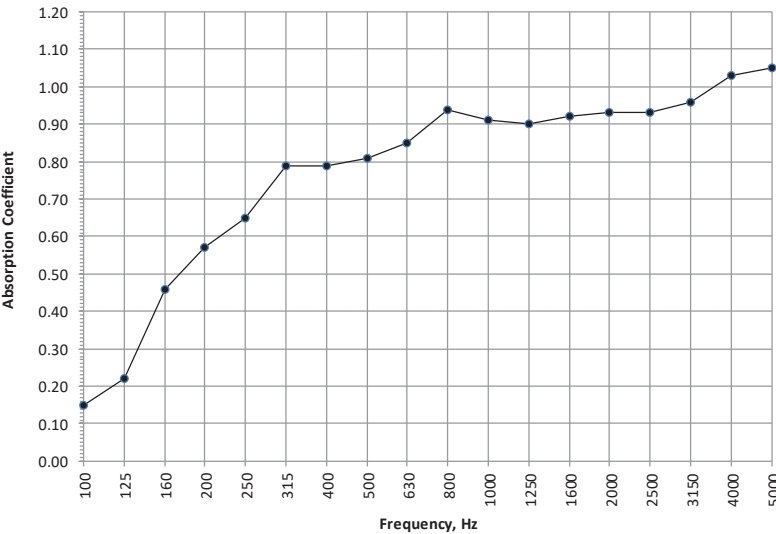
Client: J & C Joel Ltd
Test Date: 20/01/2019
Empty Room: Temperature: 15.7 °C Humidity: 45 %RH Pressure: 1007 mbar
Room with Sample: Temperature: 15.6 °C Humidity: 45 %RH Pressure: 1008 mbar
Sample Description: Euro Wool Serge - Single Layer - 50% fullness (Approx. weight 786g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 20				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	4.89	4.51	0.09	n/a
63*	5.29	4.89	0.08	
80*	7.17	6.36	0.10	
100	8.74	7.08	0.15	0.30
125	7.19	5.56	0.22	
160	6.81	4.33	0.46	
200	6.80	3.96	0.57	
250	6.89	3.78	0.65	0.65
315	6.81	3.42	0.79	
400	6.46	3.33	0.79	
500	5.52	3.02	0.81	
630	5.09	2.83	0.85	0.80
800	5.13	2.72	0.94	
1000	5.66	2.90	0.91	
1250	5.45	2.86	0.90	
1600	5.02	2.71	0.92	0.95
2000	4.54	2.55	0.93	
2500	4.01	2.37	0.93	
3150	3.16	2.02	0.96	
4000	2.47	1.68	1.03	1.00
5000	1.89	1.38	1.05	
6300*	1.26	1.01	1.05	
8000*	1.05	0.85	1.20	
10000*	0.75	0.64	1.22	

α_w	0.85(H)
Class B	
Calculated to EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Euro Wool Serge
Fullness: 100%
Cavity from Wall: 100mm



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Euro Wool Serge
Fullness: 100%
Cavity from Wall: 350mm



Data Sheet 12

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

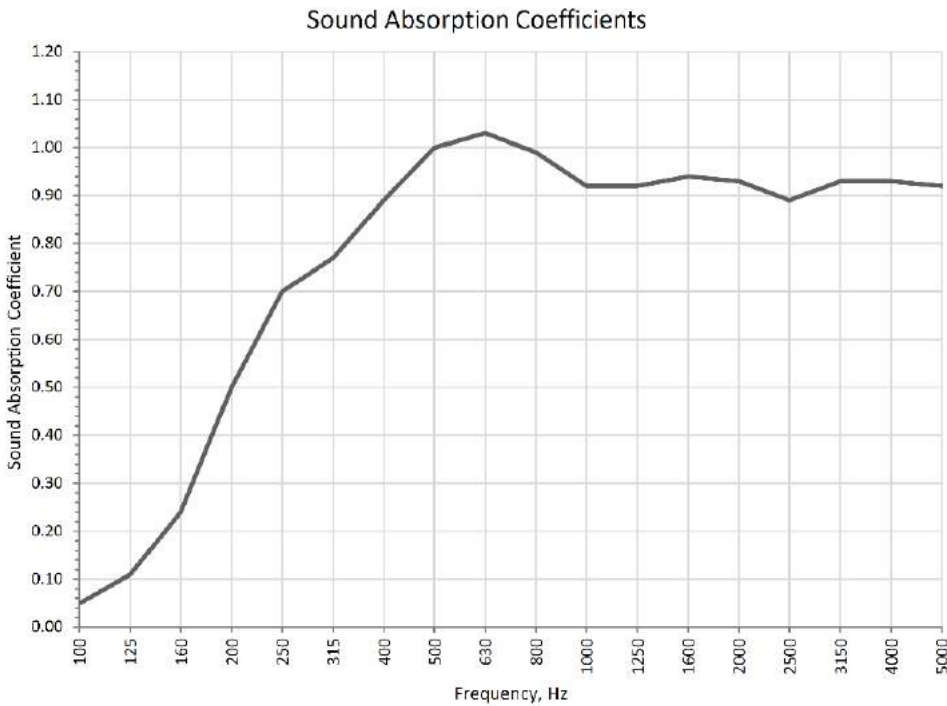
Test Number: 12
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-100
Sample Description: Euro Wool Serge at 100% fullness at 100mm from wall

Test Room: Empty
Air Temperature: 15.6 °C
Air Humidity: 48 % RH
Air Pressure: 1021 mbar
Sample Area: 9 m²

With Sample
Air Temperature: 15.5 °C
Air Humidity: 46 % RH
Air Pressure: 1018 mbar

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.37	0.02	n/a
63*	4.18	4.05	0.04	
80*	7.24	6.20	0.13	
100	6.90	6.47	0.05	
125	6.66	5.85	0.11	0.15
160	6.03	4.74	0.24	
200	6.46	4.05	0.50	
250	6.79	3.63	0.70	
315	6.54	3.39	0.77	0.65
400	6.06	3.04	0.89	
500	5.54	2.73	1.00	
630	4.90	2.54	1.03	
800	4.93	2.60	0.99	0.95
1000	5.32	2.80	0.92	
1250	5.11	2.74	0.92	
1600	4.79	2.60	0.94	
2000	4.33	2.47	0.93	0.90
2500	3.79	2.31	0.89	
3150	3.01	1.96	0.93	
4000	2.38	1.66	0.93	
5000	1.84	1.37	0.92	0.95
6300*	1.30	1.04	0.93	
8000*	1.06	0.88	0.87	
10000*	0.73	0.62	1.07	

α_w	0.90
Class A	
Calculated to BS EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	



Data Sheet 19

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

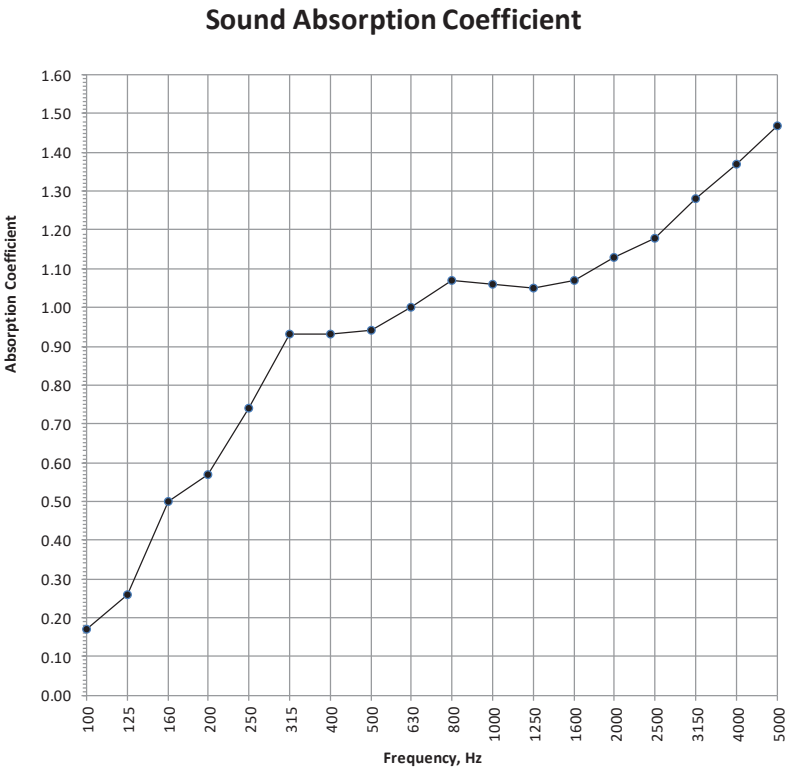
Client: J & C Joel Ltd
Test Date: 20/01/2019

Empty Room: Temperature: 15.7 °C Humidity: 45 %RH Pressure: 1007 mbar
Room with Sample: Temperature: 15.4 °C Humidity: 44 %RH Pressure: 1009 mbar
Sample Description: Euro Wool Serge - Single Layer - 100% fullness (Approx. weight 786g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 21				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	4.89	4.53	0.09	n/a
63*	5.29	4.77	0.11	
80*	7.17	6.18	0.12	
100	8.74	6.85	0.17	
125	7.19	5.37	0.26	0.30
160	6.81	4.19	0.50	
200	6.80	3.97	0.57	
250	6.89	3.55	0.74	
315	6.81	3.14	0.93	0.75
400	6.46	3.07	0.93	
500	5.52	2.82	0.94	
630	5.09	2.62	1.00	
800	5.13	2.55	1.07	0.95
1000	5.66	2.68	1.06	
1250	5.45	2.65	1.05	
1600	5.02	2.52	1.07	
2000	4.54	2.32	1.13	1.00
2500	4.01	2.13	1.18	
3150	3.16	1.79	1.28	
4000	2.47	1.50	1.37	
5000	1.89	1.23	1.47	1.00
6300*	1.26	0.90	1.62	
8000*	1.05	0.76	1.83	
10000*	0.75	0.58	1.95	

α_w	1.00
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Coloured Wool Serge

A popular fabric for perimeter and production drapes due to its wide range of colours and acoustic properties.

Fullness	Wall Cavity	Class	SAC Classification	Page
50%	100mm	B	0.80	111
50%	350mm	B	0.85	112
100%	100mm	A	0.90	113
100%	350mm	A	0.90	114

Plum
WS006

Scarlet
WS005

Cognac
WS011

Gold
WS010

Midnight
WS009

Oxford
WS008

Marine
WS007

TV Blue
WS016

Ultra Blue
WS017

Chroma Key Blue
WS018

Mole
WS012

Bottle
WS015

Emerald
WS014

Chroma Key Green
WS019

Original Grey
WS056

Slate
WS013

Natural
WS020

17
Colours Available

Approx Roll Length:
57m / 187ft

Width:
150cm / 59"

Weight:
500 g/m²

FR Rating:
IFR

FR Certification:
BS5867, IMO

Fabric Thickness:
*1.70 mm

Custom Dye Available*

*FABRIC THICKNESS Measured in-house with digital callipers, not under laboratory conditions

*CUSTOM DYE price on application, 4 wk lead time, MOQ 2 rolls



Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Coloured Wool Serge
Fullness: 50%
Cavity from Wall: 100mm

J&C Joel
Inspiration in every performance

Data Sheet 17

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 30/11/2020

Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar

Room with Sample: Temperature: 15.7 °C Humidity: 56 %RH Pressure: 1010 mbar

Sample Description: Coloured Wool Serge - Single Layer - 50% Fullness (Approx. Weight 500g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 17				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	5.21	-0.01	
63*	4.83	5.31	-0.10	n/a
80*	7.33	7.00	0.04	
100	7.42	6.33	0.13	
125	7.17	5.52	0.23	0.20
160	6.75	4.96	0.29	
200	6.77	4.62	0.37	
250	6.80	4.23	0.49	0.50
315	6.65	3.66	0.67	
400	6.46	3.23	0.84	
500	5.63	2.87	0.93	0.95
630	5.00	2.58	1.02	
800	5.22	2.72	0.96	
1000	5.79	2.93	0.92	0.95
1250	5.75	2.94	0.90	
1600	5.33	2.87	0.87	
2000	4.93	2.72	0.89	0.90
2500	4.35	2.50	0.91	
3150	3.55	2.17	0.95	
4000	2.92	1.86	1.02	1.00
5000	2.34	1.60	1.00	
6300*	1.60	1.17	1.14	
8000*	1.30	1.01	1.04	n/a
10000*	0.93	0.74	1.28	

α_w 0.80(H)

Class B

Calculated to EN ISO 11654:1997

NRC 0.80

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Sound Absorption Coefficient

www.jcjoel.com

110

111

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Coloured Wool Serge
Fullness: 50%
Cavity from Wall: 350mm



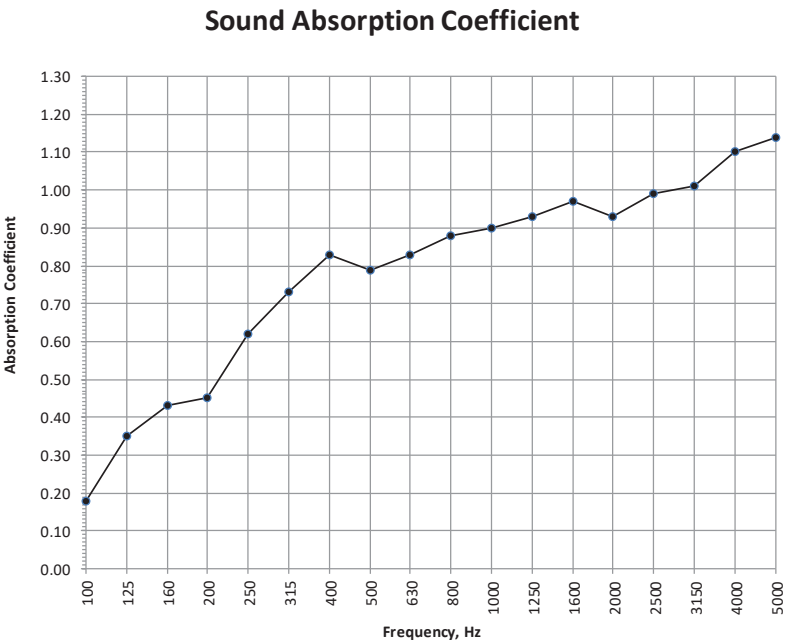
Data Sheet 18

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 56 %RH Pressure: 1009 mbar
Sample Description: Coloured Wool Serge - Single Layer - 50% Fullness (Approx. Weight 500g/m²) - 350mm Cavity From Wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 18				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.78	0.08	
63*	4.83	4.91	-0.02	n/a
80*	7.33	6.13	0.15	
100	7.42	5.95	0.18	
125	7.17	4.91	0.35	0.30
160	6.75	4.40	0.43	
200	6.77	4.32	0.45	
250	6.80	3.83	0.62	0.60
315	6.65	3.52	0.73	
400	6.46	3.25	0.83	
500	5.63	3.10	0.79	0.80
630	5.00	2.83	0.83	
800	5.22	2.83	0.88	
1000	5.79	2.95	0.90	0.90
1250	5.75	2.90	0.93	
1600	5.33	2.73	0.97	
2000	4.93	2.66	0.93	0.95
2500	4.35	2.41	0.99	
3150	3.55	2.12	1.01	
4000	2.92	1.81	1.10	1.00
5000	2.34	1.54	1.14	
6300*	1.60	1.14	1.26	
8000*	1.30	0.98	1.21	n/a
10000*	0.93	0.72	1.49	



α _w	0.85(H)
Class B	
Calculated to EN ISO 11654:1997	
NRC	0.80
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Coloured Wool Serge
Fullness: 100%
Cavity from Wall: 100mm



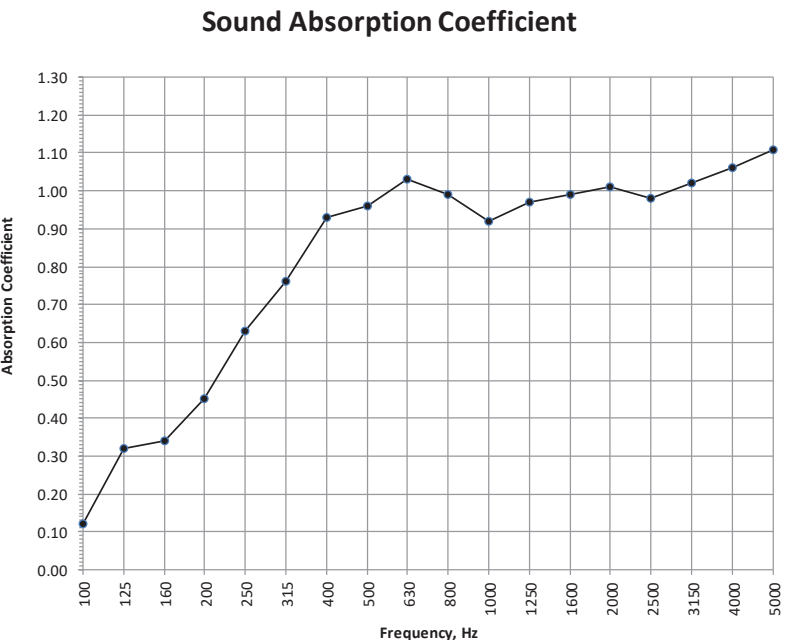
Data Sheet 15

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 56 %RH Pressure: 1011 mbar
Sample Description: Coloured Wool Serge - Single Layer - 100% Fullness (Approx. Weight 500g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 15				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	5.05	0.02	
63*	4.83	5.12	-0.06	n/a
80*	7.33	6.97	0.04	
100	7.42	6.36	0.12	
125	7.17	5.03	0.32	0.25
160	6.75	4.74	0.34	
200	6.77	4.35	0.45	
250	6.80	3.81	0.63	0.60
315	6.65	3.44	0.76	
400	6.46	3.07	0.93	
500	5.63	2.83	0.96	0.95
630	5.00	2.57	1.03	
800	5.22	2.68	0.99	
1000	5.79	2.92	0.92	0.95
1250	5.75	2.84	0.97	
1600	5.33	2.70	0.99	
2000	4.93	2.56	1.01	1.00
2500	4.35	2.42	0.98	
3150	3.55	2.11	1.02	
4000	2.92	1.83	1.06	1.00
5000	2.34	1.55	1.11	
6300*	1.60	1.17	1.14	
8000*	1.30	0.99	1.15	n/a
10000*	0.93	0.75	1.19	



α _w	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Coloured Wool Serge
Fullness: 100%
Cavity from Wall: 350mm



Showcase

Data Sheet 16

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020

Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 56 %RH Pressure: 1010 mbar
Sample Description: Coloured Wool Serge - Single Layer - 100% Fullness (Approx. Weight 500g/m²) - 350mm Cavity From Wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 16				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	4.91	0.05	
63*	4.83	4.95	-0.03	n/a
80*	7.33	6.01	0.16	
100	7.42	5.88	0.19	
125	7.17	4.69	0.40	0.35
160	6.75	4.42	0.42	
200	6.77	4.01	0.55	
250	6.80	3.80	0.63	0.65
315	6.65	3.42	0.77	
400	6.46	3.25	0.83	
500	5.63	3.02	0.83	0.90
630	5.00	2.63	0.98	
800	5.22	2.72	0.96	
1000	5.79	2.87	0.95	1.00
1250	5.75	2.72	1.05	
1600	5.33	2.65	1.03	
2000	4.93	2.55	1.02	1.00
2500	4.35	2.32	1.08	
3150	3.55	2.01	1.15	
4000	2.92	1.73	1.24	1.00
5000	2.34	1.50	1.23	
6300*	1.60	1.14	1.26	
8000*	1.30	0.95	1.38	n/a
10000*	0.93	0.72	1.49	

α_w 0.90

Class A

Calculated to EN ISO 11654:1997

NRC 0.85

Calculated to ASTM C423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

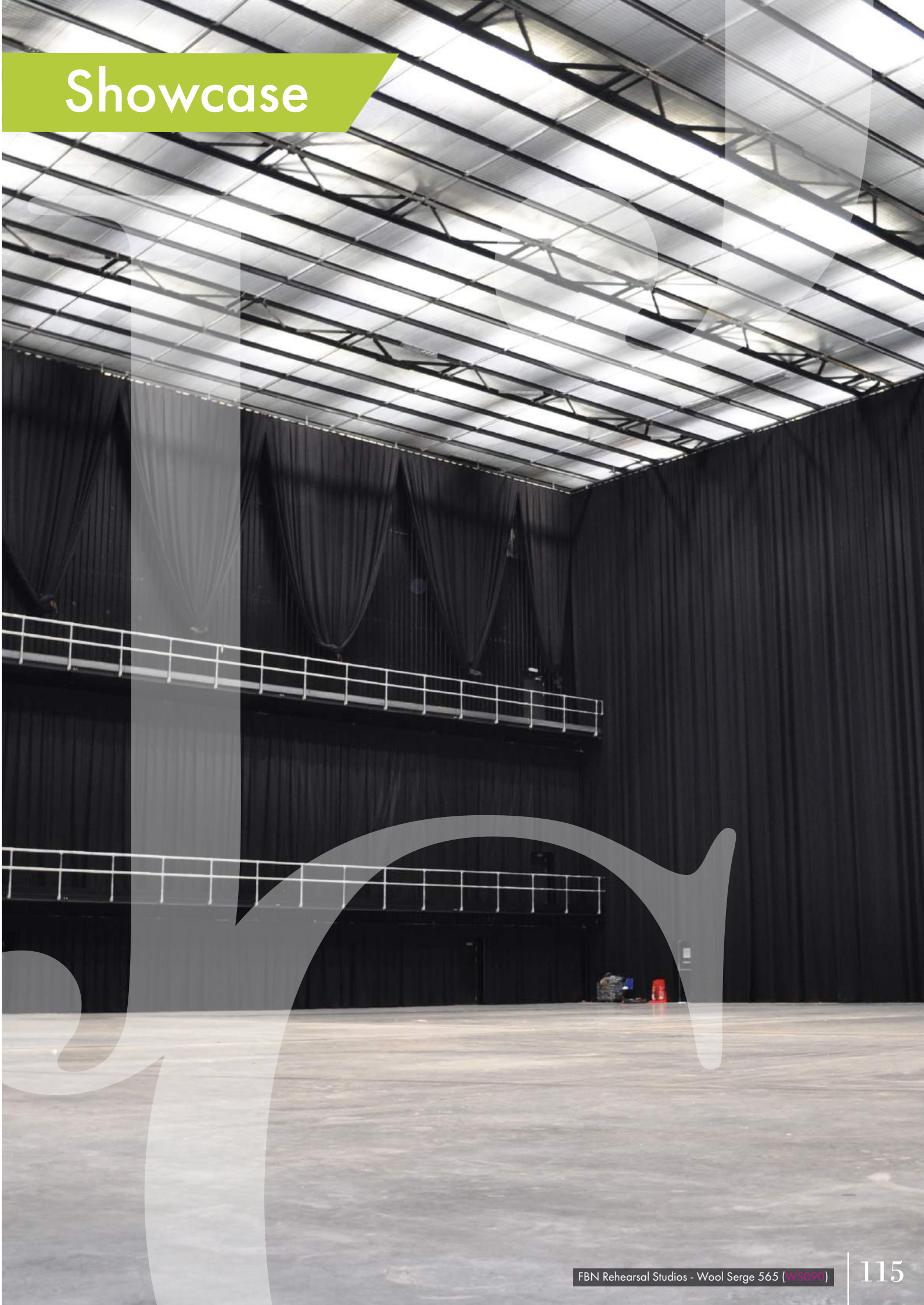
T1, empty room reverberation time
T2, room reverberation time with sample

Sound Absorption Coefficient

Frequency (Hz)	Absorption Coefficient
50	0.05
63	-0.03
80	0.16
100	0.19
125	0.40
160	0.42
200	0.55
250	0.63
315	0.77
400	0.83
500	0.83
630	0.98
800	0.96
1000	0.95
1250	1.05
1600	1.03
2000	1.02
2500	1.08
3150	1.15
4000	1.24
5000	1.23
6300	1.26
8000	1.38
10000	1.49

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Velvet

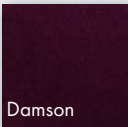
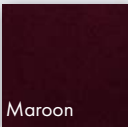
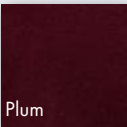
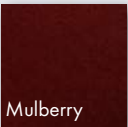
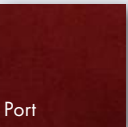
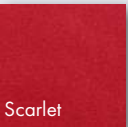
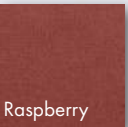
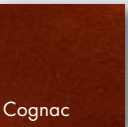
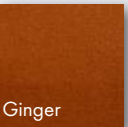
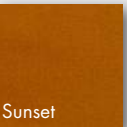
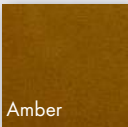
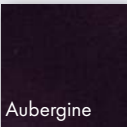
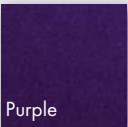
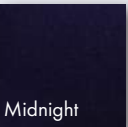
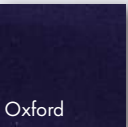
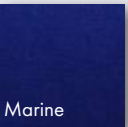
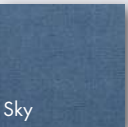
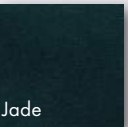
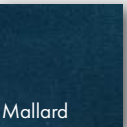
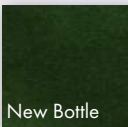
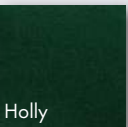
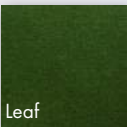
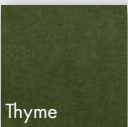
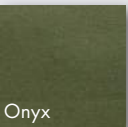
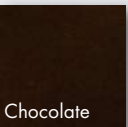
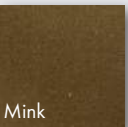
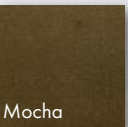
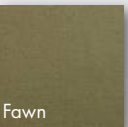
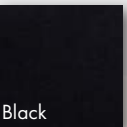
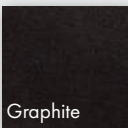
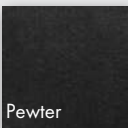
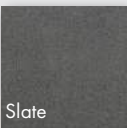
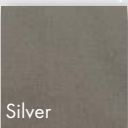
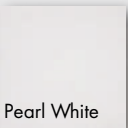


Product	Page
Countess	118
Duchess	123
Queen	129
Empress	132
Coliseum	137
Sowerby	142

Countess

Our most popular cotton velvet, manufactured using open-end pile yarn to create a hard-wearing fabric. DFR finish available upon request.

Fullness	Wall Cavity	Class	SAC Classification	Page
50%	100mm	C	0.60	119
50%	350mm	C	0.75	120
100%	100mm	C	0.70	121
100%	350mm	C	0.75	122

 Damson VEL008	 Maroon VEL007	 Plum VEL003	 Mulberry VEL006	 Port VEL002	 Scarlet VEL034	 Raspberry VEL004	 Cognac VEL022	 Ginger VEL020	 Sunset VEL253
 Amber VEL019	 Gold VEL018	 Aubergine VEL255	 Purple VEL009	 Midnight VEL012	 Oxford VEL011	 Marine VEL010	 Sky VEL027	 Jade VEL026	 Mallard VEL028
 New Bottle VEL033	 Holly VEL032	 Leaf VEL031	 Thyme VEL030	 Onyx VEL029	 Chocolate VEL023	 Mink VEL017	 Mocha VEL016	 Fawn VEL015	 Black VEL001
 Graphite VEL254	 Pewter VEL269	 Slate VEL025	 Silver VEL024	 Pearl White VEL106					

35

Colours Available



Approx Roll Length:
55m / 180ft



Width:
122cm / 48"



Weight:
375 g/m²



FR Rating:
NDFR



FR Certification:
BS5867, M1, EN13773,
NFPA 701, IMO



Fabric Thickness:
1.35 mm



Custom Dye Available*

*APPROX PILE HEIGHT - 2.10mm

*CUSTOM DYE price on application, 4 wk lead time, MOQ of 400m

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Countess
Fullness: 50%
Cavity from Wall: 100mm

J&C Joel
Inspiration in every performance

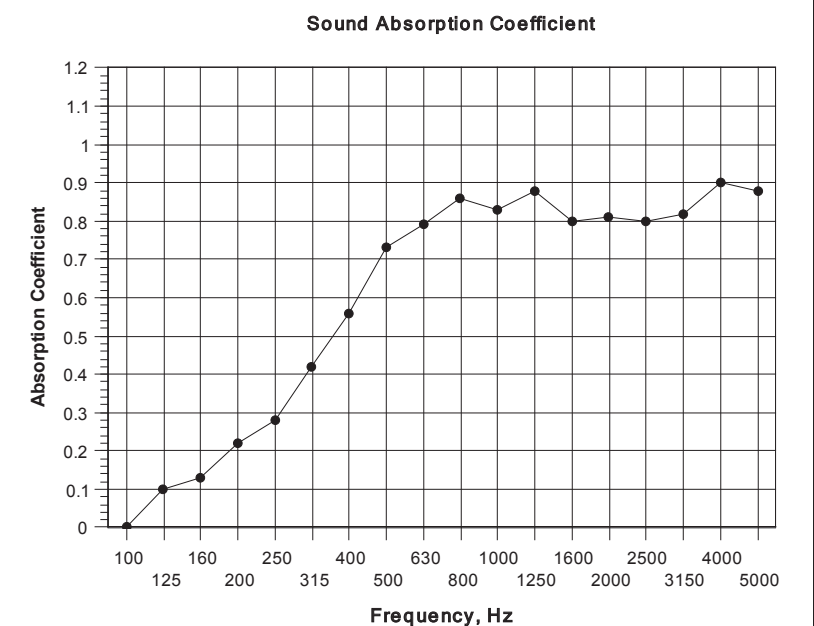
Data Sheet 28

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: **Temperature:** 19.0 °C **Humidity:** 62 %RH **Pressure:** 999 mbar
Room with Sample: **Temperature:** 19.1 °C **Humidity:** 60 %RH **Pressure:** 1001 mbar
Sample Description: Countess – Single Layer – 50% fullness (Approx. weight 375g/m²) – 100mm cavity from wall

Mounting Method: G-100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 30				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	5.70	-0.07	
63*	5.40	4.73	0.14	n/a
80*	6.56	6.07	0.07	
100	7.57	7.59	-0.00	
125	7.11	6.26	0.10	0.10
160	6.42	5.56	0.13	
200	7.12	5.50	0.22	
250	7.07	5.15	0.28	0.30
315	6.84	4.46	0.42	
400	6.46	3.87	0.56	
500	5.45	3.13	0.73	0.70
630	4.96	2.87	0.79	
800	5.47	2.92	0.86	
1000	5.91	3.09	0.83	0.85
1250	5.59	2.92	0.88	
1600	5.06	2.89	0.80	
2000	4.75	2.76	0.81	0.80
2500	4.34	2.63	0.80	
3150	3.64	2.33	0.82	
4000	3.09	2.02	0.90	0.85
5000	2.44	1.73	0.88	
6300*	1.79	1.38	0.85	
8000*	1.51	1.18	0.92	n/a
10000*	1.06	0.83	1.30	



α_w 0.60(MH)

Class C

Calculated to EN ISO 11654:1997

NRC 0.65

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Countess
Fullness: 50%
Cavity from Wall: 350mm



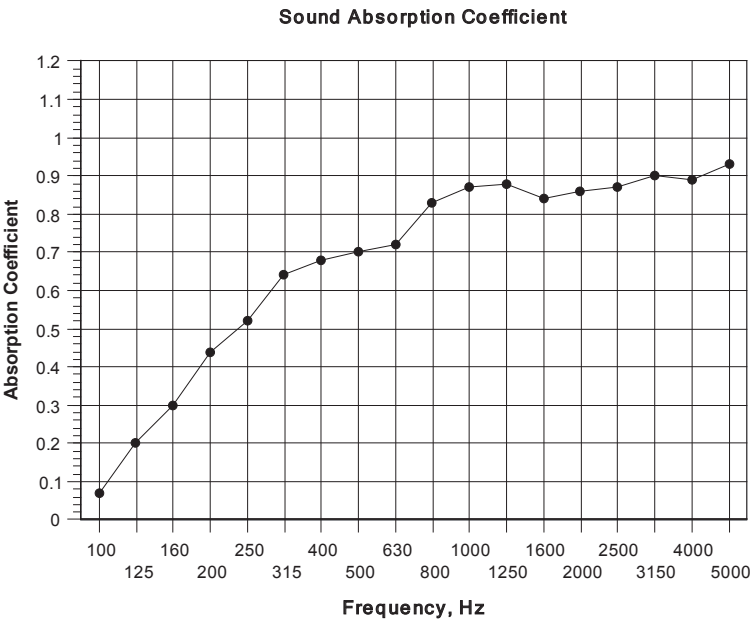
Data Sheet 27

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 19.1 °C Humidity: 60 %RH Pressure: 1001 mbar
Sample Description: Countess – Single Layer – 50% fullness (Approx. weight 375g/m²) – 350mm cavity from wall

Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 29				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	5.73	-0.07	
63*	5.40	4.45	0.21	n/a
80*	6.56	5.72	0.12	
100	7.57	6.88	0.07	
125	7.11	5.60	0.20	0.20
160	6.42	4.71	0.30	
200	7.12	4.51	0.44	
250	7.07	4.19	0.52	0.55
315	6.84	3.76	0.64	
400	6.46	3.56	0.68	
500	5.45	3.18	0.70	0.70
630	4.96	2.98	0.72	
800	5.47	2.97	0.83	
1000	5.91	3.03	0.87	0.85
1250	5.59	2.92	0.88	
1600	5.06	2.82	0.84	
2000	4.75	2.70	0.86	0.85
2500	4.34	2.54	0.87	
3150	3.64	2.25	0.90	
4000	3.09	2.03	0.89	0.90
5000	2.44	1.70	0.93	
6300*	1.79	1.33	0.99	
8000*	1.51	1.15	1.04	n/a
10000*	1.06	0.84	1.22	



α_w 0.75(H)
Class C
Calculated to EN ISO 11654:1997
NRC 0.75
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Countess
Fullness: 100%
Cavity from Wall: 100mm



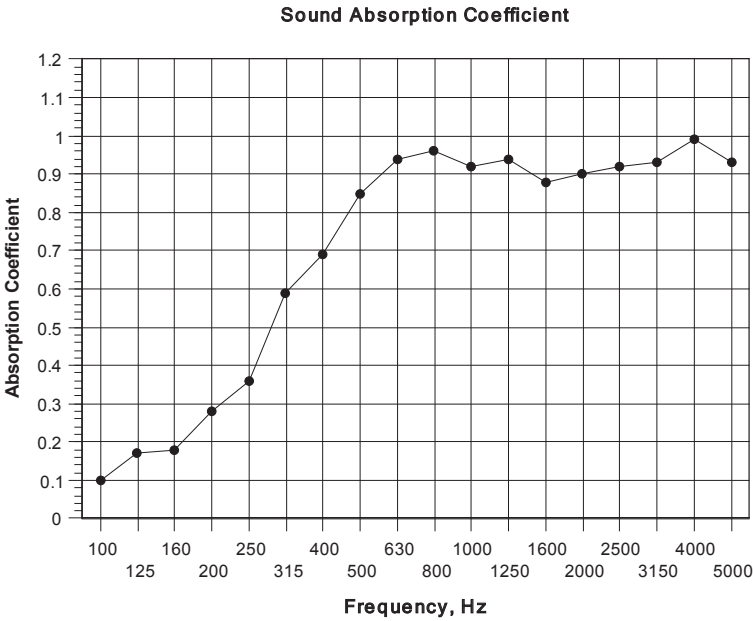
Data Sheet 29

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 19.2 °C Humidity: 60 %RH Pressure: 1001 mbar
Sample Description: Countess – Single Layer – 100% fullness (Approx. weight 375g/m²) – 100mm cavity from wall

Mounting Method: G-100
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 31				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	5.59	-0.05	
63*	5.40	4.51	0.20	n/a
80*	6.56	5.96	0.08	
100	7.57	6.67	0.10	
125	7.11	5.78	0.17	0.15
160	6.42	5.29	0.18	
200	7.12	5.20	0.28	
250	7.07	4.80	0.36	0.40
315	6.84	3.91	0.59	
400	6.46	3.53	0.69	
500	5.45	2.93	0.85	0.85
630	4.96	2.66	0.94	
800	5.47	2.77	0.96	
1000	5.91	2.94	0.92	0.95
1250	5.59	2.83	0.94	
1600	5.06	2.77	0.88	
2000	4.75	2.64	0.90	0.90
2500	4.34	2.48	0.92	
3150	3.64	2.23	0.93	
4000	3.09	1.96	0.99	0.95
5000	2.44	1.70	0.93	
6300*	1.79	1.36	0.91	
8000*	1.51	1.17	0.97	n/a
10000*	1.06	0.83	1.31	



α_w 0.70(MH)
Class C
Calculated to EN ISO 11654:1997
NRC 0.75
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Countess
Fullness: 100%
Cavity from Wall: 350mm

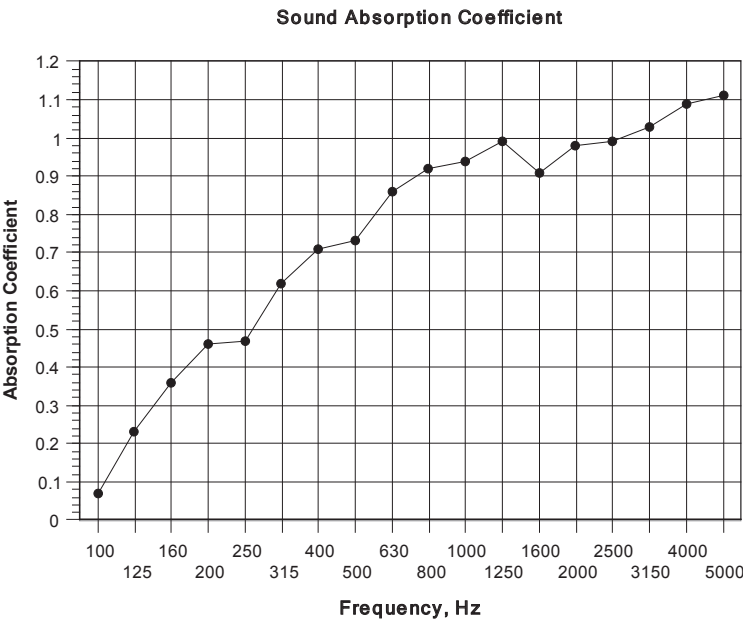


Data Sheet 30

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 19.2 °C Humidity: 60 %RH Pressure: 1001 mbar
Sample Description: Countess – Single Layer – 100% fullness (Approx. weight 375g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 32				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	4.99	0.07	
63*	5.40	4.63	0.17	n/a
80*	6.56	5.71	0.12	
100	7.57	6.85	0.07	
125	7.11	5.46	0.23	0.20
160	6.42	4.50	0.36	
200	7.12	4.41	0.46	
250	7.07	4.38	0.47	0.50
315	6.84	3.83	0.62	
400	6.46	3.48	0.71	
500	5.45	3.14	0.73	0.75
630	4.96	2.77	0.86	
800	5.47	2.83	0.92	
1000	5.91	2.91	0.94	0.95
1250	5.59	2.76	0.99	
1600	5.06	2.73	0.91	
2000	4.75	2.54	0.98	0.95
2500	4.34	2.41	0.99	
3150	3.64	2.14	1.03	
4000	3.09	1.89	1.09	1.00
5000	2.44	1.61	1.11	
6300*	1.79	1.34	0.97	
8000*	1.51	1.13	1.14	n/a
10000*	1.06	0.80	1.56	



α_w	0.75(H)
Class C	
Calculated to EN ISO 11654:1997	
NRC	0.80
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Duchess

Similar to Countess, Duchess is manufactured using open-end pile yarn, woven into a heavier, more robust cloth.

Fullness	Wall Cavity	Class	SAC Classification	Page
50%	100mm	C	0.65	124
50%	350mm	B	0.85	125
100%	100mm	B	0.80	126
100%	350mm	A	0.90	127

Claret	Brick	Red	True Gold	Aubergine	Purple	Navy	Royal	Bottle	Black
VELH044	VELH045	VELH043	VELH042	VELH051	VELH046	VELH048	VELH047	VELH049	VELH040

10 Colours Available	Approx Roll Length: 40m / 131ft	Width: 140cm / 55"	Weight: 520 g/m²	FR Rating: NDFR	FR Certification: BS5867	Fabric Thickness: 1.95 mm	Custom Dye Available*
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*APPROX PILE HEIGHT - 2.50mm

*CUSTOM DYE price on application, 4 wk lead time, MOQ of 400m



Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Duchess
Fullness: 50%
Cavity from Wall: 100mm

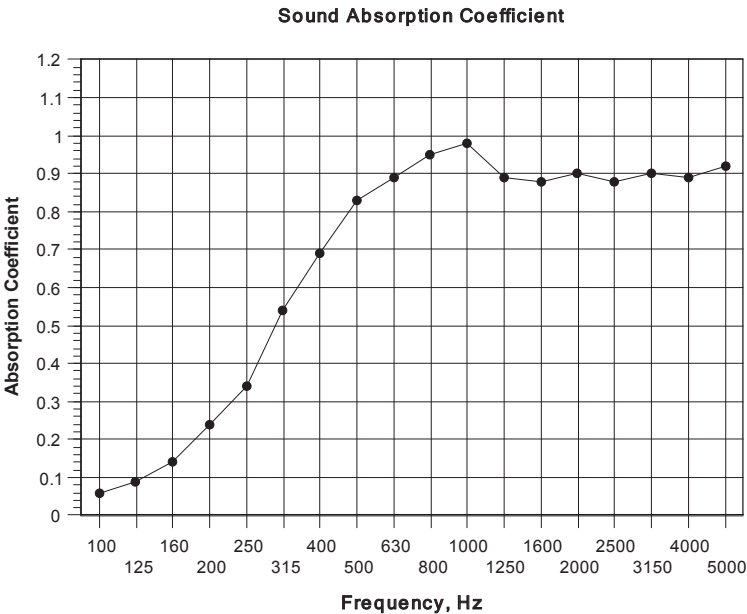


Data Sheet 17

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 18.9 °C Humidity: 62 %RH Pressure: 999 mbar
Sample Description: Duchess – Single Layer – 50% fullness (Approx. weight 520g/m²) – 100mm cavity from wall
Mounting Method: G-100
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 19				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	5.00	0.07	
63*	5.40	5.23	0.03	n/a
80*	6.56	6.03	0.07	
100	7.57	6.94	0.06	
125	7.11	6.37	0.09	0.10
160	6.42	5.53	0.14	
200	7.12	5.42	0.24	
250	7.07	4.89	0.34	0.35
315	6.84	4.06	0.54	
400	6.46	3.53	0.69	
500	5.45	2.97	0.83	0.80
630	4.96	2.72	0.89	
800	5.47	2.79	0.95	
1000	5.91	2.85	0.98	0.95
1250	5.59	2.90	0.89	
1600	5.06	2.77	0.88	
2000	4.75	2.65	0.90	0.90
2500	4.34	2.54	0.88	
3150	3.64	2.26	0.90	
4000	3.09	2.04	0.89	0.90
5000	2.44	1.72	0.92	
6300*	1.79	1.35	0.97	
8000*	1.51	1.17	1.03	n/a
10000*	1.06	0.86	1.17	



α_w 0.65(MH)
Class C
Calculated to EN ISO 11654:1997
NRC 0.75
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Duchess
Fullness: 50%
Cavity from Wall: 350mm

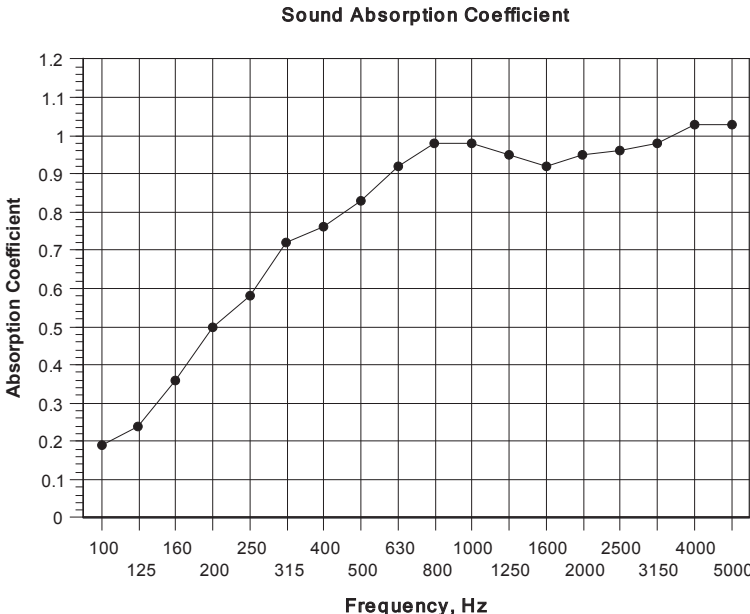


Data Sheet 18

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 18.9 °C Humidity: 62 %RH Pressure: 999 mbar
Sample Description: Duchess – Single Layer – 50% fullness (Approx. weight 520g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 20				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	4.90	0.09	
63*	5.40	5.10	0.06	n/a
80*	6.56	5.51	0.16	
100	7.57	5.96	0.19	
125	7.11	5.40	0.24	0.25
160	6.42	4.49	0.36	
200	7.12	4.30	0.50	
250	7.07	4.00	0.58	0.60
315	6.84	3.58	0.72	
400	6.46	3.39	0.76	
500	5.45	2.96	0.83	0.85
630	4.96	2.68	0.92	
800	5.47	2.74	0.98	
1000	5.91	2.85	0.98	0.95
1250	5.59	2.81	0.95	
1600	5.06	2.72	0.92	
2000	4.75	2.58	0.95	0.95
2500	4.34	2.45	0.96	
3150	3.64	2.19	0.98	
4000	3.09	1.94	1.03	1.00
5000	2.44	1.66	1.03	
6300*	1.79	1.31	1.10	
8000*	1.51	1.15	1.11	n/a
10000*	1.06	0.85	1.24	



α_w 0.85(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.85
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Duchess
Fullness: 100%
Cavity from Wall: 100mm

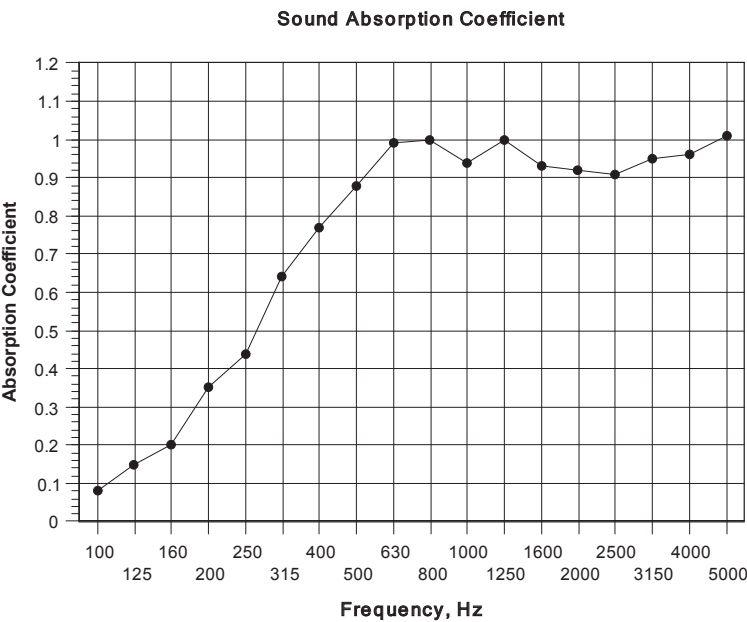


Data Sheet 20

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 18.9 °C Humidity: 62 %RH Pressure: 999 mbar
Sample Description: Duchess – Single Layer – 100% fullness (Approx. weight 520g/m²) – 100mm cavity from wall
Mounting Method: G-100
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 22				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	5.41	-0.01	
63*	5.40	5.04	0.07	n/a
80*	6.56	6.00	0.08	
100	7.57	6.79	0.08	
125	7.11	5.94	0.15	0.15
160	6.42	5.20	0.20	
200	7.12	4.85	0.35	
250	7.07	4.50	0.44	0.50
315	6.84	3.78	0.64	
400	6.46	3.36	0.77	
500	5.45	2.89	0.88	0.90
630	4.96	2.60	0.99	
800	5.47	2.72	1.00	
1000	5.91	2.91	0.94	1.00
1250	5.59	2.74	1.00	
1600	5.06	2.70	0.93	
2000	4.75	2.62	0.92	0.90
2500	4.34	2.50	0.91	
3150	3.64	2.22	0.95	
4000	3.09	1.99	0.96	0.95
5000	2.44	1.67	1.01	
6300*	1.79	1.35	0.97	
8000*	1.51	1.14	1.15	n/a
10000*	1.06	0.82	1.47	



α_w 0.80(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.80
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Duchess
Fullness: 100%
Cavity from Wall: 350mm

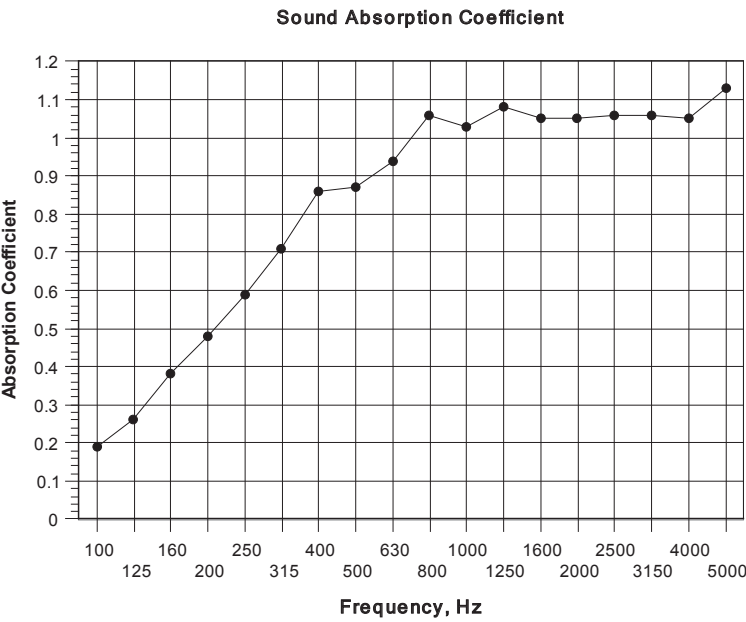


Data Sheet 19

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 18.9 °C Humidity: 62 %RH Pressure: 999 mbar
Sample Description: Duchess – Single Layer – 100% fullness (Approx. weight 520g/m²) – 350mm cavity from wall
Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 21				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	4.87	0.10	
63*	5.40	4.94	0.09	n/a
80*	6.56	5.80	0.11	
100	7.57	6.00	0.19	
125	7.11	5.31	0.26	0.30
160	6.42	4.42	0.38	
200	7.12	4.37	0.48	
250	7.07	3.98	0.59	0.60
315	6.84	3.59	0.71	
400	6.46	3.18	0.86	
500	5.45	2.90	0.87	0.90
630	4.96	2.66	0.94	
800	5.47	2.63	1.06	
1000	5.91	2.77	1.03	1.00
1250	5.59	2.64	1.08	
1600	5.06	2.55	1.05	
2000	4.75	2.47	1.05	1.00
2500	4.34	2.34	1.06	
3150	3.64	2.12	1.06	
4000	3.09	1.93	1.05	1.00
5000	2.44	1.61	1.13	
6300*	1.79	1.28	1.19	
8000*	1.51	1.11	1.27	n/a
10000*	1.06	0.80	1.64	



α_w 0.90
Class A
Calculated to EN ISO 11654:1997
NRC 0.90
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Showcase



Queen

High-end ring-spun yarns, woven into a luxurious velvet. Queen has the longest pile in our range which creates a bright and deep colour.

Fullness	Wall Cavity	Class	SAC Classification	Page
50%	350mm	B	0.85	130
100%	350mm	A	0.90	131

Wine

VEL165

Angel Flame

VEL160

Scarlet

VEL164

Gold

VEL163

Navy

VEL162

Royal

VEL167

Black

VEL168

Natural

VEL166

8

Colours Available

Approx Roll Length:
30m / 98ft

Width:
150cm / 59"

Weight:
565 g/m²

FR Rating:
NDFR

FR Certification:
BS5867, NFPA 701

Fabric Thickness:
2.16 mm

Custom Dye Available*

*APPROX PILE HEIGHT - 2.90mm

*CUSTOM DYE price on application, 4 wk lead time, MOQ of 240m



E-DA World Theme ParK, Taiwan - Queen (VEL160)

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: Queen
Fullness: 50%
Cavity from Wall: 350mm



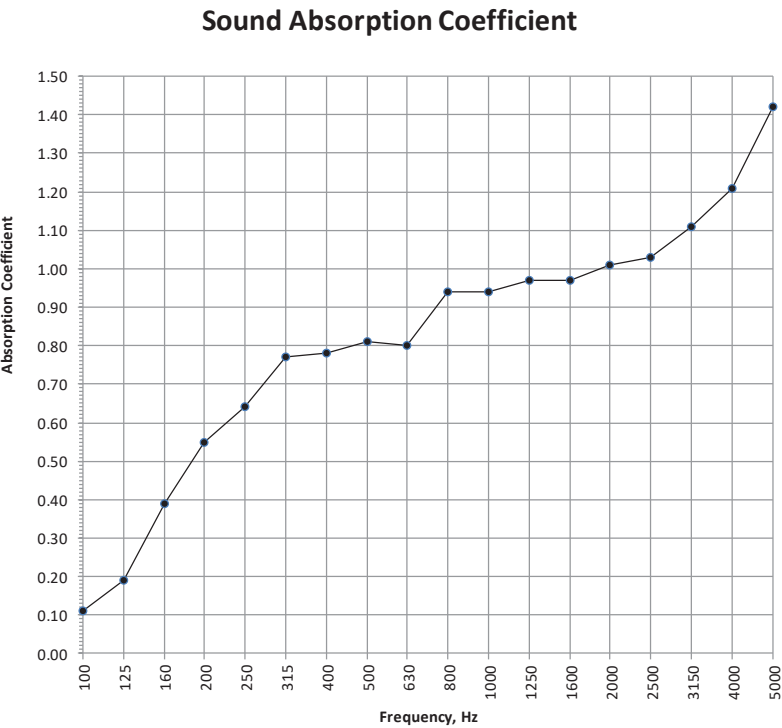
Data Sheet 4

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.1 °C Humidity: 45 %RH Pressure: 1002 mbar
Sample Description: Queen - Single Layer - 50% fullness (Approx. weight 565g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 5				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.81	0.04	
63*	5.39	5.04	0.07	n/a
80*	7.08	6.40	0.08	
100	9.00	7.59	0.11	
125	7.30	5.85	0.19	0.25
160	6.60	4.50	0.39	
200	6.86	4.06	0.55	
250	7.22	3.90	0.64	0.65
315	6.99	3.51	0.77	
400	6.36	3.34	0.78	
500	5.64	3.07	0.81	0.80
630	5.09	2.92	0.80	
800	5.10	2.72	0.94	
1000	5.74	2.89	0.94	0.95
1250	5.63	2.81	0.97	
1600	5.18	2.67	0.97	
2000	4.76	2.50	1.01	1.00
2500	4.22	2.30	1.03	
3150	3.35	1.93	1.11	
4000	2.59	1.58	1.21	1.00
5000	2.04	1.27	1.42	
6300*	1.39	0.93	1.65	
8000*	1.14	0.80	1.63	n/a
10000*	0.80	0.61	1.64	



α _w	0.85(H)
Class B	
Calculated to EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Queen
Fullness: 100%
Cavity from Wall: 350mm



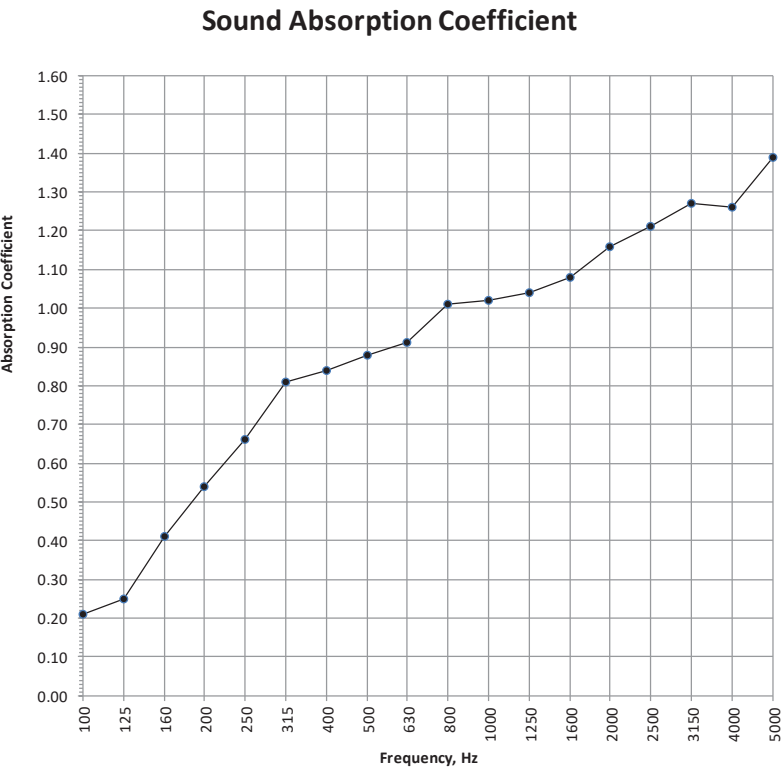
Data Sheet 3

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.2 °C Humidity: 45 %RH Pressure: 1002 mbar
Sample Description: Queen - Single Layer - 100% fullness (Approx. weight 565g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 4				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.80	0.04	
63*	5.39	4.94	0.09	n/a
80*	7.08	6.56	0.06	
100	9.00	6.68	0.21	
125	7.30	5.49	0.25	0.30
160	6.60	4.40	0.41	
200	6.86	4.08	0.54	
250	7.22	3.84	0.66	0.65
315	6.99	3.43	0.81	
400	6.36	3.22	0.84	
500	5.64	2.96	0.88	0.90
630	5.09	2.75	0.91	
800	5.10	2.62	1.01	
1000	5.74	2.76	1.02	1.00
1250	5.63	2.71	1.04	
1600	5.18	2.54	1.08	
2000	4.76	2.34	1.16	1.00
2500	4.22	2.14	1.21	
3150	3.35	1.83	1.27	
4000	2.59	1.56	1.26	1.00
5000	2.04	1.28	1.39	
6300*	1.39	0.92	1.72	
8000*	1.14	0.79	1.74	n/a
10000*	0.80	0.60	1.80	



α _w	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

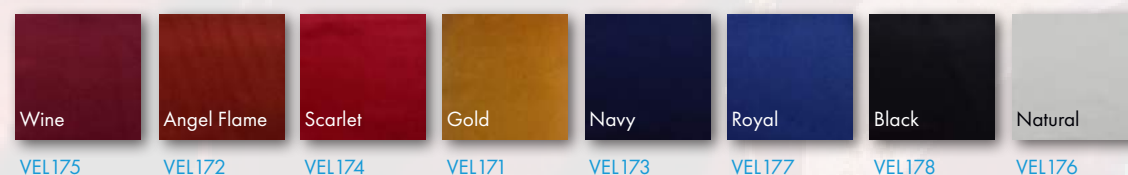
Practical absorption coefficient, BS EN ISO 11654:1997

v5

Empress

Empress is our Queen velvet but with an M1 finish. It is manufactured using high-end, ring-spun yarns, which provide a vibrant and rich colour.

Fullness	Wall Cavity	Class	SAC Classification	Page
50%	100mm	B	0.80	133
50%	350mm	A	0.90	134
100%	100mm	A	0.90	135
100%	350mm	A	0.95	136



Colours Available



Approx Roll Length: 30m / 98ft



Width: 150cm / 59"



Weight: 620 g/m²



FR Rating: NDFR



FR Certification: BS5867, M1



Fabric Thickness: 2.68 mm



Custom Dye Available*

*APPROX PILE HEIGHT - 2.90mm

*CUSTOM DYE price on application, 4 wk lead time, MOQ of 240m



Manufacture of Box Pelmet - Peth Theatre, Scotland - Empress (VEL175)

Acoustic Test Report - Absorption

Absorption Class: B

Calculated to EN ISO 11654:1997

Fabric: Empress

Fullness: 50%

Cavity from Wall: 100mm

J&C Joel 
Inspiration in every performance

Data Sheet 4

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 4
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-100
Sample Description: Empress at 50% Fullness

Test Room:	Empty	With Sample
Air Temperature:	15.6 °C	15.4 °C
Air Humidity:	48 % RH	47 % RH
Air Pressure:	1021 mbar	1021 mbar
Sample Area:	9 m ²	

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.26	0.05	n/a
63*	4.18	4.03	0.05	
80*	7.24	6.34	0.11	
100	6.90	6.33	0.07	0.15
125	6.66	6.24	0.06	
160	6.03	4.67	0.26	
200	6.46	4.52	0.36	0.50
250	6.79	3.98	0.56	
315	6.54	3.67	0.65	
400	6.06	3.33	0.73	0.90
500	5.54	2.83	0.94	
630	4.90	2.55	1.02	
800	4.93	2.63	0.96	0.90
1000	5.32	2.82	0.90	
1250	5.11	2.80	0.87	
1600	4.79	2.74	0.85	0.85
2000	4.33	2.56	0.85	
2500	3.79	2.29	0.92	
3150	3.01	2.01	0.88	0.90
4000	2.38	1.69	0.90	
5000	1.84	1.40	0.88	
6300*	1.30	1.05	0.91	n/a
8000*	1.06	0.90	0.84	
10000*	0.73	0.65	0.84	

α_w 0.80

Class B

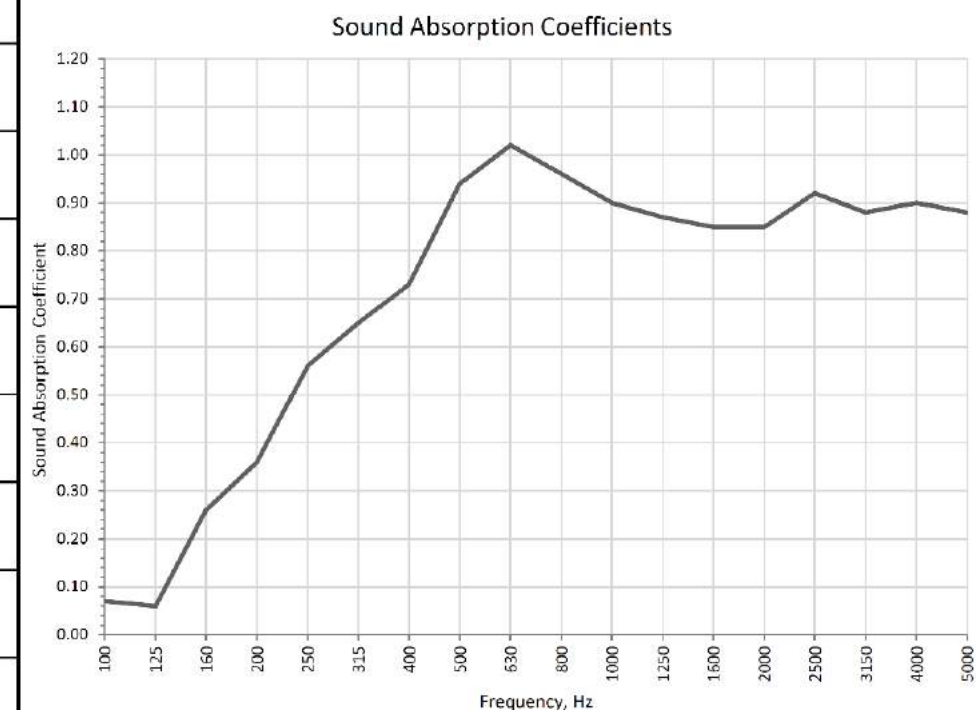
Calculated to BS EN ISO 11654:1997

NRC 0.80

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited

v1



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Empress
Fullness: 50%
Cavity from Wall: 350mm



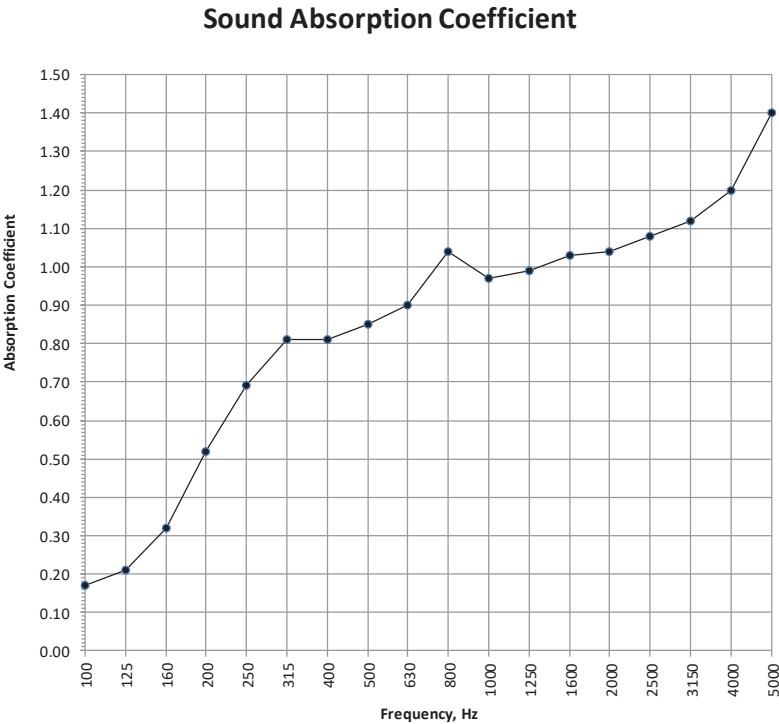
Data Sheet 2

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.3 °C Humidity: 45 %RH Pressure: 1002 mbar
Sample Description: Empress - Single Layer - 50% fullness (Approx. weight 620g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 3				
Freq Hz	T1 sec	T2 sec	Absorp Coeff αs	Practical Absorp Coeff #
50*	4.96	4.72	0.06	n/a
63*	5.39	4.95	0.09	
80*	7.08	6.19	0.11	
100	9.00	7.06	0.17	
125	7.30	5.70	0.21	0.25
160	6.60	4.75	0.32	0.65
200	6.86	4.15	0.52	
250	7.22	3.77	0.69	
315	6.99	3.42	0.81	
400	6.36	3.27	0.81	0.85
500	5.64	3.00	0.85	
630	5.09	2.77	0.90	
800	5.10	2.59	1.04	
1000	5.74	2.84	0.97	1.00
1250	5.63	2.78	0.99	1.00
1600	5.18	2.60	1.03	
2000	4.76	2.46	1.04	
2500	4.22	2.25	1.08	
3150	3.35	1.93	1.12	1.00
4000	2.59	1.59	1.20	
5000	2.04	1.28	1.40	
6300*	1.39	0.93	1.67	
8000*	1.14	0.81	1.58	n/a
10000*	0.80	0.60	1.82	



αw	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Empress
Fullness: 100%
Cavity from Wall: 100mm

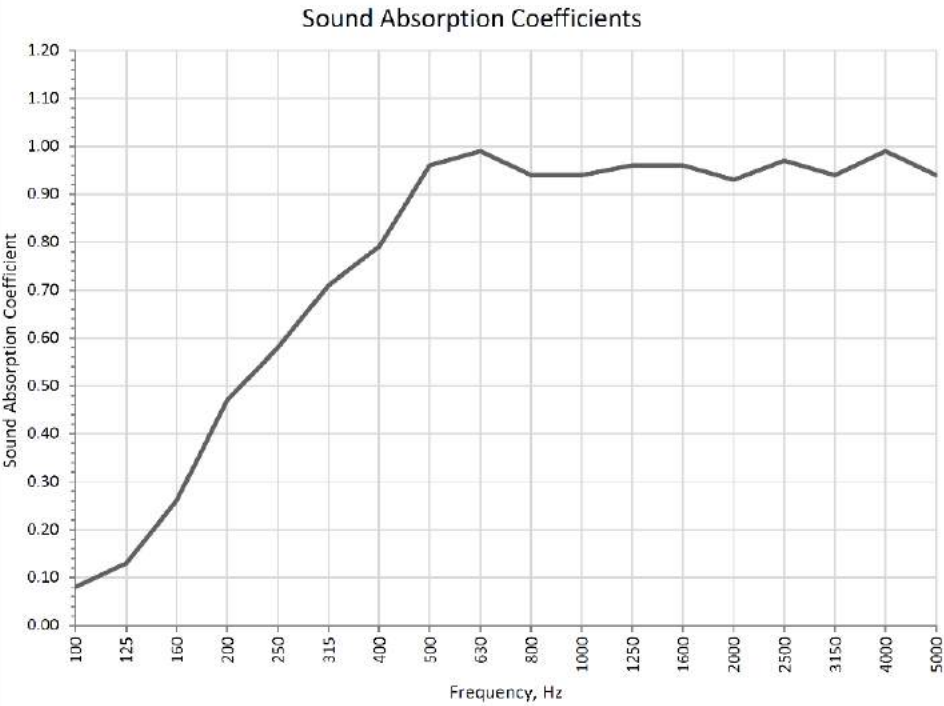


Data Sheet 3

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 3
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-100
Sample Description: Empress at 100% Fullness
Test Room: Empty With Sample
Air Temperature: 15.6 °C 15.4 °C
Air Humidity: 48 % RH 47 % RH
Air Pressure: 1021 mbar 1021 mbar
Sample Area: 9 m²

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient αs	Practical Sound Absorption Coefficient αp
50*	4.45	4.22	0.07	n/a
63*	4.18	4.07	0.04	
80*	7.24	5.99	0.16	
100	6.90	6.30	0.08	
125	6.66	5.74	0.13	0.15
160	6.03	4.66	0.26	
200	6.46	4.16	0.47	
250	6.79	3.94	0.58	
315	6.54	3.53	0.71	0.60
400	6.06	3.22	0.79	
500	5.54	2.80	0.96	
630	4.90	2.58	0.99	
800	4.93	2.66	0.94	0.90
1000	5.32	2.77	0.94	
1250	5.11	2.68	0.96	
1600	4.79	2.59	0.96	
2000	4.33	2.47	0.93	0.95
2500	3.79	2.24	0.97	
3150	3.01	1.96	0.94	
4000	2.38	1.64	0.99	
5000	1.84	1.37	0.94	0.95
6300*	1.30	1.03	0.99	
8000*	1.06	0.89	0.91	
10000*	0.73	0.64	0.96	



αw	0.90
Class A	
Calculated to BS EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Empress
Fullness: 100%
Cavity from Wall: 350mm

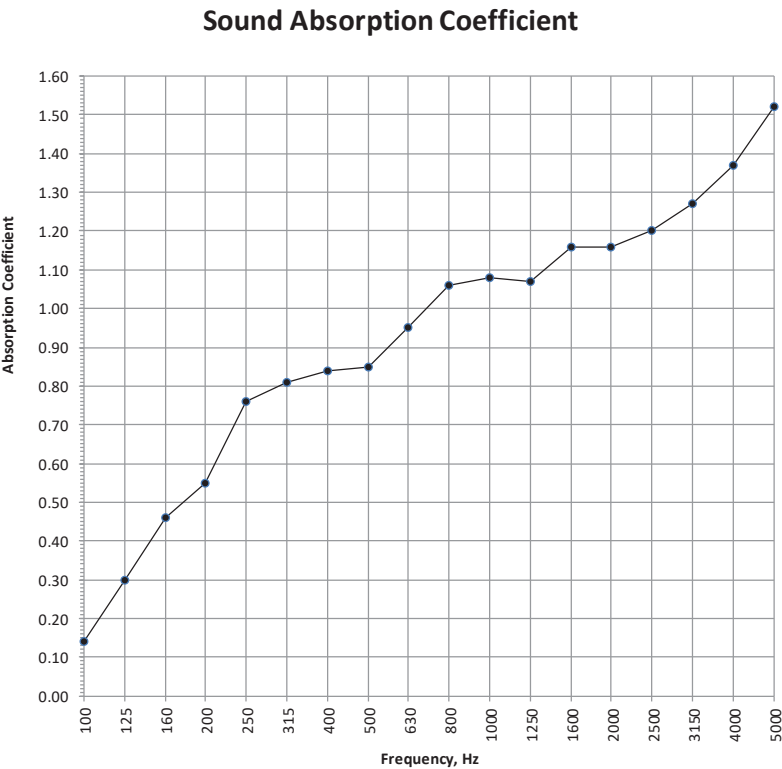


Data Sheet 1

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.5 °C Humidity: 45 %RH Pressure: 1002 mbar
Sample Description: Empress - Single Layer - 100% fullness (Approx. weight 620g/m2) 350mm cavity from wall
Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 2				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.64	0.08	
63*	5.39	4.84	0.12	n/a
80*	7.08	6.20	0.11	
100	9.00	7.35	0.14	
125	7.30	5.23	0.30	0.30
160	6.60	4.23	0.46	
200	6.86	4.04	0.55	
250	7.22	3.60	0.76	0.70
315	6.99	3.43	0.81	
400	6.36	3.21	0.84	
500	5.64	3.01	0.85	0.90
630	5.09	2.70	0.95	
800	5.10	2.56	1.06	
1000	5.74	2.68	1.08	1.00
1250	5.63	2.67	1.07	
1600	5.18	2.45	1.16	
2000	4.76	2.34	1.16	1.00
2500	4.22	2.15	1.20	
3150	3.35	1.84	1.27	
4000	2.59	1.52	1.37	1.00
5000	2.04	1.25	1.52	
6300*	1.39	0.95	1.57	
8000*	1.14	0.80	1.70	n/a
10000*	0.80	0.60	1.86	



α _w	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

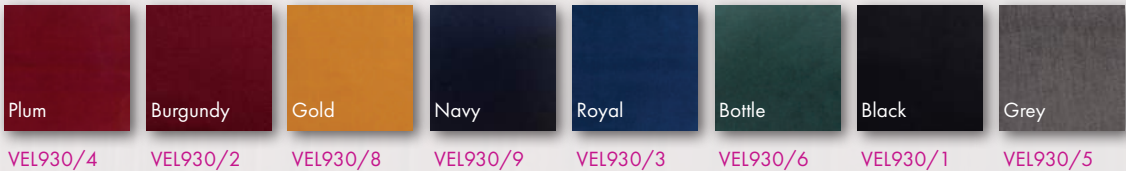
Practical absorption coefficient, BS EN ISO 11654:1997

v5

The West End Collection - Coliseum

A knitted, synthetic based velvet collection that imitates traditional velvets. Developed to incorporate a longer pile, the West End velvets provide a rich sheen to enhance the colour and overall appearance, without compromising the hardwearing properties.

Fullness	Wall Cavity	Class	SAC Classification	Page
50%	100mm	B	0.80	124
50%	350mm	B	0.85	125
100%	100mm	A	0.90	126
100%	350mm	A	0.90	127



Colours Available

Approx Roll Length: 55m / 180ft

Width: 150cm / 59"

Weight: 500 g/m²

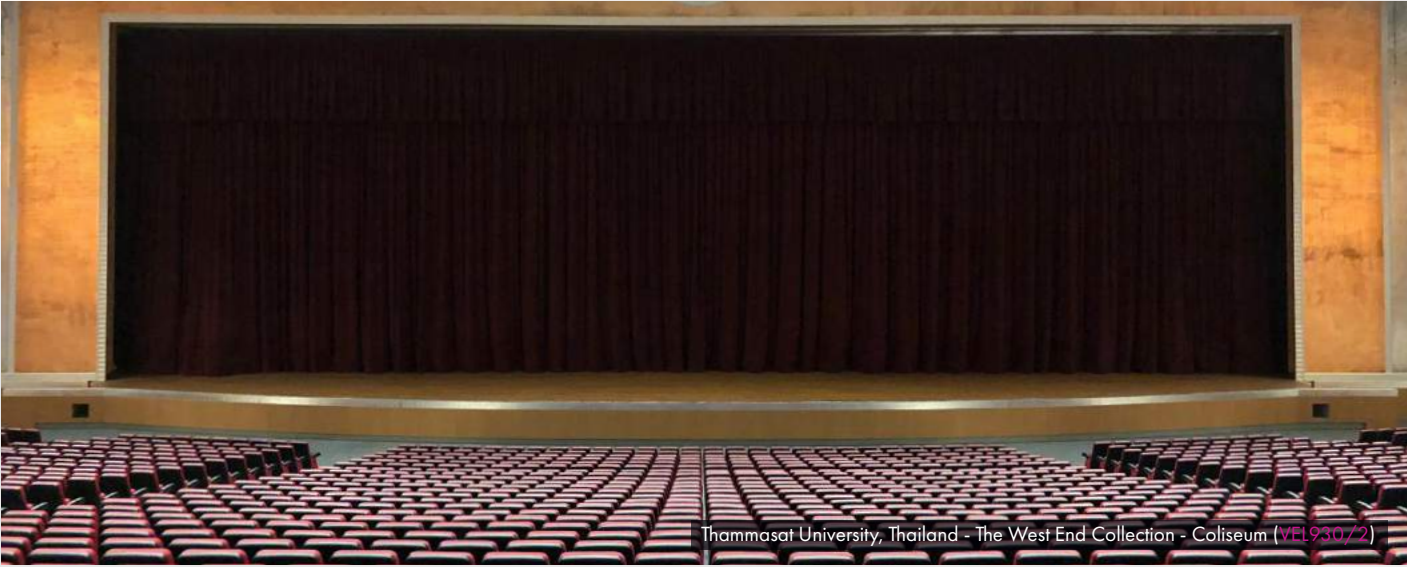
FR Rating: IFR

FR Certification: BS5867, NFPA 701, EN13773

Fabric Thickness: 1.71 mm

Custom Dye Available*

*MOQ of 400m



Thammasat University, Thailand - The West End Collection - Coliseum (VEL930/2)

Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: The West End Collection - Coliseum
Fullness: 50%
Cavity from Wall: 100mm



Data Sheet 13

See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

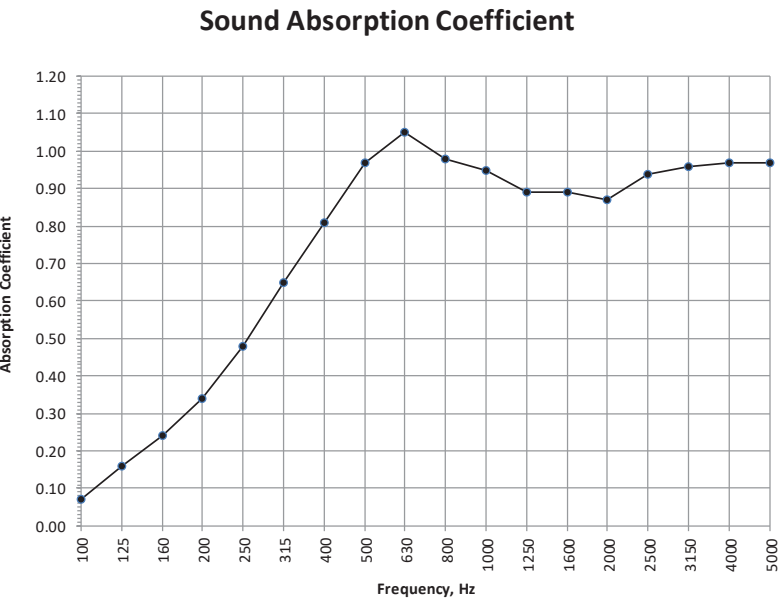
Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 996 mbar
Room with Sample: Temperature: 21.6 °C Humidity: 66 %RH Pressure: 997 mbar
Sample Description: The West End Collection - Coliseum - Single Layer - 50% Fullness (Approx. Weight 500g/m²) 100mm cavity from wall
Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 15				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.83	4.89	-0.01	
63*	5.22	5.21	0.00	n/a
80*	7.65	7.27	0.04	
100	7.54	6.82	0.07	
125	7.75	6.28	0.16	0.15
160	6.51	5.05	0.24	
200	6.93	4.82	0.34	
250	6.80	4.23	0.48	0.50
315	6.68	3.69	0.65	
400	6.35	3.23	0.81	
500	5.57	2.77	0.97	0.95
630	4.92	2.50	1.05	
800	4.94	2.60	0.98	
1000	5.40	2.76	0.95	0.95
1250	5.54	2.88	0.89	
1600	5.12	2.77	0.89	
2000	4.79	2.69	0.87	0.90
2500	4.39	2.48	0.94	
3150	3.74	2.24	0.96	
4000	3.17	2.01	0.97	0.95
5000	2.59	1.76	0.97	
6300*	1.95	1.38	1.12	
8000*	1.57	1.18	1.11	n/a
10000*	1.11	0.91	1.03	

α _w 0.80(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.80
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: B
Calculated to EN ISO 11654:1997
Fabric: The West End Collection - Coliseum
Fullness: 50%
Cavity from Wall: 350mm



Data Sheet 14

See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

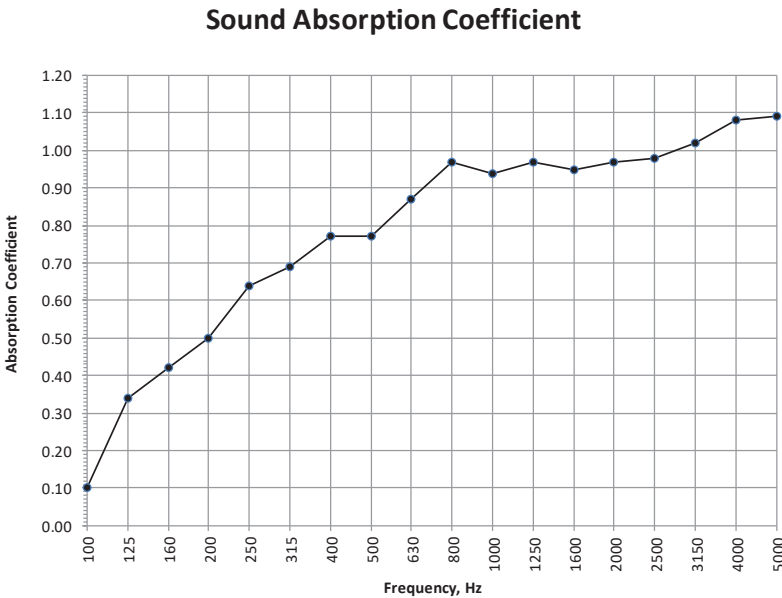
Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 996 mbar
Room with Sample: Temperature: 21.6 °C Humidity: 66 %RH Pressure: 997 mbar
Sample Description: The West End Collection - Coliseum - Single Layer - 50% Fullness (Approx. Weight 500g/m²) 350mm cavity from wall
Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 16				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.83	4.84	0.00	
63*	5.22	4.89	0.07	n/a
80*	7.65	6.61	0.11	
100	7.54	6.58	0.10	
125	7.75	5.17	0.34	0.30
160	6.51	4.31	0.42	
200	6.93	4.20	0.50	
250	6.80	3.76	0.64	0.60
315	6.68	3.60	0.69	
400	6.35	3.31	0.77	
500	5.57	3.10	0.77	0.80
630	4.92	2.74	0.87	
800	4.94	2.61	0.97	
1000	5.40	2.78	0.94	0.95
1250	5.54	2.76	0.97	
1600	5.12	2.69	0.95	
2000	4.79	2.56	0.97	0.95
2500	4.39	2.43	0.98	
3150	3.74	2.18	1.02	
4000	3.17	1.93	1.08	1.00
5000	2.59	1.69	1.09	
6300*	1.95	1.38	1.12	
8000*	1.57	1.17	1.15	n/a
10000*	1.11	0.88	1.23	

α _w 0.85(H)
Class B
Calculated to EN ISO 11654:1997
NRC 0.85
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: The West End Collection - Coliseum
Fullness: 100%
Cavity from Wall: 100mm



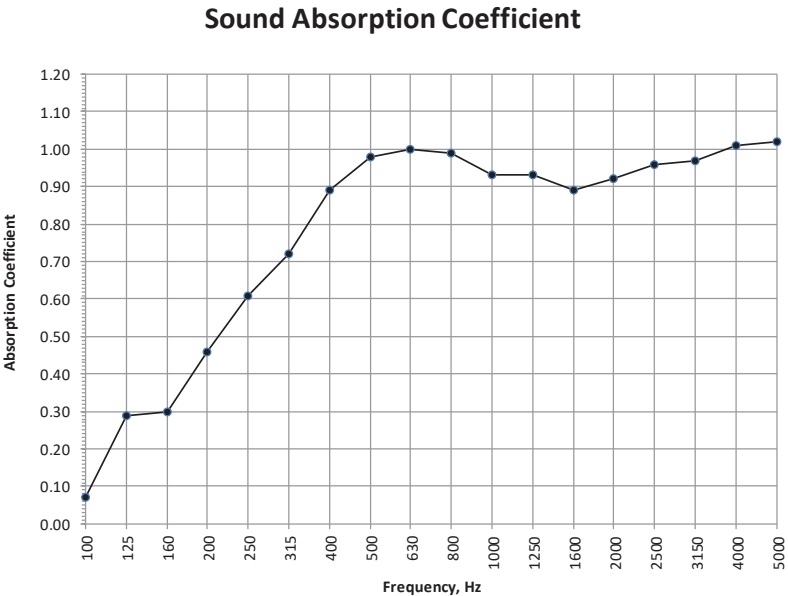
Data Sheet 15

See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 996 mbar
Room with Sample: Temperature: 21.6 °C Humidity: 66 %RH Pressure: 997 mbar
Sample Description: The West End Collection - Coliseum - Single Layer - 100% Fullness (Approx. Weight 500g/m²) 100mm cavity from wall
Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 17				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.83	4.90	-0.02	
63*	5.22	5.07	0.03	n/a
80*	7.65	7.24	0.04	
100	7.54	6.85	0.07	
125	7.75	5.48	0.29	0.20
160	6.51	4.75	0.30	
200	6.93	4.36	0.46	
250	6.80	3.84	0.61	0.60
315	6.68	3.52	0.72	
400	6.35	3.09	0.89	
500	5.57	2.76	0.98	0.95
630	4.92	2.56	1.00	
800	4.94	2.58	0.99	
1000	5.40	2.79	0.93	0.95
1250	5.54	2.83	0.93	
1600	5.12	2.77	0.89	
2000	4.79	2.63	0.92	0.90
2500	4.39	2.46	0.96	
3150	3.74	2.23	0.97	
4000	3.17	1.98	1.01	1.00
5000	2.59	1.73	1.02	
6300*	1.95	1.38	1.12	
8000*	1.57	1.18	1.11	n/a
10000*	1.11	0.93	0.90	



α _w	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.85
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: The West End Collection - Coliseum
Fullness: 100%
Cavity from Wall: 350mm



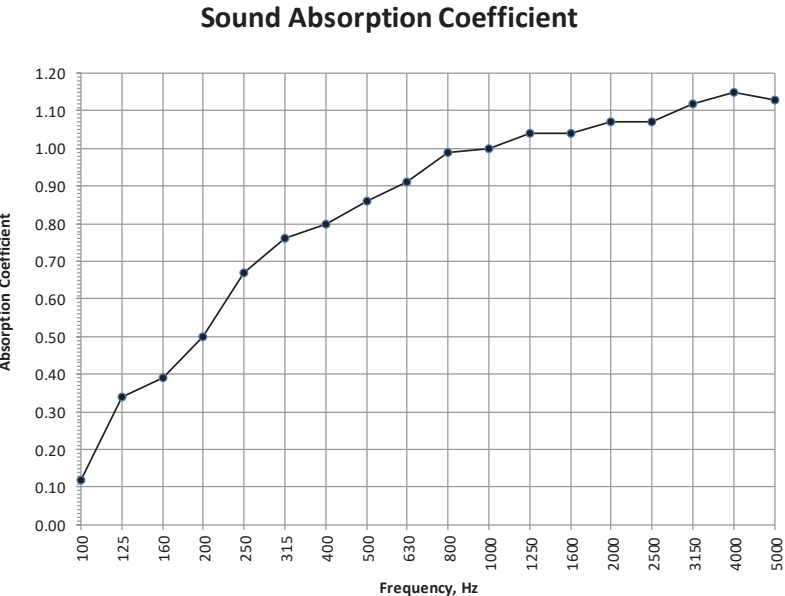
Data Sheet 16

See SRL report 24694-SRL-RP-XT-001-P1 for full details

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: Temperature: 21.5 °C Humidity: 67 %RH Pressure: 996 mbar
Room with Sample: Temperature: 21.6 °C Humidity: 66 %RH Pressure: 997 mbar
Sample Description: The West End Collection - Coliseum - Single Layer - 100% Fullness (Approx. Weight 500g/m²) 350mm cavity from wall
Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 18				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.83	4.78	0.01	
63*	5.22	4.97	0.05	n/a
80*	7.65	6.36	0.14	
100	7.54	6.48	0.12	
125	7.75	5.21	0.34	0.30
160	6.51	4.40	0.39	
200	6.93	4.20	0.50	
250	6.80	3.68	0.67	0.65
315	6.68	3.44	0.76	
400	6.35	3.26	0.80	
500	5.57	2.94	0.86	0.85
630	4.92	2.68	0.91	
800	4.94	2.58	0.99	
1000	5.40	2.69	1.00	1.00
1250	5.54	2.67	1.04	
1600	5.12	2.57	1.04	
2000	4.79	2.45	1.07	1.00
2500	4.39	2.34	1.07	
3150	3.74	2.10	1.12	
4000	3.17	1.88	1.15	1.00
5000	2.59	1.67	1.13	
6300*	1.95	1.36	1.18	
8000*	1.57	1.14	1.27	n/a
10000*	1.11	0.89	1.16	



α _w	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

The Pennine Collection - Sowerby

A premier IFR velvet collection, manufactured using 100% Trevira CS yarns for both the base layer and pile. The velvets are first manufactured as a 'V' weave double-layered cloth, which is then cut to create the tightly packed, laid pile for creating superior fabrics.

Fullness	Wall Cavity	Class	SAC Classification	Page
50%	350mm	A	0.95	129
100%	350mm	A	0.95	130

Plum

VEL700/3

Burgundy

VEL700/13

Red

VEL700/2

Gold

VEL700/12

Navy

VEL700/4

Royal

VEL700/7

Bottle

VEL700/8

Black

VEL700/1

Graphite

VEL700/6

Slate

VEL700/5

10

Colours Available

Approx Roll Length: 30m / 98ft

Width: 140cm / 55"

Weight: 550 g/m²

FR Rating: IFR

FR Certification: BS5867, M1, B1, IMO, EN13773

Fabric Thickness: 2.51 mm

Custom Dye Available*

*APPROX PILE HEIGHT - 2.70mm

*CUSTOM DYE price on application, 4 wk lead time, MOQ 30m



Caudan Arts Centre, Mauritius - The Pennine Collection - Sowerby (Custom Dye)

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: The Pennine Collection - Sowerby
Fullness: 50%
Cavity from Wall: 350mm

J&C Joel
Inspiration in every performance

Data Sheet 6

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 19/01/2019

Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar

Room with Sample: Temperature: 15.4 °C Humidity: 44 %RH Pressure: 1002 mbar

Sample Description: Sowerby Velvet - Single Layer - 50% fullness (Approx. weight 550g/m2) 350mm cavity from wall

Mounting Method: G - 350

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 7

Freq Hz	T1 sec	T2 sec	Absorp Coeff α_s	Practical Absorp Coeff #
50*	4.96	4.76	0.05	
63*	5.39	5.00	0.08	n/a
80*	7.08	6.22	0.11	
100	9.00	7.29	0.14	
125	7.30	5.48	0.25	0.30
160	6.60	4.30	0.44	
200	6.86	3.81	0.63	
250	7.22	3.63	0.75	0.75
315	6.99	3.36	0.84	
400	6.36	3.20	0.85	
500	5.64	3.06	0.82	0.85
630	5.09	2.70	0.95	
800	5.10	2.64	1.00	
1000	5.74	2.78	1.01	1.00
1250	5.63	2.74	1.01	
1600	5.18	2.54	1.08	
2000	4.76	2.37	1.12	1.00
2500	4.22	2.19	1.14	
3150	3.35	1.85	1.23	
4000	2.59	1.55	1.27	1.00
5000	2.04	1.25	1.47	
6300*	1.39	0.92	1.68	
8000*	1.14	0.78	1.77	n/a
10000*	0.80	0.58	2.04	

α_w 0.95

Class A

Calculated to EN ISO 11654:1997

NRC 0.95

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Sound Absorption Coefficient

Frequency, Hz	Absorption Coefficient
100	0.05
125	0.08
160	0.11
200	0.14
250	0.25
315	0.44
400	0.85
500	0.82
630	0.95
800	1.00
1000	1.01
1250	1.01
1600	1.08
2000	1.12
2500	1.14
3150	1.23
4000	1.27
5000	1.47

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: The Pennine Collection - Sowerby
Fullness: 100%
Cavity from Wall: 350mm

J&C Joel
Inspiration in every performance

Showcase

Data Sheet 5

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019

Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.3 °C Humidity: 44 %RH Pressure: 1002 mbar
Sample Description: Sowerby Velvet - Single Layer- 100% fullness (Approx. weight 550g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 6				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.56	0.10	
63*	5.39	5.02	0.08	n/a
80*	7.08	6.02	0.14	
100	9.00	6.99	0.17	
125	7.30	5.52	0.24	0.30
160	6.60	4.31	0.44	
200	6.86	3.94	0.59	
250	7.22	3.71	0.71	0.70
315	6.99	3.44	0.81	
400	6.36	3.14	0.88	
500	5.64	2.88	0.93	0.90
630	5.09	2.74	0.92	
800	5.10	2.67	0.97	
1000	5.74	2.74	1.04	1.00
1250	5.63	2.62	1.10	
1600	5.18	2.49	1.12	
2000	4.76	2.35	1.14	1.00
2500	4.22	2.14	1.20	
3150	3.35	1.84	1.24	
4000	2.59	1.52	1.33	1.00
5000	2.04	1.27	1.39	
6300*	1.39	0.93	1.61	
8000*	1.14	0.78	1.75	n/a
10000*	0.80	0.58	2.02	

Sound Absorption Coefficient

Frequency, Hz	Absorption Coefficient
50	0.10
63	0.08
80	0.14
100	0.17
125	0.24
160	0.44
200	0.59
250	0.71
315	0.81
400	0.88
500	0.93
630	0.92
800	0.97
1000	1.04
1250	1.10
1600	1.12
2000	1.14
2500	1.20
3150	1.24
4000	1.33
5000	1.39
6300	1.61
8000	1.75
10000	2.02

α_w 0.95
Class A
Calculated to EN ISO 11654:1997

NRC 0.95
Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5



Other Fabrics

Product	Page
Acoustic Molton	148
Acoustic Transparent	154
8pt Sharkstooth Gauze	158
Transition (Digital Print)	160
Digifoam	162

Acoustic Molton

A Molton that combines great masking properties with excellent acoustic absorption, also known as Calmuc.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	C	0.60	149
Flat	350mm	C	0.65	150
50%	350mm	A	0.90	151
100%	100mm	A	0.90	152
100%	350mm	A	0.95	153

Black

MOL030

Natural

MOL031

2

Colours Available

Approx Bale Length: 30m / 98ft

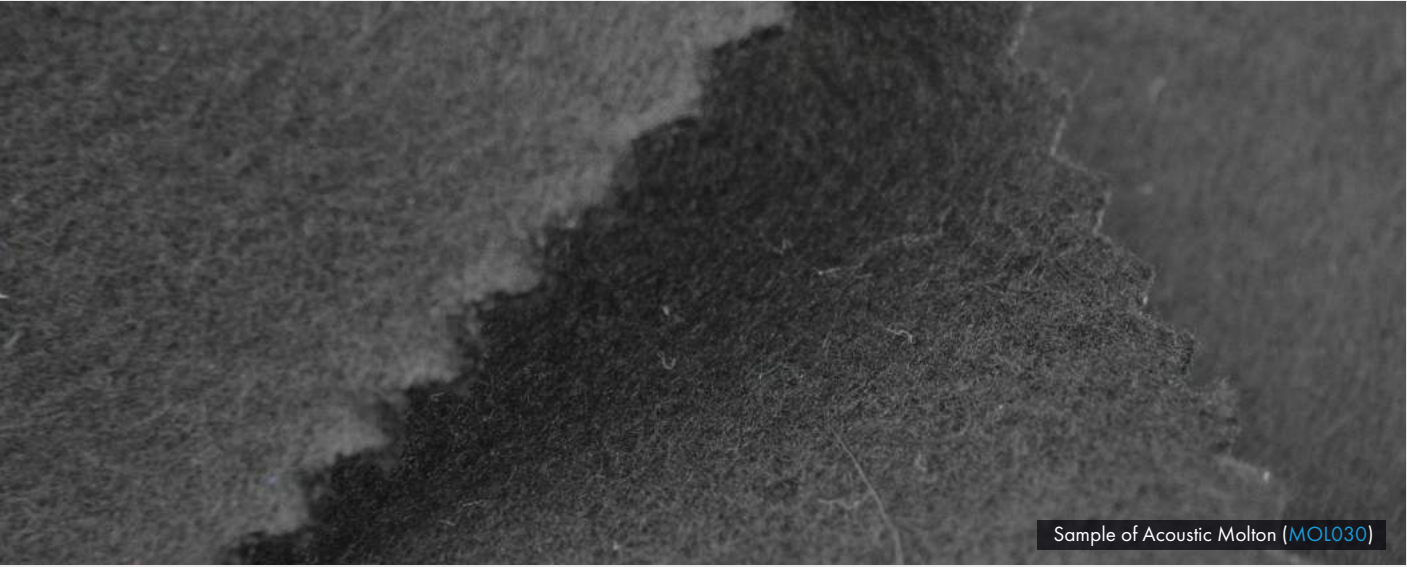
Width: 300cm / 118"

Weight: 500 g/m²

FR Rating: NDFR

FR Certification: BS5867, M1, B1

Custom Dye N/A



Sample of Acoustic Molton (MOL030)

Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Acoustic Molton
Fullness: Flat
Cavity from Wall: 100mm

J&C Joel
Inspiration in every performance

Data Sheet 20

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd

Test Date: 30/11/2020

Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar

Room with Sample: Temperature: 15.7 °C Humidity: 55 %RH Pressure: 1009 mbar

Sample Description: Acoustic Molton - Single Layer - Flat (Approx. Weight 500g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100

Sample Area: 9 m²

Chamber Volume: 300 m³

Test 20				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	5.23	-0.01	
63*	4.83	5.51	-0.14	n/a
80*	7.33	7.60	-0.03	
100	7.42	6.82	0.06	
125	7.17	6.47	0.08	0.10
160	6.75	5.78	0.14	
200	6.77	5.59	0.17	
250	6.80	5.13	0.26	0.30
315	6.65	4.48	0.40	
400	6.46	3.60	0.67	
500	5.63	3.19	0.74	0.75
630	5.00	2.83	0.83	
800	5.22	2.88	0.85	
1000	5.79	3.04	0.85	0.85
1250	5.75	3.08	0.82	
1600	5.33	3.00	0.79	
2000	4.93	2.95	0.73	0.75
2500	4.35	2.70	0.74	
3150	3.55	2.34	0.76	
4000	2.92	1.96	0.85	0.80
5000	2.34	1.68	0.82	
6300*	1.60	1.22	0.91	
8000*	1.30	1.05	0.78	n/a
10000*	0.93	0.77	0.92	

α_w 0.60(MH)

Class C

Calculated to EN ISO 11654:1997

NRC 0.65

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Sound Absorption Coefficient

Frequency, Hz	Absorption Coefficient
100	0.10
125	0.10
160	0.14
200	0.17
250	0.26
315	0.40
400	0.67
500	0.74
630	0.83
800	0.85
1000	0.85
1250	0.82
1600	0.79
2000	0.73
2500	0.74
3150	0.76
4000	0.80
5000	0.82
6300	0.91
8000	0.78
10000	0.92

α_w 0.60(MH)

Class C

Calculated to EN ISO 11654:1997

NRC 0.65

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v5

www.jcjoel.com

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Acoustic Test Report - Absorption

Absorption Class: C
Calculated to EN ISO 11654:1997
Fabric: Acoustic Molton
Fullness: Flat
Cavity from Wall: 350mm

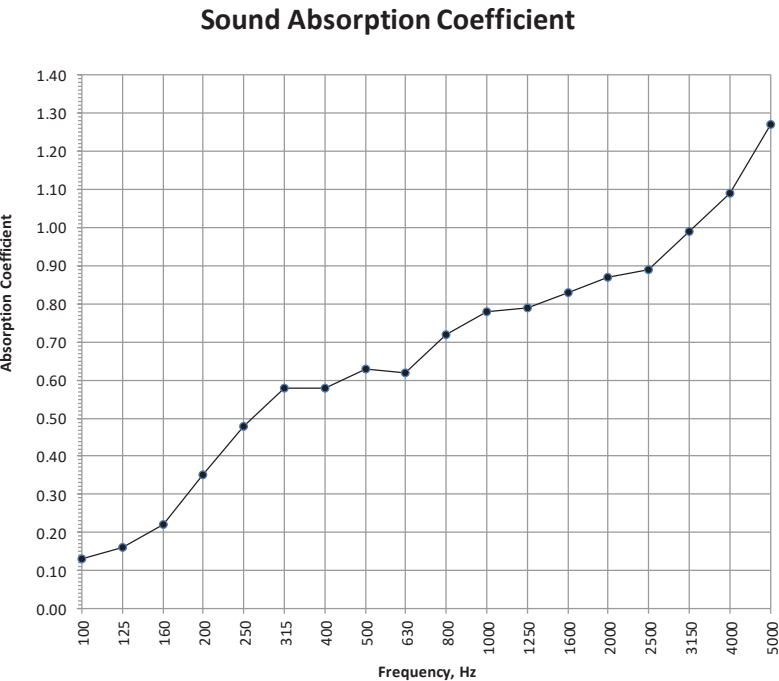


Data Sheet 9

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.5 °C Humidity: 43 %RH Pressure: 1001 mbar
Sample Description: Acoustic Molton - Single Layer - flat (Approx. weight 500g/m2) 350mm cavity from wall
Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 10				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.87	0.02	
63*	5.39	5.02	0.08	n/a
80*	7.08	6.76	0.04	
100	9.00	7.44	0.13	
125	7.30	6.03	0.16	0.15
160	6.60	5.23	0.22	
200	6.86	4.78	0.35	
250	7.22	4.43	0.48	0.45
315	6.99	4.00	0.58	
400	6.36	3.81	0.58	
500	5.64	3.42	0.63	0.60
630	5.09	3.23	0.62	
800	5.10	3.05	0.72	
1000	5.74	3.14	0.78	0.75
1250	5.63	3.08	0.79	
1600	5.18	2.86	0.83	
2000	4.76	2.65	0.87	0.85
2500	4.22	2.43	0.89	
3150	3.35	2.00	0.99	
4000	2.59	1.62	1.09	1.00
5000	2.04	1.30	1.27	
6300*	1.39	0.96	1.39	
8000*	1.14	0.80	1.52	n/a
10000*	0.80	0.59	1.79	



α _w	0.65(H)
Class C	
Calculated to EN ISO 11654:1997	
NRC	0.70
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Acoustic Molton
Fullness: 50%
Cavity from Wall: 350mm

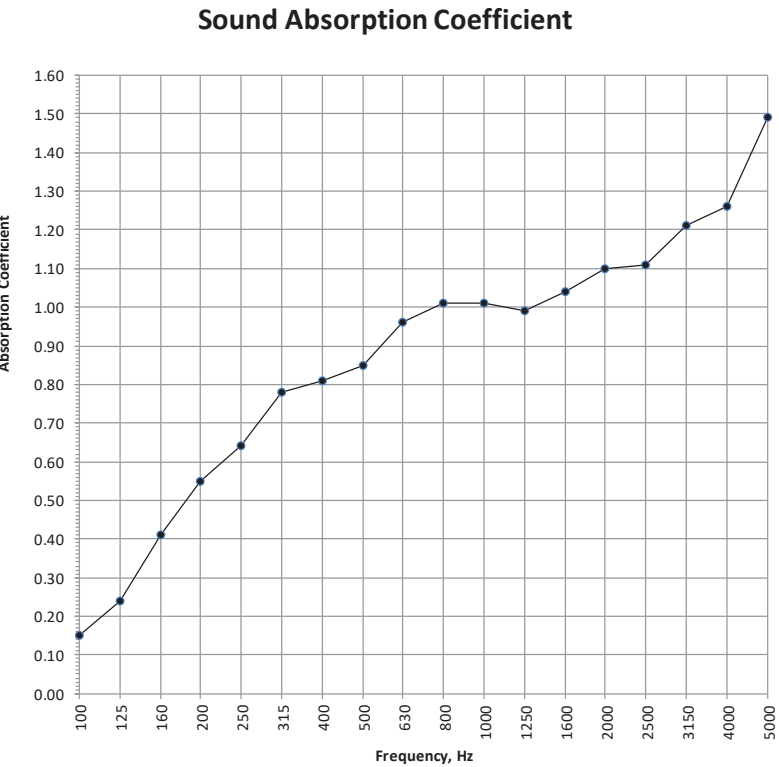


Data Sheet 8

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.4 °C Humidity: 43 %RH Pressure: 1001 mbar
Sample Description: Acoustic Molton - Single Layer - 50% fullness (Approx. weight 500g/m2) 350mm cavity from wall
Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 9				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.75	0.05	
63*	5.39	4.91	0.10	n/a
80*	7.08	6.53	0.07	
100	9.00	7.17	0.15	
125	7.30	5.54	0.24	0.25
160	6.60	4.40	0.41	
200	6.86	4.05	0.55	
250	7.22	3.91	0.64	0.65
315	6.99	3.50	0.78	
400	6.36	3.28	0.81	
500	5.64	3.01	0.85	0.85
630	5.09	2.69	0.96	
800	5.10	2.62	1.01	
1000	5.74	2.77	1.01	1.00
1250	5.63	2.77	0.99	
1600	5.18	2.58	1.04	
2000	4.76	2.38	1.10	1.00
2500	4.22	2.21	1.11	
3150	3.35	1.85	1.21	
4000	2.59	1.54	1.26	1.00
5000	2.04	1.23	1.49	
6300*	1.39	0.91	1.68	
8000*	1.14	0.77	1.77	n/a
10000*	0.80	0.59	1.77	



α _w	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Acoustic Molton
Fullness: 100%
Cavity from Wall: 100mm



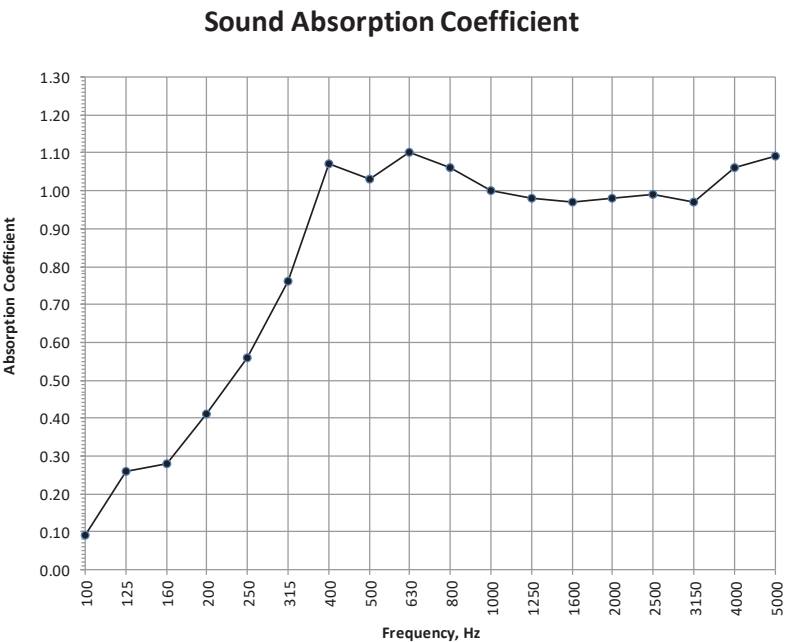
Data Sheet 19

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 30/11/2020
Empty Room: Temperature: 16.4 °C Humidity: 57 %RH Pressure: 1016 mbar
Room with Sample: Temperature: 15.7 °C Humidity: 55 %RH Pressure: 1009 mbar
Sample Description: Acoustic Molton - Single Layer - 100% Fullness (Approx. Weight 500g/m²) - 100mm Cavity From Wall

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 19				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	5.15	5.18	0.00	
63*	4.83	5.19	-0.08	n/a
80*	7.33	7.40	-0.01	
100	7.42	6.58	0.09	
125	7.17	5.33	0.26	0.20
160	6.75	4.99	0.28	
200	6.77	4.49	0.41	
250	6.80	3.99	0.56	0.60
315	6.65	3.45	0.76	
400	6.46	2.84	1.07	
500	5.63	2.72	1.03	1.00
630	5.00	2.49	1.10	
800	5.22	2.59	1.06	
1000	5.79	2.80	1.00	1.00
1250	5.75	2.82	0.98	
1600	5.33	2.73	0.97	
2000	4.93	2.60	0.98	1.00
2500	4.35	2.40	0.99	
3150	3.55	2.14	0.97	
4000	2.92	1.82	1.06	1.00
5000	2.34	1.55	1.09	
6300*	1.60	1.18	1.06	
8000*	1.30	1.00	1.04	n/a
10000*	0.93	0.76	1.01	



α _w	0.90
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.90
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Test Report - Absorption

Absorption Class: A
Calculated to EN ISO 11654:1997
Fabric: Acoustic Molton
Fullness: 100%
Cavity from Wall: 350mm



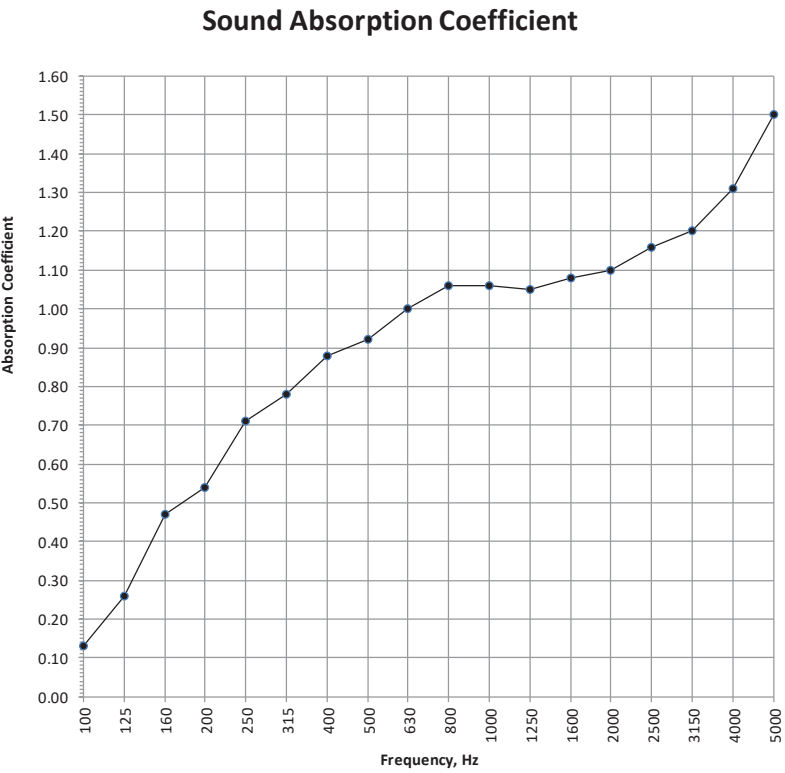
Data Sheet 7

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 19/01/2019
Empty Room: Temperature: 17.0 °C Humidity: 46 %RH Pressure: 1002 mbar
Room with Sample: Temperature: 15.4 °C Humidity: 44 %RH Pressure: 1001 mbar
Sample Description: Acoustic Molton - Single Layer - 100% fullness (Approx. weight 500 g/m2) 350mm cavity from wall

Mounting Method: G - 350
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 8				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.96	4.66	0.07	
63*	5.39	4.95	0.09	n/a
80*	7.08	6.47	0.07	
100	9.00	7.41	0.13	
125	7.30	5.44	0.26	0.30
160	6.60	4.19	0.47	
200	6.86	4.09	0.54	
250	7.22	3.73	0.71	0.70
315	6.99	3.49	0.78	
400	6.36	3.14	0.88	
500	5.64	2.90	0.92	0.95
630	5.09	2.64	1.00	
800	5.10	2.56	1.06	
1000	5.74	2.71	1.06	1.00
1250	5.63	2.69	1.05	
1600	5.18	2.53	1.08	
2000	4.76	2.39	1.10	1.00
2500	4.22	2.17	1.16	
3150	3.35	1.87	1.20	
4000	2.59	1.53	1.31	1.00
5000	2.04	1.24	1.50	
6300*	1.39	0.91	1.75	
8000*	1.14	0.78	1.77	n/a
10000*	0.80	0.58	2.04	



α _w	0.95
Class A	
Calculated to EN ISO 11654:1997	
NRC	0.95
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003	
T1, empty room reverberation time	
T2, room reverberation time with sample	

Practical absorption coefficient, BS EN ISO 11654:1997

v5

Acoustic Transparent

A fabric which allows sound to penetrate whilst masking visually, making it suitable for sub bass speaker openings in a stage.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	E	0.25	155
Flat	350mm	E	0.25	156

Black

ACT001

1

Colour Available

Approx Bale Length: 60m / 197ft

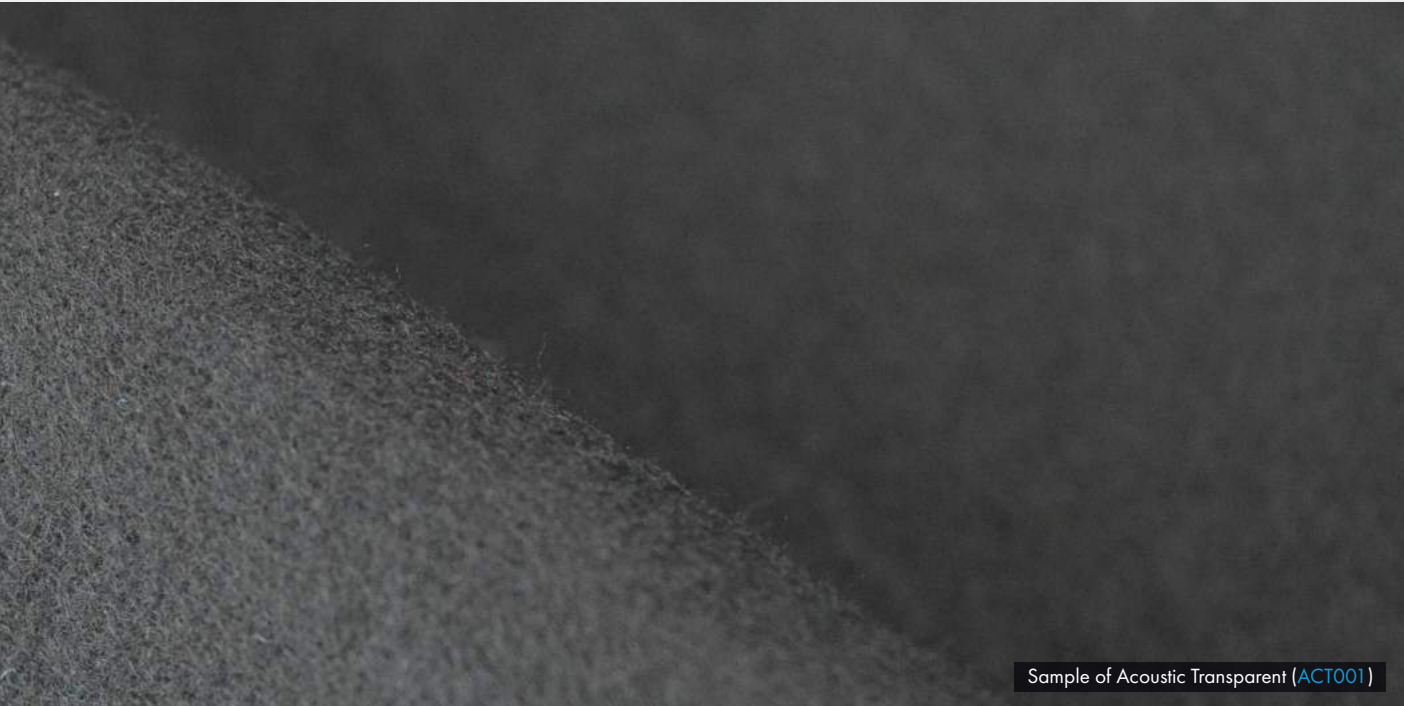
Width: 260cm / 102"

Weight: 140 g/m²

FR Rating: NDFR

FR Certification: BS5867, M1, B1, EN13773

Custom Dye N/A



Sample of Acoustic Transparent (ACT001)

Acoustic Test Report - Absorption

Absorption Class: E
Calculated to EN ISO 11654:1997
Fabric: Acoustic Transparent
Fullness: Flat
Cavity from Wall: 100mm



Data Sheet 32

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd

Test Date: 20/05/2014

Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar

Room with Sample: Temperature: 19.2 °C Humidity: 60 %RH Pressure: 1001 mbar

Sample Description: Acoustic Transparent – Single Layer – Flat (Approx. weight 140g/m²) – 100mm cavity from wall

Mounting Method: G-100

Sample Area: 9 m2

Chamber Volume: 300 m3

Test 34

Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	4.93	0.08	
63*	5.40	4.42	0.22	n/a
80*	6.56	6.34	0.03	
100	7.57	7.88	-0.03	
125	7.11	7.02	0.01	-0.00
160	6.42	6.49	-0.01	
200	7.12	6.59	0.06	
250	7.07	6.68	0.04	0.05
315	6.84	6.04	0.10	
400	6.46	5.62	0.12	
500	5.45	4.62	0.18	0.15
630	4.96	4.19	0.20	
800	5.47	4.25	0.28	
1000	5.91	4.45	0.30	0.30
1250	5.59	4.45	0.25	
1600	5.06	4.17	0.23	
2000	4.75	3.94	0.23	0.25
2500	4.34	3.55	0.27	
3150	3.64	3.08	0.26	
4000	3.09	2.62	0.30	0.30
5000	2.44	2.09	0.34	
6300*	1.79	1.59	0.34	
8000*	1.51	1.32	0.45	n/a
10000*	1.06	0.94	0.56	

a_w 0.25

Class E

Calculated to EN ISO 11654:1997

NRC 0.20

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time

T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Sound Absorption Coefficient

Acoustic Test Report - Absorption

Absorption Class: E
Calculated to EN ISO 11654:1997
Fabric: Acoustic Transparent
Fullness: Flat
Cavity from Wall: 350mm



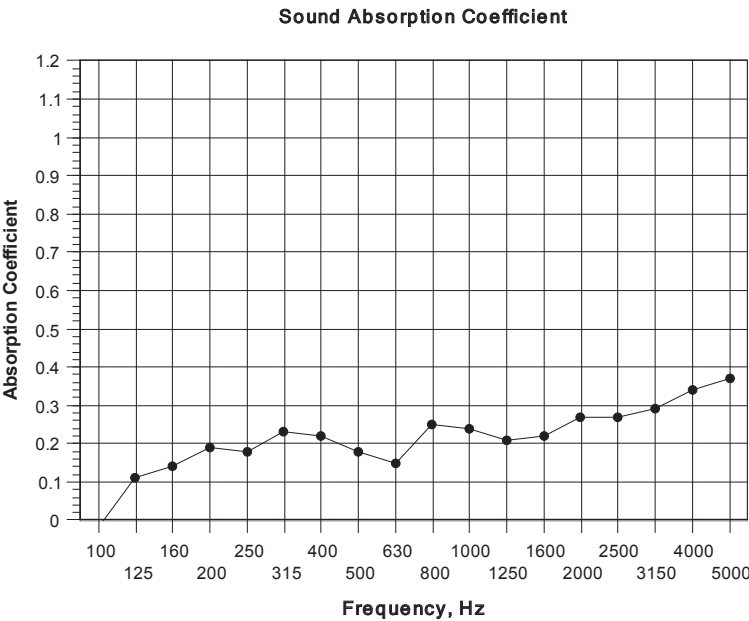
Data Sheet 31

The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J&C Joel Ltd
Test Date: 20/05/2014
Empty Room: Temperature: 19.0 °C Humidity: 62 %RH Pressure: 999 mbar
Room with Sample: Temperature: 19.2 °C Humidity: 60 %RH Pressure: 1001 mbar
Sample Description: Acoustic Transparent – Single Layer – Flat (Approx. weight 140g/m²) – 350mm cavity from wall

Mounting Method: G-350
Sample Area: 9 m2
Chamber Volume: 300 m3

Test 33				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	5.33	4.72	0.13	
63*	5.40	5.01	0.08	n/a
80*	6.56	5.81	0.11	
100	7.57	7.73	-0.02	
125	7.11	6.17	0.11	0.10
160	6.42	5.51	0.14	
200	7.12	5.66	0.19	
250	7.07	5.74	0.18	0.20
315	6.84	5.29	0.23	
400	6.46	5.12	0.22	
500	5.45	4.60	0.18	0.20
630	4.96	4.36	0.15	
800	5.47	4.36	0.25	
1000	5.91	4.66	0.24	0.25
1250	5.59	4.59	0.21	
1600	5.06	4.20	0.22	
2000	4.75	3.84	0.27	0.25
2500	4.34	3.54	0.27	
3150	3.64	3.02	0.29	
4000	3.09	2.56	0.34	0.35
5000	2.44	2.07	0.37	
6300*	1.79	1.57	0.38	
8000*	1.51	1.33	0.42	n/a
10000*	1.06	0.93	0.62	



a_w 0.25
Class E
Calculated to EN ISO 11654:1997
NRC 0.20
Calculated to ASTM C 423-01
* Denotes frequencies outside the range covered by BS EN ISO 354:2003
T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

v4.3

Showcase



BBC Hoddinott Hall, UK - Acoustic Transparent, covering acoustic duvets (ACT001)

8pt Sharkstooth Gauze

An industry staple 8pt cotton scrim, usually used for projection and lighting effects, 8pt Sharkstooth is also effective as an acoustically transparent material.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	N/A	0.05	159



Colours Available

Approx Bale Length: 58m / 190ft

Width: 1097cm / 432"

Weight: 100 g/m²

FR Rating: NDFR

FR Certification: BS5867, M1, B1, NFPA 701, AS1530.2/3

Custom Dye Available*

* CUSTOM DYE price on application, 3 wk lead time, MOQ of 58m



Acoustic Test Report - Absorption

Absorption Class: Not Classified
Calculated to EN ISO 11654:1997
Fabric: 8pt Sharkstooth Gauze
Fullness: Flat
Cavity from Wall: 100mm



Data Sheet 1

The Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Client: J & C Joel Ltd
Test Date: 18/09/2015

Empty Room: **Temperature:** 16.5 °C **Humidity:** 77 %RH **Pressure:** 1005 mbar
Room with Sample: **Temperature:** 16.5 °C **Humidity:** 77 %RH **Pressure:** 1005 mbar

Sample Description: Sharkstooth Gauze

Mounting Method: G-100
Sample Area: 10.5 m²
Chamber Volume: 300 m³

Test 2				
Freq Hz	T1 sec	T2 sec	Absorp Coeff	Practical Absorp Coeff #
50*	4.81	4.94	-0.03	
63*	4.65	4.49	0.04	n/a
80*	6.59	6.49	0.01	
100	7.01	6.97	0.00	
125	7.16	7.32	-0.01	-0.00
160	6.88	7.01	-0.01	
200	6.93	6.90	0.00	
250	7.59	7.53	0.00	0.00
315	7.27	6.96	0.03	
400	6.49	6.08	0.05	
500	5.38	5.10	0.05	0.05
630	5.15	4.84	0.06	
800	5.49	5.08	0.07	
1000	5.83	5.58	0.04	0.05
1250	5.66	5.34	0.05	
1600	5.21	4.94	0.05	
2000	4.85	4.67	0.04	0.05
2500	4.48	4.17	0.08	
3150	3.87	3.66	0.07	
4000	3.25	3.10	0.07	0.05
5000	2.60	2.49	0.08	
6300*	2.00	1.93	0.08	
8000*	1.68	1.63	0.08	n/a
10000*	1.14	1.09	0.19	

α_w 0.05

Not Classified

Calculated to EN ISO 11654:1997

NRC 0.05

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time
T2, room reverberation time with sample

Practical absorption coefficient, BS EN ISO 11654:1997

Sound Absorption Coefficient

Transition (Digital Print)

A lightweight foldable fabric, printed with multiple images to allow the transition from day to night when lit from behind. Tested to prove absence of acoustic absorption.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	N/A	0.05	161



Approx Roll Length:
30m / 98ft



Width:
500cm / 197"



Weight:
190 g/m²



FR Rating:
NDFR



FR Certification:
EN13501-1



Custom Dye
Print



Sample of Transition (PRT001)

Acoustic Test Report - Absorption

Absorption Class: Not Classified
Calculated to EN ISO 11654:1997
Fabric: Transition (Digital Print)
Fullness: Flat
Cavity from Wall: 100mm



Data Sheet 12
See SRL report 24694-SRL-RP-XT-001-P1 for full details
The Laboratory Measurement of Random Incidence Sound Absorption generally to BS EN ISO 354:2003

Client: J & C Joel
Test Date: 21/08/2020
Empty Room: **Temperature:** 21.5 °C **Humidity:** 67 %RH **Pressure:** 996 mbar
Room with Sample: **Temperature:** 21.6 °C **Humidity:** 66 %RH **Pressure:** 997 mbar
Sample Description: Transition (Digital Print) - Single Layer - Flat (Approx. Weight 190g/m²)

Mounting Method: G - 100
Sample Area: 9 m²
Chamber Volume: 300 m³

Test 14				
Freq Hz	T1 sec	T2 sec	Absorp Coeff α _s	Practical Absorp Coeff #
50*	4.83	4.98	-0.03	n/a
63*	5.22	5.38	-0.03	n/a
80*	7.65	7.89	-0.02	
100	7.54	7.35	0.02	
125	7.75	7.53	0.02	0.00
160	6.51	6.48	0.00	
200	6.93	7.17	-0.03	
250	6.80	6.69	0.01	0.00
315	6.68	6.47	0.03	
400	6.35	6.13	0.03	
500	5.57	5.50	0.01	0.05
630	4.92	4.69	0.05	
800	4.94	4.79	0.03	
1000	5.40	5.28	0.02	0.05
1250	5.54	5.29	0.05	
1600	5.12	4.96	0.03	
2000	4.79	4.65	0.03	0.05
2500	4.39	4.19	0.06	
3150	3.74	3.61	0.05	
4000	3.17	3.04	0.07	0.05
5000	2.59	2.50	0.07	
6300*	1.95	1.88	0.09	
8000*	1.57	1.48	0.19	n/a
10000*	1.11	1.09	0.05	

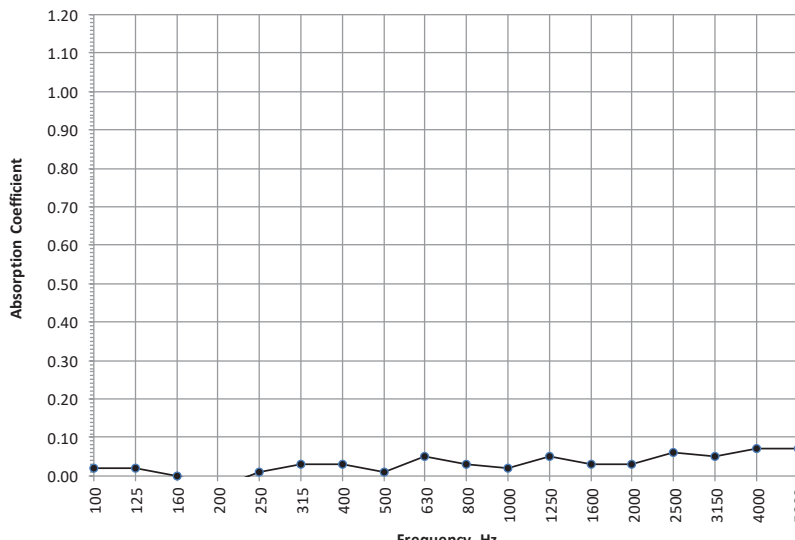
α_w 0.05
Not Classified
Calculated to EN ISO 11654:1997

NRC 0.00
Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003

T1, empty room reverberation time
T2, room reverberation time with sample

Sound Absorption Coefficient



Practical absorption coefficient, BS EN ISO 11654:1997

v5

Digifoam

A loop Nylon foam backed fabric, ideal for large format blue or green screens for the film production industry.

Fullness	Wall Cavity	Class	SAC Classification	Page
Flat	100mm	D	0.45	163
Flat	350mm	D	0.40	164



Colours Available

Approx Roll Length: 50m / 164ft

Width: 183cm / 72"

Weight: 230 g/m²

FR Rating: NDFR

FR Certification: BS5867

Custom Dye N/A



Guardians of the Galaxy - Digifoam (DIG004)

Acoustic Test Report - Absorption

Absorption Class: D
Calculated to EN ISO 11654:1997
Fabric: Digifoam
Fullness: Flat
Cavity from Wall: 100mm

J&C Joel
Inspiration in every performance

Data Sheet 1

Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: I	Test Room: Empty	With Sample
Client: J & C Joel Ltd	Air Temperature: 15.6 °C	15.4 °C
Test Date: 01/03/2023	Air Humidity: 48 % RH	47 % RH
Chamber Volume: 300.1 m ³	Air Pressure: 1021 mbar	1021 mbar
Mounting Method: G-100	Sample Area: 9 m ²	

Sample Description: Digifoam at 0% Fullness

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.23	0.06	n/a
63*	4.18	4.02	0.05	
80*	7.24	6.76	0.05	
100	6.90	6.56	0.04	0.05
125	6.66	6.29	0.05	
160	6.03	5.56	0.08	
200	6.46	5.54	0.14	0.20
250	6.79	5.54	0.18	
315	6.54	5.05	0.24	
400	6.06	4.49	0.31	0.40
500	5.54	3.87	0.42	
630	4.90	3.36	0.51	
800	4.93	3.38	0.51	0.45
1000	5.32	3.68	0.45	
1250	5.11	3.76	0.38	
1600	4.79	3.54	0.39	0.45
2000	4.33	3.13	0.47	
2500	3.79	2.84	0.46	
3150	3.01	2.37	0.46	0.50
4000	2.38	1.94	0.49	
5000	1.84	1.54	0.51	
6300 ^h	1.30	1.13	0.56	n/a
8000*	1.06	0.95	0.50	
10000*	0.73	0.67	0.58	

α_w 0.45

Class D

Calculated to BS EN ISO 11654:1997

NRC 0.40

Calculated to ASTM C 423-01

* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited

v1

Sound Absorption Coefficients

Acoustic Test Report - Absorption

Absorption Class: D
Calculated to EN ISO 11654:1997

Fabric: Digifoam
Fullness: Flat
Cavity from Wall: 350mm



Inspiration in every performance

Showcase

Data Sheet 2

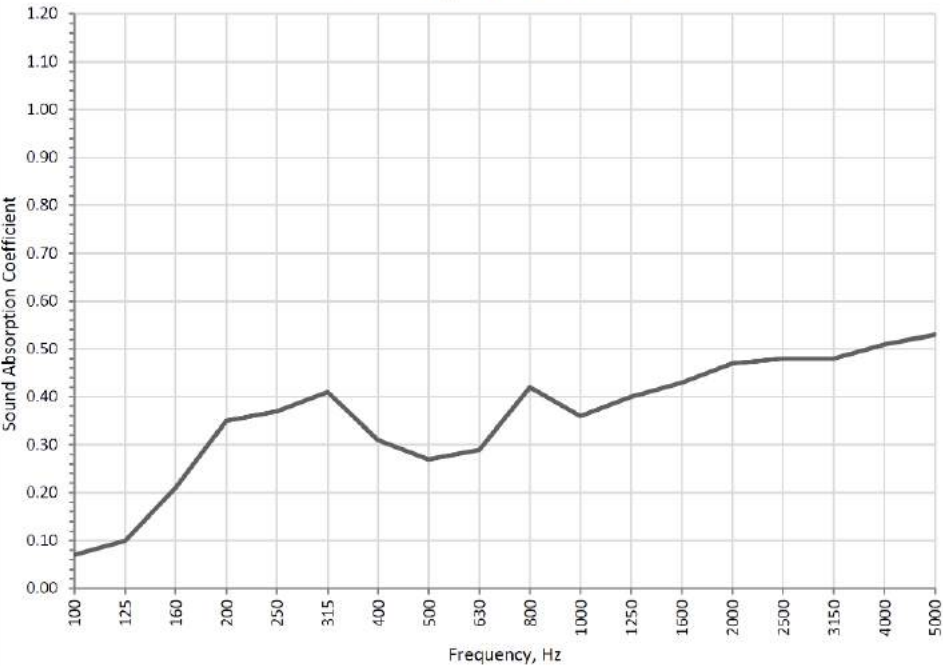
Laboratory Measurement of Random Incidence Sound Absorption to BS EN ISO 354:2003

Test Number: 2
Client: J & C Joel Ltd
Test Date: 01/03/2023
Chamber Volume: 300.1 m³
Mounting Method: G-350
Sample Description: Digifoam at 0% Fullness

Test Room:	Empty	With Sample
Air Temperature:	15.6 °C	15.4 °C
Air Humidity:	48 % RH	47 % RH
Air Pressure:	1021 mbar	1021 mbar
Sample Area:	9 m²	

Frequency Hz	T1, empty room reverberation time sec	T2, room reverberation time with sample sec	Sound Absorption Coefficient α_s	Practical Sound Absorption Coefficient α_p
50*	4.45	4.31	0.04	n/a
63*	4.18	4.07	0.04	
80*	7.24	6.41	0.10	
100	6.90	6.33	0.07	
125	6.66	5.96	0.10	
160	6.03	4.91	0.21	0.15
200	6.46	4.56	0.35	
250	6.79	4.66	0.37	
315	6.54	4.37	0.41	
400	6.06	4.50	0.31	
500	5.54	4.34	0.27	0.30
630	4.90	3.90	0.29	
800	4.93	3.58	0.42	
1000	5.32	3.94	0.36	
1250	5.11	3.70	0.40	
1600	4.79	3.46	0.43	0.40
2000	4.33	3.13	0.47	
2500	3.79	2.82	0.48	
3150	3.01	2.36	0.48	
4000	2.38	1.92	0.51	
5000	1.84	1.54	0.53	0.45
6300*	1.30	1.14	0.49	
8000*	1.06	0.96	0.47	
10000*	0.73	0.66	0.65	

Sound Absorption Coefficients



α_w	0.40
Class D	
Calculated to BS EN ISO 11654:1997	
NRC	0.35
Calculated to ASTM C 423-01	
* Denotes frequencies outside the range covered by BS EN ISO 354:2003 and not UKAS accredited	
v1	

Acoustic Drapery Insulation Reports

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Quality Assurance	
Project Title	The Laboratory Measurement of Sound Reduction Index of Various Drapes
Document Title	Technical Report
Client	J & C Joel Ltd
Client Address	Corporation Mill Corporation Street Sowerby Bridge, Halifax HX6 2QQ
Author	Richard Calvert
Checker	Richard Critchlow
Report Number	C/23171/T01

Summary

Tests have been done in SRL's Laboratory at Holbrook House, Sudbury, Suffolk, to determine the sound reduction index of various drapes in accordance with BS EN ISO 10140-2:2010

From these measurements the required results have been derived and are presented in both tabular and graphic form in Data Sheets 1 to 9.

The results are given in 1/3rd octave bands over the frequency range 50Hz to 10kHz, which is beyond that required by the test standard. Measurements outside the standard frequency range are not UKAS accredited.



Richard Calvert
Tester
For and on behalf of
SRL Technical Services Limited
Tel: 01787 247595
Email: rcalvert@srltsl.com



Richard Critchlow
Deputy Technical Manager

1.5 Instrumentation and Apparatus Used

Make	Description	Type
E D I	Microphone Multiplexer	
	Microphone Power Supply Unit	
Norwegian Electronics	Real Time Analyser	830
	Rotating Microphone Boom	231
Brüel & Kjaer	12mm Condenser Microphones	4166
	Windshields	UA0237
	Pre Amplifiers	2639, 2669C
	Microphone Calibrator	4231
	Omnipower Sound Source	4296
Larson Davis	12mm Condenser Microphone	2560
Celestion	Loudspeakers	100w
Douglas Curtis	Rotating Microphone Boom	
Oregon Scientific	Temperature & Humidity & Probe	THGR810
TOA	Graphic Equalizer	E-1231
QSC Audio	Power Amplifier	RMX 1450

1.6 References

BS EN ISO 717-1:2013	Rating of sound insulation in buildings and of building elements. Airborne Sound Insulation.
BS EN ISO 10140-2:2010	Laboratory measurement of sound insulation for building elements – Part 2: Measurement of airborne sound insulation.

2.0 Description of Test

2.1 Description of Sample

Various different drape materials were overlaid to build up different combinations. These were clamped to a wooden frame which was sealed to the test aperture. Descriptions are in the summary and data sheets. Drawing 1 shows a typical installation.

Sampling plan:	Enough for test only
Sample condition:	New
Details supplied by:	J & C Joel Ltd
Sample installed by:	J & C Joel Ltd

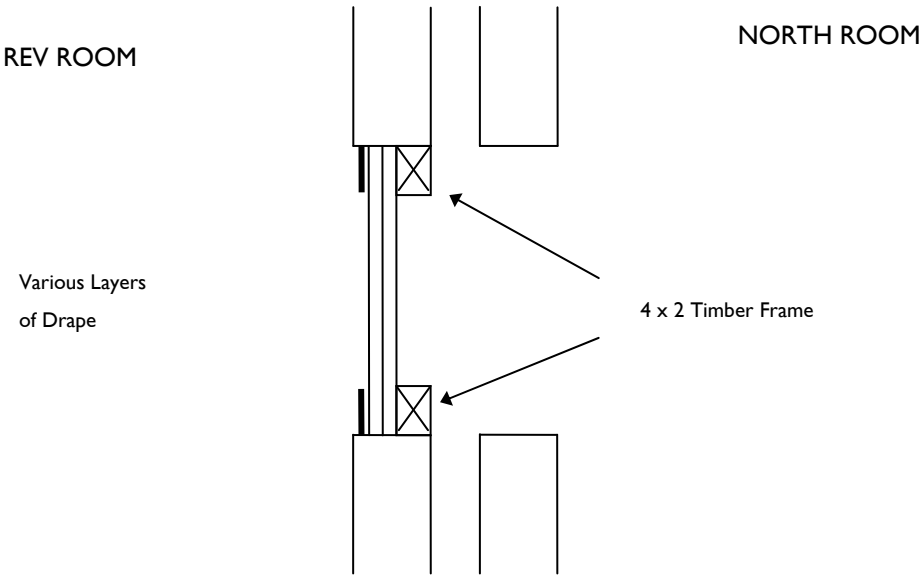
2.2 Sample Delivery date

18 September 2015

2.3 Test Procedures

The sample was mounted/located and tested in accordance with the relevant standard. The method and procedure is described in Appendix A. The measurement uncertainty is given in Appendix B.

Drawing 1



Appendix A -Test Method

Measurement of Sound Transmission in accordance with
BS EN ISO 10140-2: 2010 – TP33

In the laboratory, airborne sound transmission is determined from the difference in sound pressure levels measured across a test sample installed between two reverberant rooms. The difference in measured sound pressure levels is corrected for the amount of absorption in the receiving room. The test is done under conditions which restrict the transmission of sound by paths other than directly through the sample. The source sound field is randomly incident on the sample.

The test sample is located and sealed in an aperture within the brick dividing wall between the two rectangular reverberant or acoustically "live" rooms, both of which are constructed from 215mm brick with reinforced concrete floors and roofs. The brick wall has dimensions of 3.9m wide x 2.9m high and forms the whole of the common area between the two rooms.

One of the rooms termed the source room has a volume of 55 cubic metres and is isolated by the use of resilient mountings and seals, from the surrounding structure and the adjoining room. The adjoining receiving room has a volume of 50 cubic metres.

Broad band noise is produced in the source room from an electronic generator, power amplifier and loudspeaker. The resulting sound pressure levels in both rooms are sampled, filtered into one third octave band widths, integrated and averaged by means of a Real Time Analyser using a microphone on an oscillating microphone boom. The value obtained at any particular frequency is known as the equivalent sound pressure level for either source or receiving rooms. The change in level across the test sample is termed the equivalent sound pressure level difference, i.e.

D = L1 - L2

where

- D is the equivalent sound pressure level difference in dB
- L1 is the equivalent sound pressure level in the source room in dB
- L2 is the equivalent sound pressure level in the receiving room in dB

The Sound Reduction Index (R), also known by the American terminology Sound Transmission Loss, is defined as the number of decibels by which sound energy randomly incident on the test sample is reduced in transmitting through it and is given by the formula:

R = D + 10log10 $\frac{S}{A}$ in decibels

Where

- S is the area of the sample (m2)
- A is the total absorption in the receiving room (m2)

both dimensions being in consistent units

The Sound Reduction Index is an expression of the laboratory sound transmission performance of a particular element or construction. It is a function of the mass, thickness, sealing, method of mounting etc., and is independent of the overall area of the sample.

However, when a sample is installed on site and forms part of an enclosure of building, the sound insulation obtained will be dependent upon its surface area, the larger the area the greater the sound energy transmitted, as well as the absorption in the receiving area. In addition, the overall sound insulation of an enclosure is also determined by the sound transmission through other building elements, some of which may have an inferior performance to the sample. Because of this the potential Sound Reduction Index of a sample is not always fully realised in practice. A further consequence is that the Sound Reduction Index of a particular sample can only successfully be measured in a laboratory because only under such controlled conditions can the sound transmission path be limited to the sample under test.

Rw, C and Ctr have been calculated in accordance with the relevant section of
BS EN ISO 717-1:1997 from the results of laboratory tests carried out in accordance with
BS EN ISO 10140-2:2010.

Acoustic Test Report - Insulation

Decibel Reduction: 13 dB
(Calculated in accordance with BS EN ISO 717-1: 2013)
Fabrics: PVC, Wool Serge 800,
Wool Serge 565, PVC



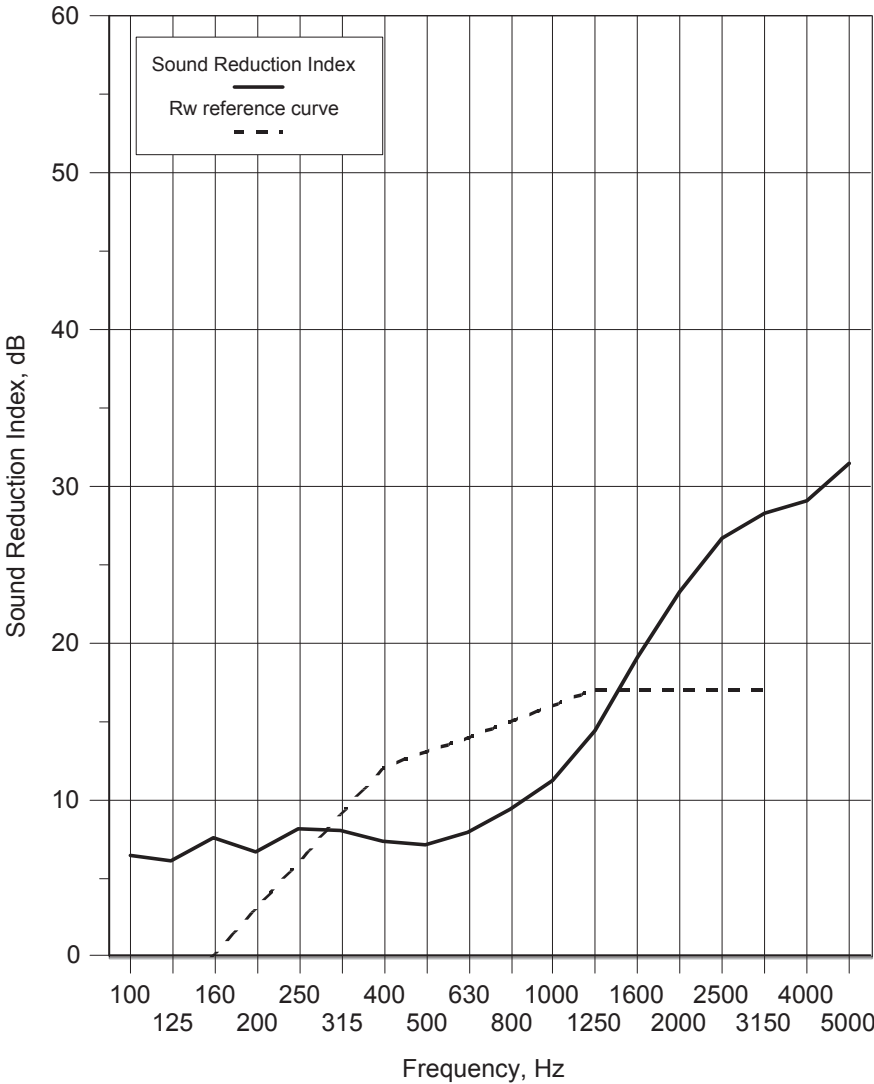
Data Sheet 1

Test Number : 2
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 2.37 kg/m2
Product: PVC (flat)
Identification: Wool Serge 800 (flat)
Wool Serge 565 (flat)
PVC (flat)

Test Room: Source Receiving
Air temperature: 16 °C 16.1 °C
Air humidity: 74 % 74 %
Volume: 115 m3 300 m3

Air Pressure: 1002 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	9.3	8.1
63+	7.9	
80+	7.3	
100	6.4	6.7
125	6.1	
160	7.6	
200	6.7	7.5
250	8.1	
315	8.0	
400	7.4	7.4
500	7.1	
630	7.9	
800	9.4	11.2
1000	11.2	
1250	14.4	
1600	19.1	22.0
2000	23.3	
2500	26.7	
3150	28.3	29.4
4000	29.1	
5000	31.5	
6300+	33.5	33.2
8000+	33.1	
10000+	33.1	
Average 100-3150	12.4	Version v2.1



Rating according to BS EN ISO 717-1:2013 * shows measurement corrected for background
Rw(C;Ctr)= 13 (-1;-3) dB + shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 16 dB
(Calculated in accordance with BS EN ISO 717-1: 2013)
Fabrics: Wool Serge 565, PVC,
Heavy Bump Interlining, PVC,
Wool Serge 565



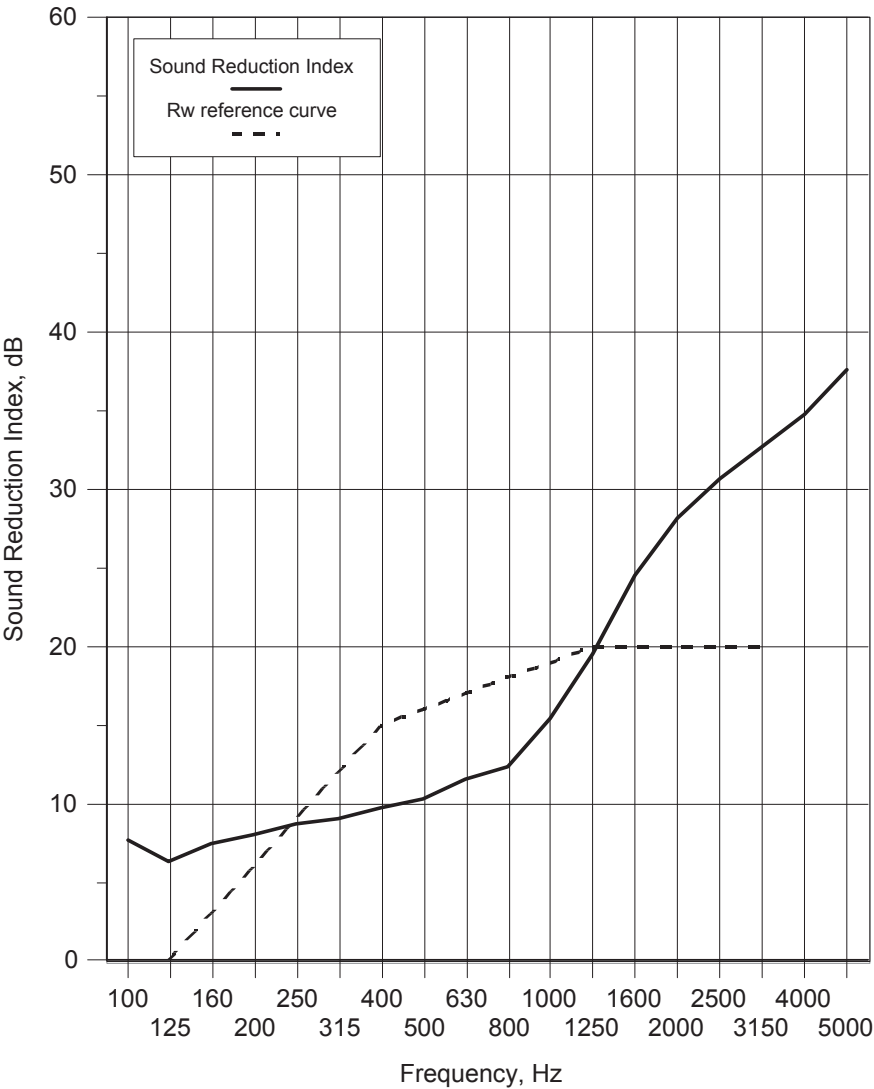
Data Sheet 2

Test Number : 3
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 2.83 kg/m2
Product: Wool Serge 565 (50% fullness)
Identification: PVC (flat)
Heavy Bump Interlining (flat)
PVC (flat)
Wool Serge 565 (flat)

Test Room: Source Receiving
Air temperature: 16 °C 16.2 °C
Air humidity: 74 % 74 %
Volume: 115 m3 300 m3

Air Pressure: 1002 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	8.3	7.7
63+	8.7	
80+	6.6	
100	7.7	7.1
125	6.3	
160	7.5	
200	8.0	8.5
250	8.7	
315	9.1	
400	9.7	10.5
500	10.3	
630	11.5	
800	12.4	14.9
1000	15.4	
1250	19.5	
1600	24.5	27.0
2000	28.2	
2500	30.7	
3150	32.7	34.6
4000	34.8	
5000	37.6	
6300+	39.1	38.9
8000+	38.8	
10000+	38.8	
Average 100-3150	15.1	Version v2.1



Rating according to BS EN ISO 717-1:2013 * shows measurement corrected for background
Rw(C;Ctr)= 16 (-1;-3) dB + shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 18 dB
Fabrics: Wool Serge 565, PVC, Heavy Bump Interlining, PVC, Wool Serge 565

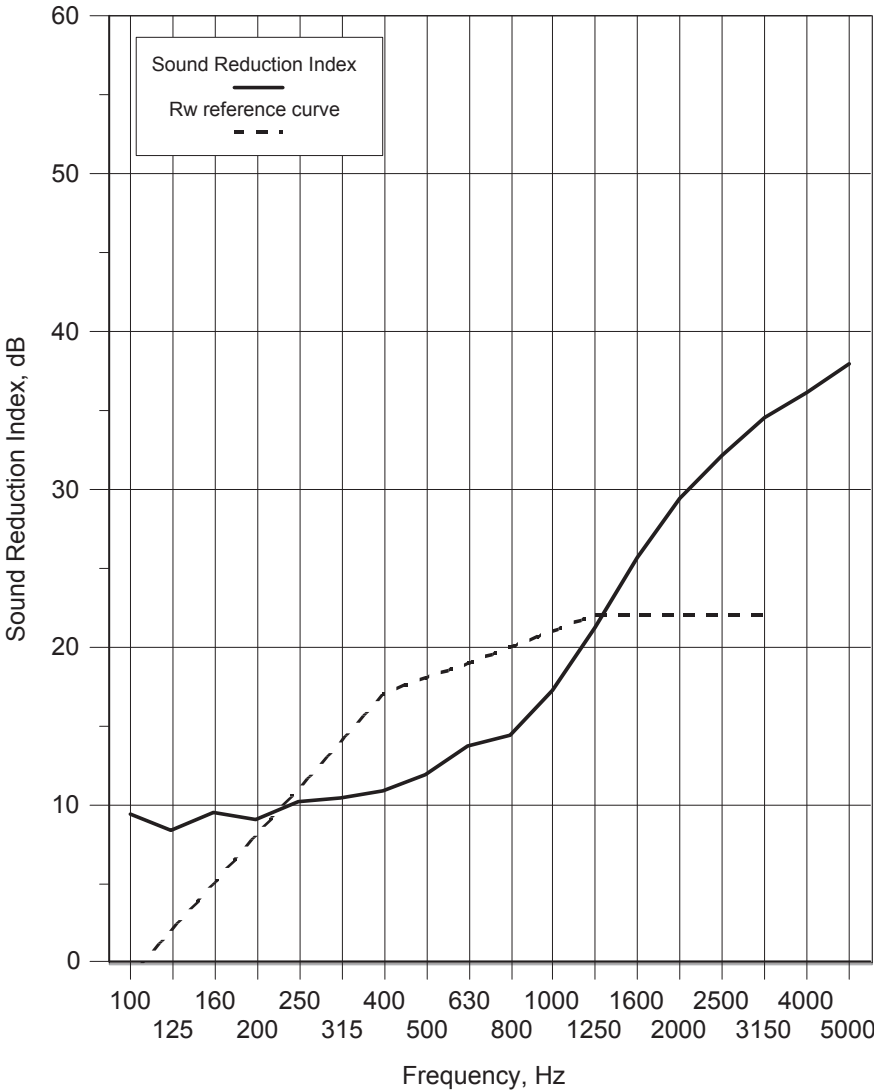


Data Sheet 3

Test Number : 4
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 3.11 kg/m2
Product: Wool Serge 565 (50% fullness)
Identification: PVC (flat), Heavy Bump Interlining (flat), PVC (flat), Wool Serge 565 (50% fullness)

Test Room: Air temperature: 16.1 °C, Air humidity: 73 %, Volume: 115 m3
Receiving: 16.3 °C, 74 %, 300 m3
Air Pressure: 1002 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	8.2	8.0
63+	8.3	
80+	7.6	
100	9.4	9.1
125	8.4	
160	9.5	
200	9.1	9.8
250	10.2	
315	10.4	
400	10.9	12.0
500	11.9	
630	13.7	
800	14.4	16.8
1000	17.3	
1250	21.2	
1600	25.7	28.3
2000	29.4	
2500	32.2	
3150	34.6	36.1
4000	36.2	
5000	38.0	
6300+	39.8	39.3
8000+	39.3	
10000+	38.8	
Average 100-3150	16.8	Version v2.1



Rating according to BS EN ISO 717-1:2013
Rw(C;Ctr)= 18 (-1;-3) dB

* shows measurement corrected for background
+ shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 16 dB
Fabrics: Wool Serge 565, PVC, Heavy Bump Interlining, PVC, Wool Serge 800

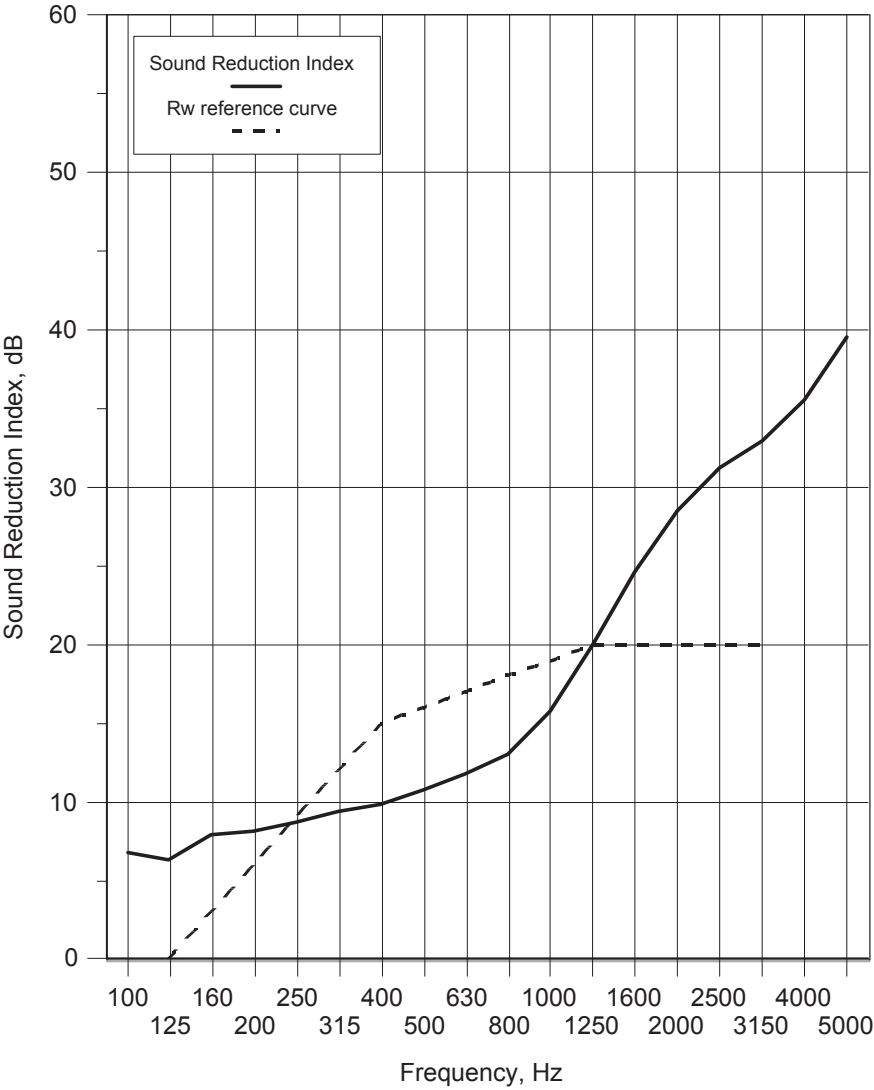


Data Sheet 4

Test Number : 5
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 3.06 kg/m2
Product: Wool Serge 565 (50% fullness)
Identification: PVC (flat), Heavy Bump Interlining (flat), PVC (flat), Wool Serge 800 (flat)

Test Room: Air temperature: 16.1 °C, Air humidity: 73 %, Volume: 115 m3
Receiving: 16.3 °C, 74 %, 300 m3
Air Pressure: 1002 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	6.9	6.5
63+	7.3	
80+	5.6	
100	6.8	7.0
125	6.3	
160	7.9	
200	8.1	8.7
250	8.7	
315	9.4	
400	9.9	10.7
500	10.8	
630	11.8	
800	13.0	15.4
1000	15.8	
1250	20.0	
1600	24.7	27.3
2000	28.5	
2500	31.2	
3150	33.0	35.3
4000	35.6	
5000	39.6	
6300+	41.7	40.6
8000+	41.2	
10000+	39.3	
Average 100-3150	15.4	Version v2.1



Rating according to BS EN ISO 717-1:2013
Rw(C;Ctr)= 16 (0;-3) dB

* shows measurement corrected for background
+ shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 17 dB
(Calculated in accordance with BS EN ISO 717-1: 2013)
Fabrics: Wool Serge 565, PVC,
Heavy Bump Interlining, PVC,
Wool Serge 800

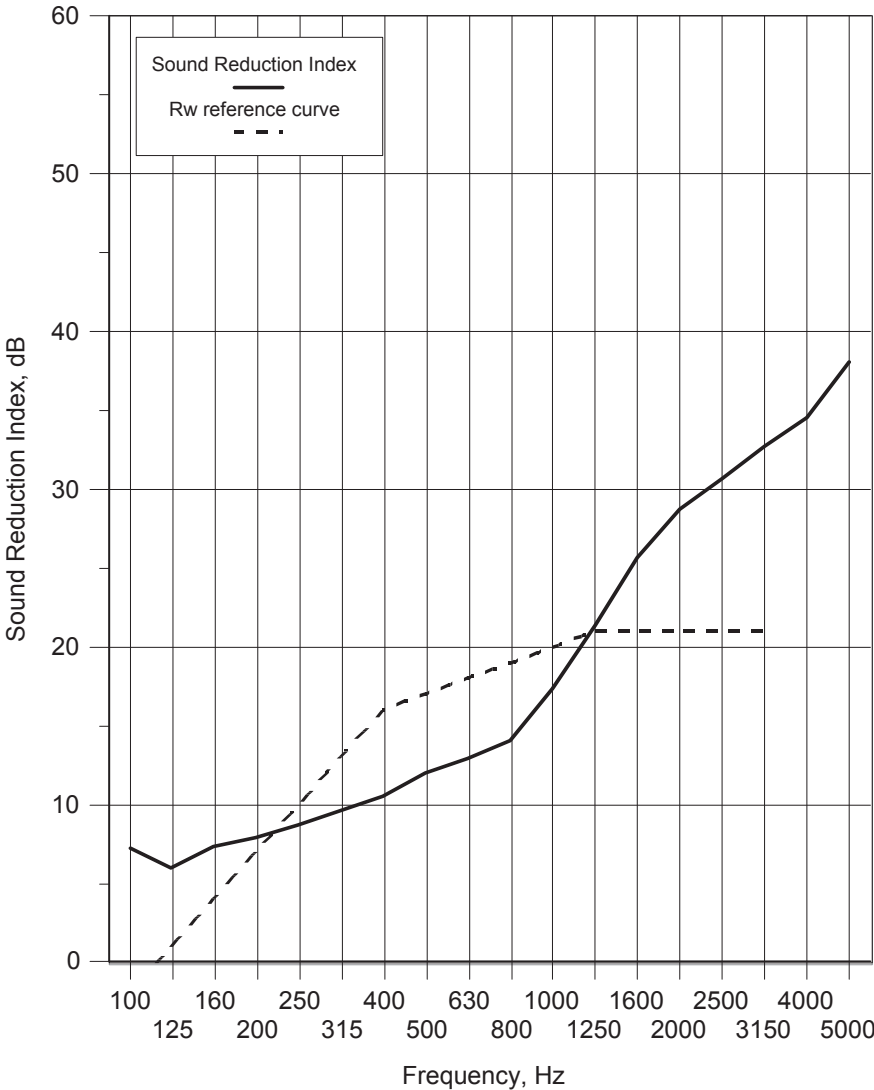


Data Sheet 5

Test Number : 6
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 3.46 kg/m2
Product: Wool Serge 565 (50% fullness)
Identification: PVC (flat)
Heavy Bump Interlining (flat)
PVC (flat)
Wool Serge 800 (50% fullness)

Test Room: Source Receiving
Air temperature: 16.1 °C 16.4 °C
Air humidity: 73 % 74 %
Volume: 115 m3 300 m3
Air Pressure: 1002 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	9.0	8.1
63+	9.4	
80+	6.5	
100	7.2	6.8
125	6.0	
160	7.3	
200	7.9	8.7
250	8.7	
315	9.6	
400	10.5	11.7
500	12.0	
630	12.9	
800	14.1	16.7
1000	17.4	
1250	21.3	
1600	25.7	27.9
2000	28.7	
2500	30.7	
3150	32.7	34.6
4000	34.6	
5000	38.1	
6300+	39.8	39.9
8000+	39.8	
10000+	40.2	
Average 100-3150	15.8	Version v2.1



Rating according to BS EN ISO 717-1:2013

Rw(C;Ctr)= 17 (-1;-3) dB

* shows measurement corrected for background

+ shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 16 dB
(Calculated in accordance with BS EN ISO 717-1: 2013)
Fabrics: Wool Serge 565,
PVC, Heavy Bump Interlining,
PVC, Bolton Twill

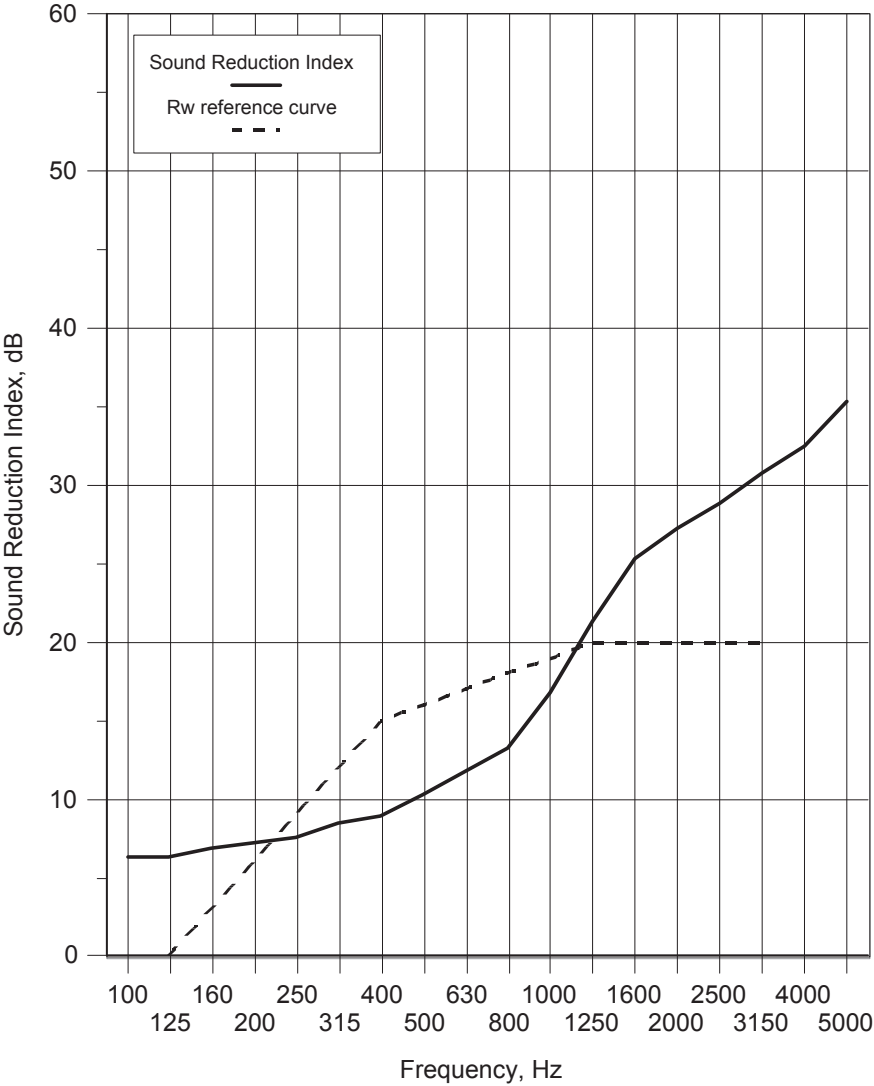


Data Sheet 6

Test Number : 7
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 2.64 kg/m2
Product: Wool Serge 800 (50% fullness)
Identification: PVC (flat)
Heavy Bump Interlining (flat)
PVC (flat)
Bolton Twill (50% fullness)

Test Room: Source Receiving
Air temperature: 16.1 °C 16.4 °C
Air humidity: 72 % 74 %
Volume: 115 m3 300 m3
Air Pressure: 1003 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	8.0	7.3
63+	8.8	
80+	5.7	
100	6.3	6.5
125	6.3	
160	6.9	
200	7.2	7.8
250	7.6	
315	8.5	
400	8.9	10.2
500	10.3	
630	11.8	
800	13.3	16.0
1000	16.8	
1250	21.3	
1600	25.3	26.9
2000	27.3	
2500	28.9	
3150	30.8	32.5
4000	32.5	
5000	35.3	
6300+	37.5	37.6
8000+	37.6	
10000+	37.7	
Average 100-3150	14.8	Version v2.1



Rating according to BS EN ISO 717-1:2013

Rw(C;Ctr)= 16 (-1;-3) dB

* shows measurement corrected for background

+ shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 16 dB
(Calculated in accordance with BS EN ISO 717-1 : 2013)
Fabrics: Empress, PVC,
Heavy Bump Interlining, PVC,
Bolton Twill



Data Sheet 7

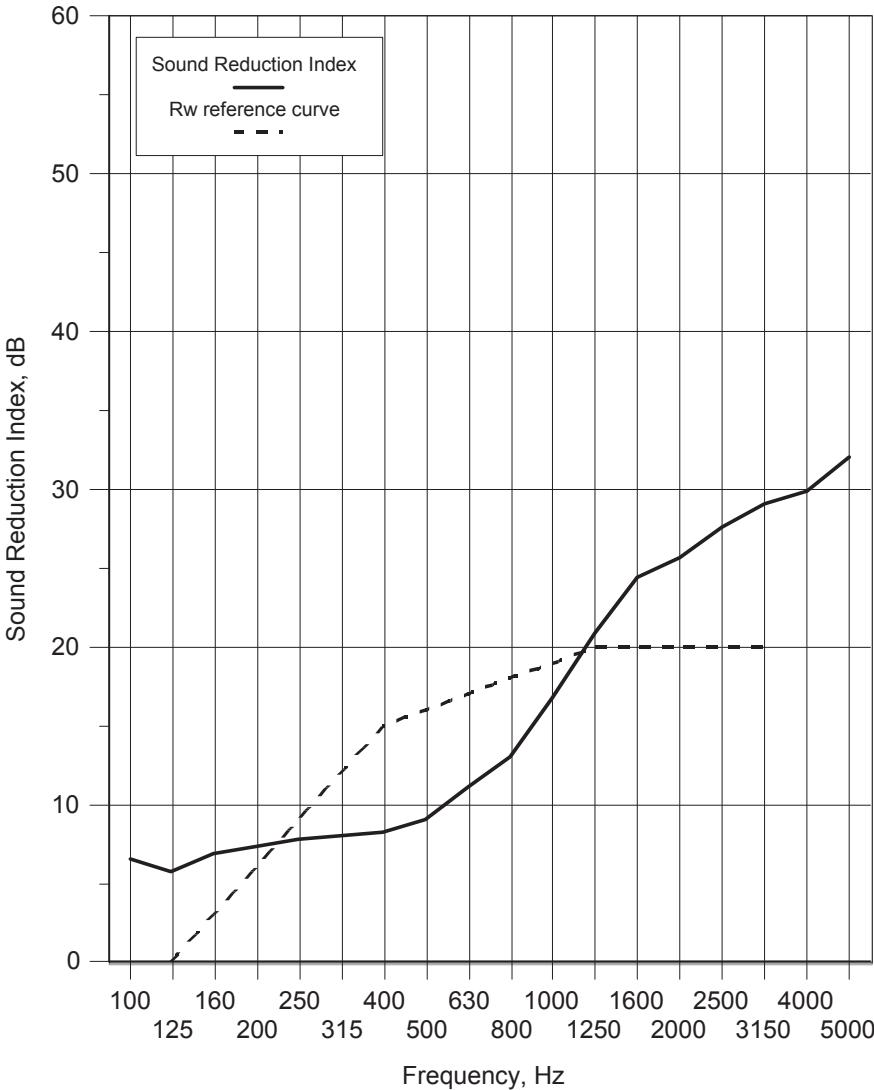
Test Number : 8
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 2.64 kg/m2
Product Empress Velvet (50% fullness)
Identification: PVC (flat)
Heavy Bump Interlining (flat)
PVC (flat)
Bolton Twill (50% fullness)

Test Room:
Air temperature: 16.1 °C
Air humidity: 72 %
Volume: 115 m3

Receiving
16.4 °C
74 %
300 m3

Air Pressure: 1004 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	7.7	7.2
63+	7.7	
80+	6.3	
100	6.5	6.4
125	5.8	
160	6.9	
200	7.3	7.7
250	7.8	
315	8.0	
400	8.3	9.3
500	9.1	
630	11.1	
800	13.0	15.8
1000	16.8	
1250	20.9	
1600	24.4	25.7
2000	25.7	
2500	27.6	
3150	29.1	30.2
4000	29.9	
5000	32.0	
6300+	34.5	33.9
8000+	33.8	
10000+	33.5	
Average 100-3150	14.3	Version v2.1



Rating according to BS EN ISO 717-1:2013
Rw(C;Ctr)= 16 (-1;-4) dB

* shows measurement corrected for background
+ shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 17 dB
(Calculated in accordance with BS EN ISO 717-1 : 2013)
Fabrics: Empress,
Heavy Bump Interlining and PVC
Heavy Bump Interlining and PVC
Heavy Bump Interlining, Bolton Twill



Data Sheet 8

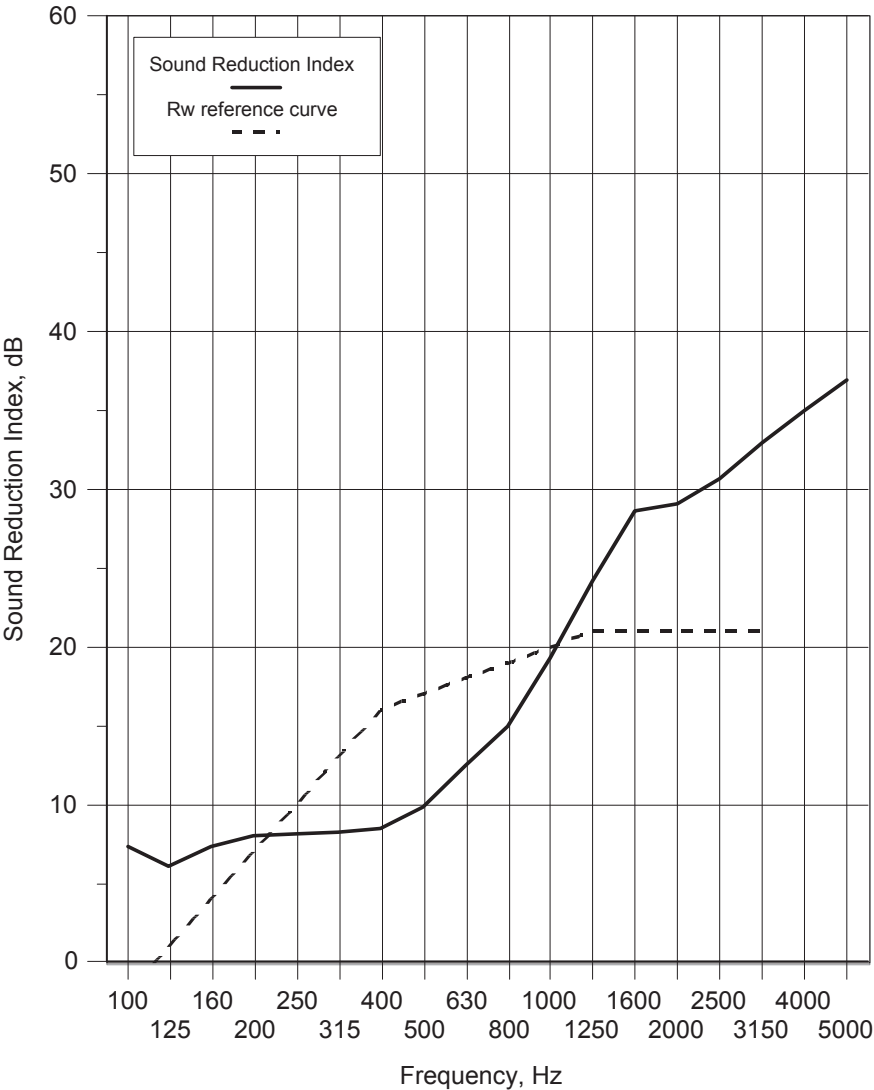
Test Number : 9
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 3.54 kg/m2
Product Empress Velvet (50% fullness)
Identification: Heavy Bump Interlining (flat) and PVC (flat)
Heavy Bump Interlining (flat) and PVC (flat)
Heavy Bump Interlining (flat)
Bolton Twill (50% fullness)

Test Room:
Air temperature: 16.3 °C
Air humidity: 72 %
Volume: 115 m3

Receiving
16.5 °C
76 %
300 m3

Air Pressure: 1005 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	8.6	8.2
63+	9.0	
80+	7.2	
100	7.4	6.9
125	6.1	
160	7.3	
200	8.0	8.1
250	8.1	
315	8.3	
400	8.5	10.0
500	9.9	
630	12.5	
800	15.0	18.0
1000	19.3	
1250	24.2	
1600	28.6	29.4
2000	29.1	
2500	30.7	
3150	33.0	34.7
4000	35.0	
5000	37.0	
6300+	38.7	39.1
8000+	39.0	
10000+	39.6	
Average 100-3150	16.0	Version v2.1



Rating according to BS EN ISO 717-1:2013
Rw(C;Ctr)= 17 (-1;-4) dB

* shows measurement corrected for background
+ shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 17 dB
(Calculated in accordance with BS EN ISO 717-1:2013)
Fabrics: Wool Serge 565,
Heavy Bump Interlining and PVC
Heavy Bump Interlining and PVC
Heavy Bump Interlining, Bolton Twill

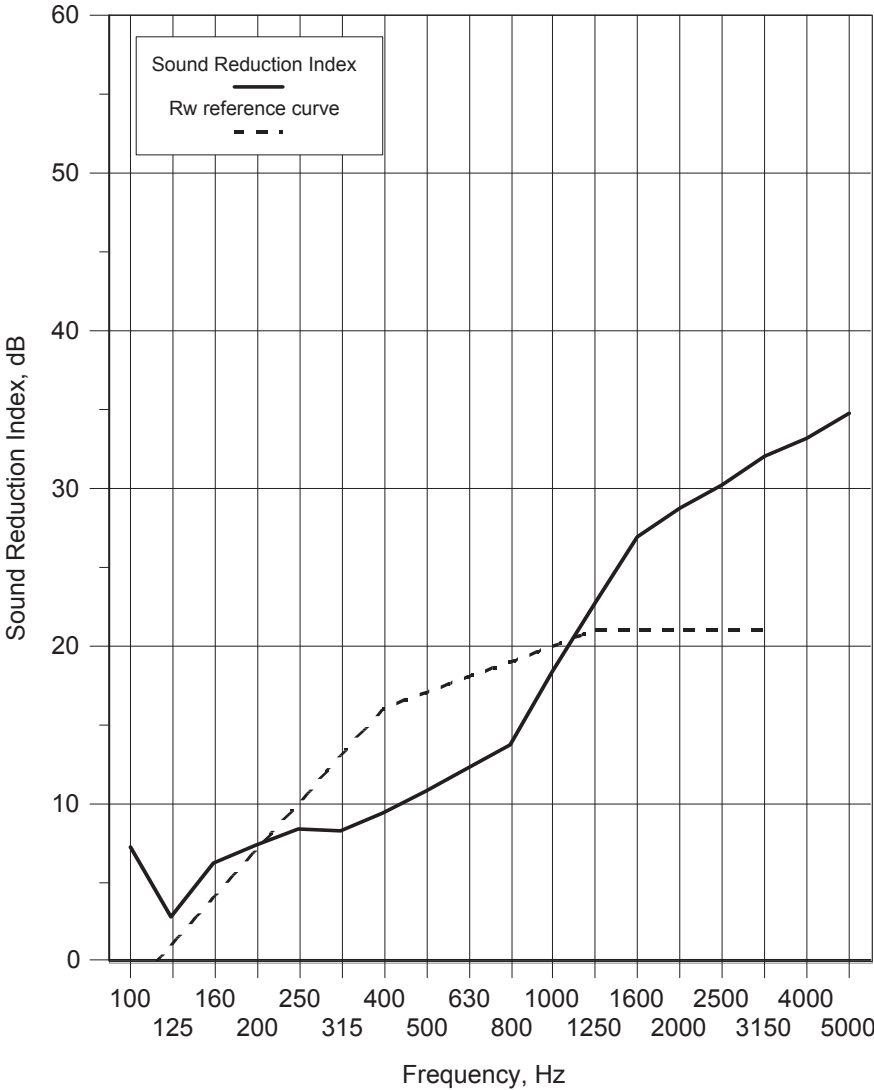


Data Sheet 9

Test Number : 10
Client: J & C Joel Ltd
Test Date: 18/09/2015
Sample height: 2.2 m
Sample width: 2 m
Sample weight: 3.46 kg/m2
Product: Wool Serge 565 (50% fullness)
Identification: Heavy Bump Interlining (flat) and PVC (flat)
Heavy Bump Interlining (flat) and PVC (flat)
Heavy Bump Interlining (flat)
Bolton Twill (50% fullness)

Test Room: Air temperature: 16.3 °C
Air humidity: 72 %
Volume: 115 m3
Receiving: 16.5 °C
76 %
300 m3
Air Pressure: 1005 mbar

Freq f Hz	Sound Reduction Index, dB	
	1/3 Oct	1/1 Oct
50+	8.4	8.6
63+	9.2	
80+	8.1	
100	7.2	5.0
125	2.8	
160	6.2	
200	7.3	8.0
250	8.4	
315	8.3	
400	9.4	10.7
500	10.8	
630	12.2	
800	13.7	16.8
1000	18.4	
1250	22.7	
1600	26.9	28.5
2000	28.8	
2500	30.2	
3150	32.0	33.2
4000	33.2	
5000	34.8	
6300+	36.7	36.0
8000+	35.9	
10000+	35.4	
Average 100-3150	15.3	Version v2.1



Rating according to BS EN ISO 717-1:2013
Rw(C;Ctr)= 17 (-1;-4) dB

* shows measurement corrected for background
+ shows frequency beyond standard and not UKAS accredited

Acoustic Test Report - Insulation

Decibel Reduction: 13 dB
(Calculated in accordance with BS EN ISO 717-1:2013)
Fabrics: Wool Serge 565,
PVC Screen,
Wool Serge 565



Data Sheet 1

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

Test Number: I
Client: J&C Joel Ltd
Test Date: 28/02/2023
Sample Height: 2.20 m
Sample Width: 2.00 m
Sample Weight: 1.6 kg/m²

Test Room: Air Temperature: 11.3 °C
Air Humidity: 53 %
Volume: 115 m³
Receiving: 15.4 °C
46 %
300.1 m³
Air Pressure: 1023 mbar

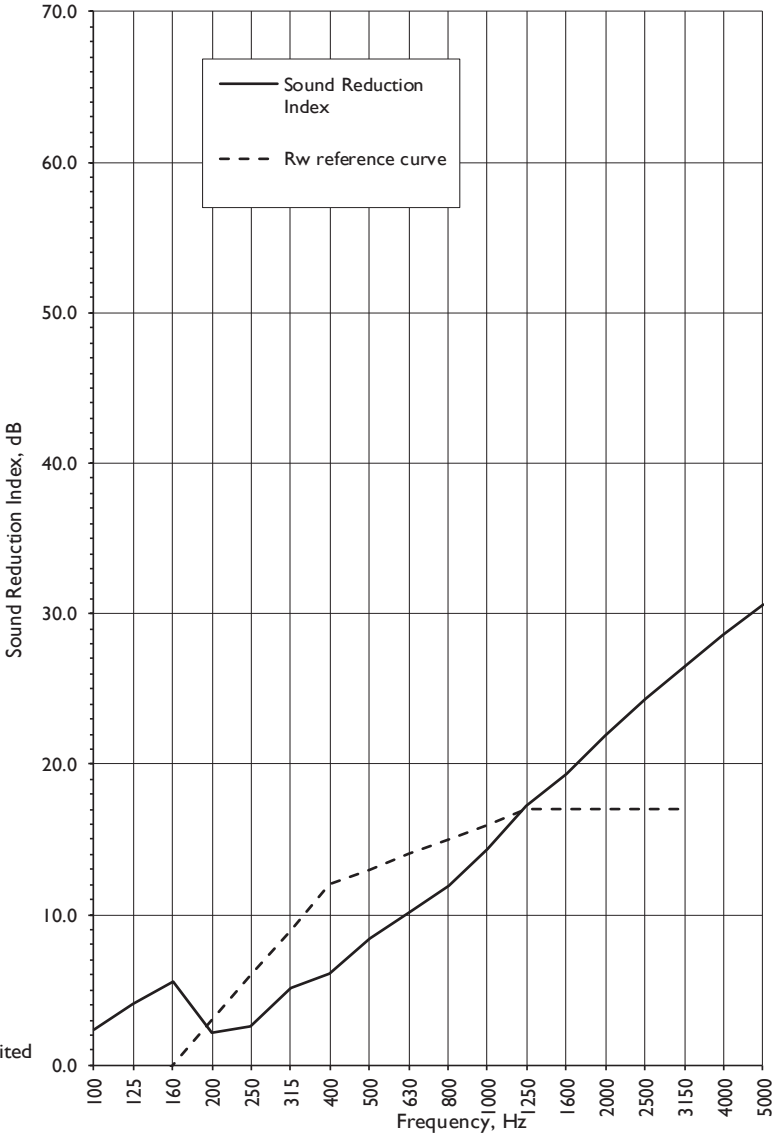
Product: 1st Layer - Wool Serge 565g/m² at 50% Fullness
2nd Layer - PVC Screen 500g/m² at 0% Fullness
Identification: 3rd Layer - Wool Serge 565g/m² at 50% Fullness

Frequency Hz	Sound Reduction Index, dB	
	1/3 Oct	Octave
50+	5.2	4.3
63+	4.4	
80+	3.5	
100	2.4	3.8
125	4.1	
160	5.5	
200	2.2	3.1
250	2.6	
315	5.1	
400	6.1	7.9
500	8.4	
630	10.1	
800	11.9	14.0
1000	14.4	
1250	17.2	
1600	19.4	21.4
2000	21.9	
2500	24.3	
3150	26.5	28.2
4000	28.6	
5000	30.6	
6300+	33.0	34.2
8000+	34.3	
10000+	35.7	
Average 100-3150	11.4	SRL Version 1.1

* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 13 (-1;-3) dB



Acoustic Test Report - Insulation

Decibel Reduction: 16 dB
(Calculated in accordance with BS EN ISO 717-1:2013)
Fabrics: Wool Serge 565, PVC Screen, Acoustic Molton, PVC Screen, Wool Serge 565



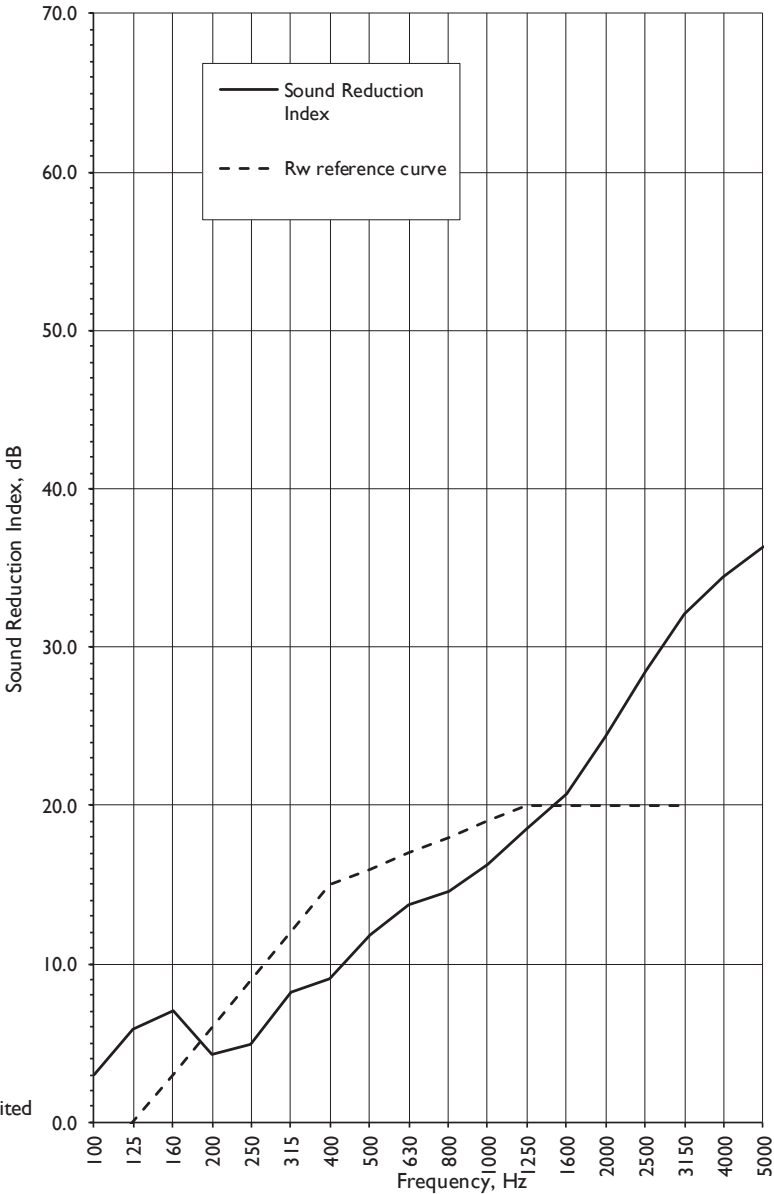
Data Sheet 2

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

Test Number:	2	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	11.3 °C	15.4 °C
Test Date:	28/02/2023	Air Humidity:	53 %	46 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1023 mbar	
Sample Weight:	2.6 kg/m²			

Product Identification: 1st Layer - Wool Serge 565g/m² at 50% Fullness 4th Layer - PVC Screen 500g/m² at 0% Fullness
2nd Layer - PVC Screen 500g/m² at 0% Fullness 5th Layer - Wool Serge 565g/m² at 50% Fullness
3rd Layer - Acoustic Molton 500g/m² at 0% Fullness

Frequency Hz	Sound Reduction Index, dB	
	1/3 Oct	Octave
50+	6.2	5.9
63+	6.4	
80+	5.2	
100	3.0	5.0
125	5.9	
160	7.0	
200	4.3	5.5
250	4.9	
315	8.2	
400	9.1	11.1
500	11.8	
630	13.7	
800	14.6	16.2
1000	16.3	
1250	18.5	
1600	20.7	23.4
2000	24.3	
2500	28.5	
3150	32.1	33.9
4000	34.4	
5000	36.3	
6300+	36.9	37.2
8000+	37.3	
10000+	37.5	
Average 100-3150	13.9	SRL Version 1.1



* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 16 (-1;-4) dB

Acoustic Test Report - Insulation

Decibel Reduction: 13 dB
(Calculated in accordance with BS EN ISO 717-1:2013)
Fabrics: Coliseum, PVC Screen Coliseum



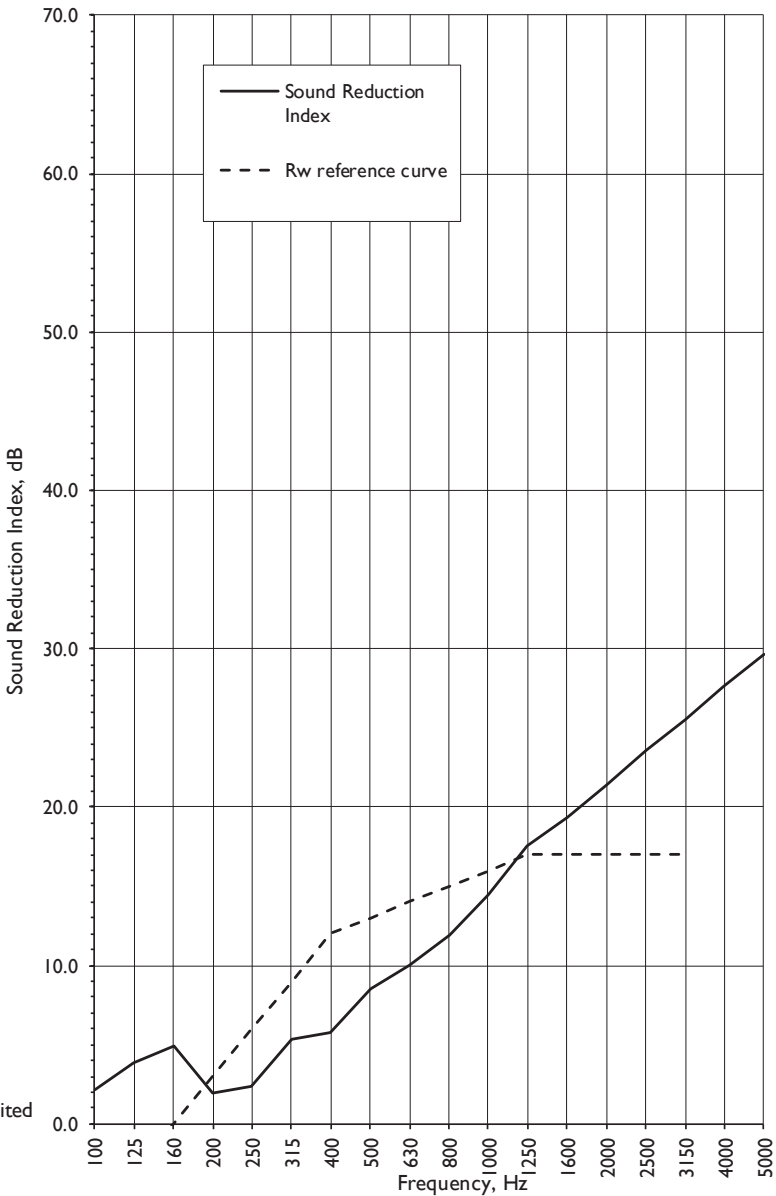
Data Sheet 3

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

Test Number:	3	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	11.3 °C	15.4 °C
Test Date:	28/02/2023	Air Humidity:	53 %	46 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1023 mbar	
Sample Weight:	1.5 kg/m²			

Product Identification: 1st Layer - Coliseum Velvet 500g/m² at 50% Fullness
2nd Layer - PVC Screen 500g/m² at 0% Fullness
3rd Layer - Coliseum Velvet 500g/m² at 50% Fullness

Frequency Hz	Sound Reduction Index, dB	
	1/3 Oct	Octave
50+	5.2	4.1
63+	4.3	
80+	3.0	
100	2.2	3.5
125	3.8	
160	4.9	
200	1.9	3.0
250	2.4	
315	5.3	
400	5.8	7.7
500	8.5	
630	10.0	
800	11.9	14.1
1000	14.5	
1250	17.5	
1600	19.3	21.1
2000	21.4	
2500	23.6	
3150	25.5	27.2
4000	27.6	
5000	29.6	
6300+	32.0	33.5
8000+	33.8	
10000+	35.3	
Average 100-3150	11.2	SRL Version 1.1



* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 13 (-1;-3) dB

Acoustic Test Report - Insulation

Decibel Reduction: 15 dB
(Calculated in accordance with BS EN ISO 717-1:2013)
Fabrics: Coliseum, PVC Screen, Acoustic Molton, PVC Screen, Coliseum

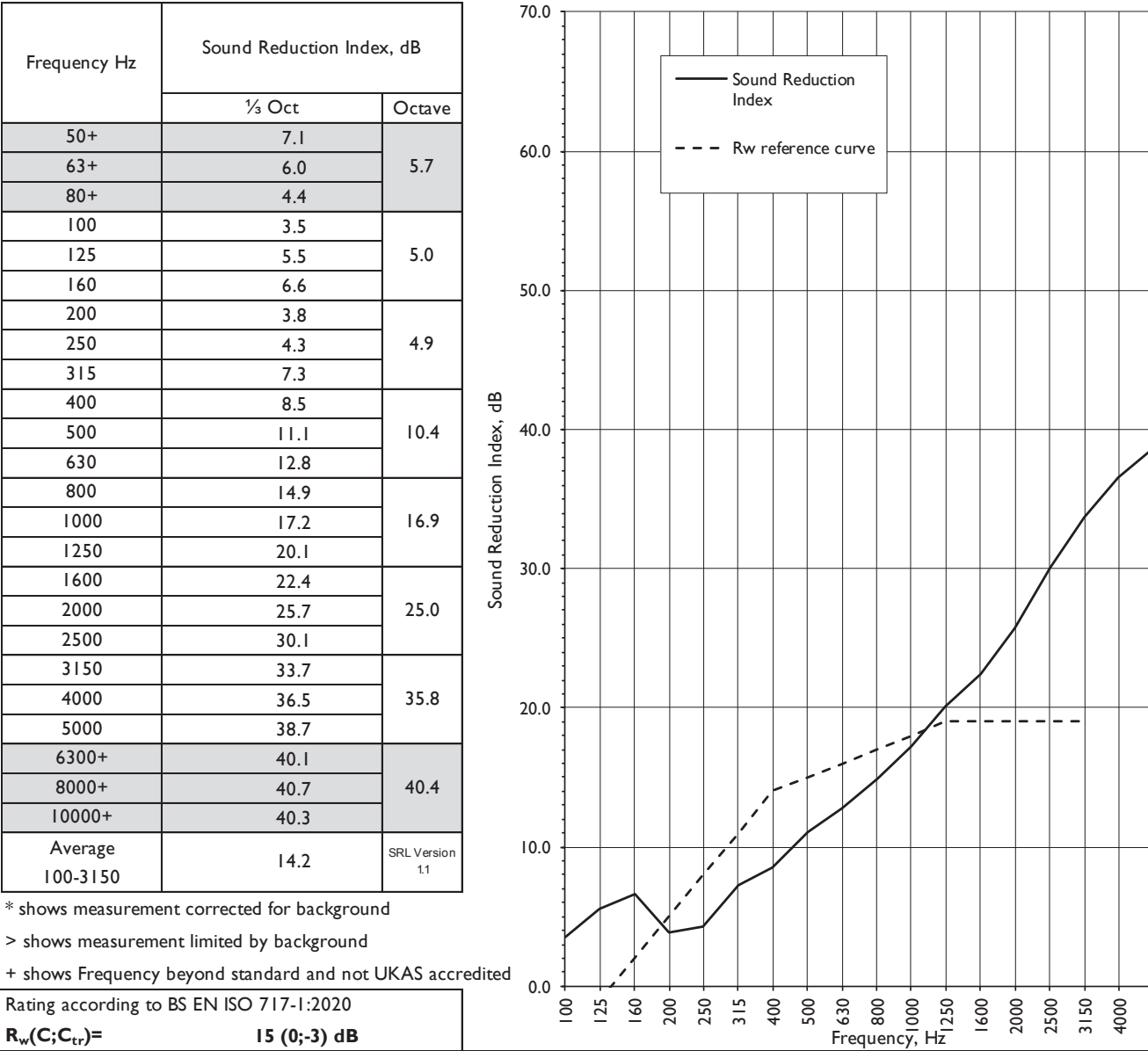


Data Sheet 4

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

Test Number:	4	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	11.3 °C	15.6 °C
Test Date:	28/02/2023	Air Humidity:	53 %	46 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1022 mbar	
Sample Weight:	2.5 kg/m²			

Product Identification: 1st Layer – Coliseum Velvet 500g/m² at 50% Fullness 4th Layer – PVC Screen 500g/m² at 0% Fullness
2nd Layer – PVC Screen 500g/m² at 0% Fullness 5th Layer – Coliseum Velvet 500g/m² at 50% Fullness
3rd Layer – Acoustic Molton 500g/m² at 0% Fullness



Acoustic Test Report - Insulation

Decibel Reduction: 11 dB
(Calculated in accordance with BS EN ISO 717-1:2013)
Fabrics: PVC Screen, Acoustic Molton, PVC Screen

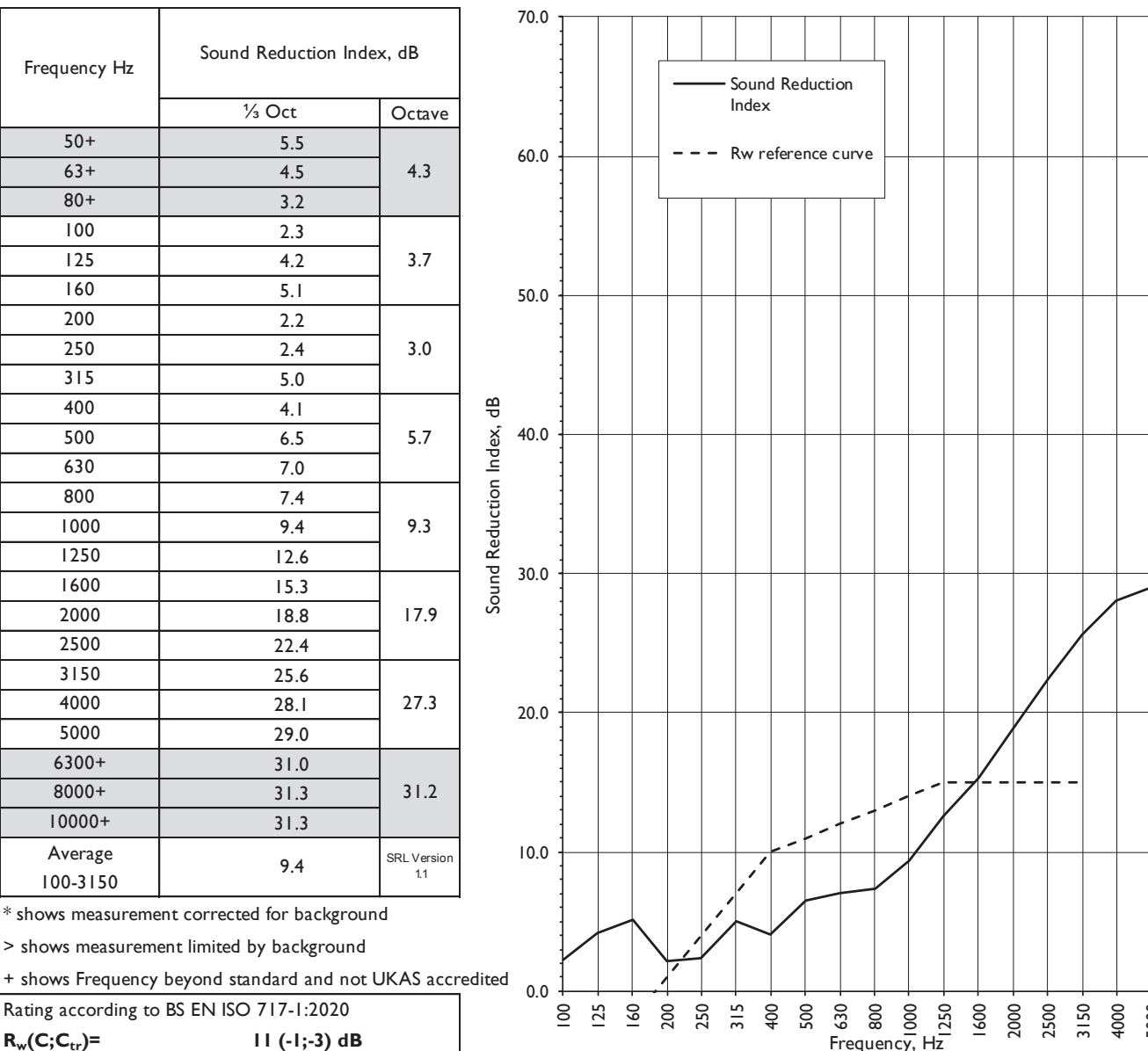


Data Sheet 5

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

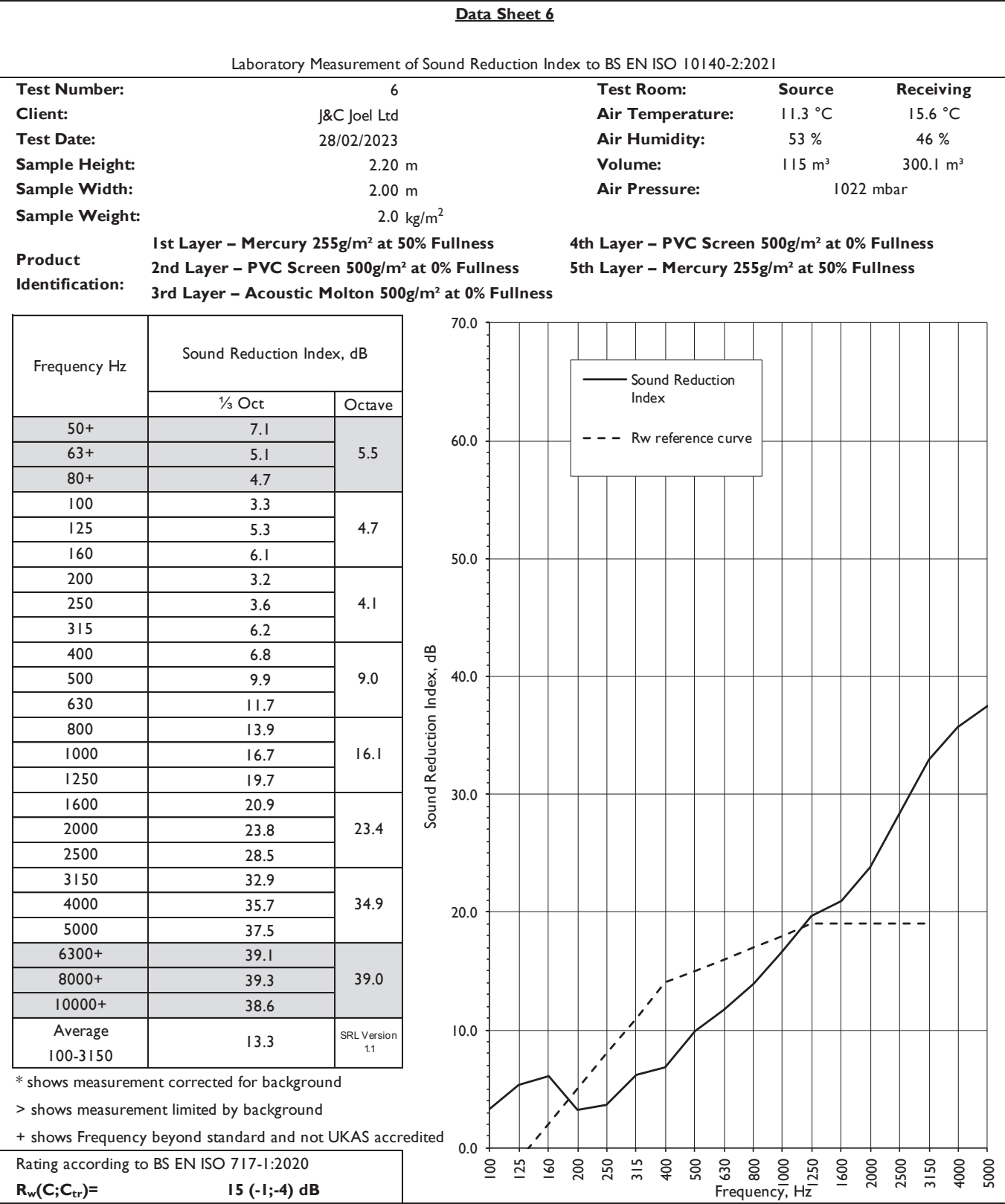
Test Number:	5	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	11.3 °C	15.6 °C
Test Date:	28/02/2023	Air Humidity:	53 %	46 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1022 mbar	
Sample Weight:	1.5 kg/m²			

Product Identification: 1st Layer – PVC Screen 500g/m² at 0% Fullness
2nd Layer – Acoustic Molton 500g/m² at 0% Fullness
3rd Layer – PVC Screen 500g/m² at 0% Fullness



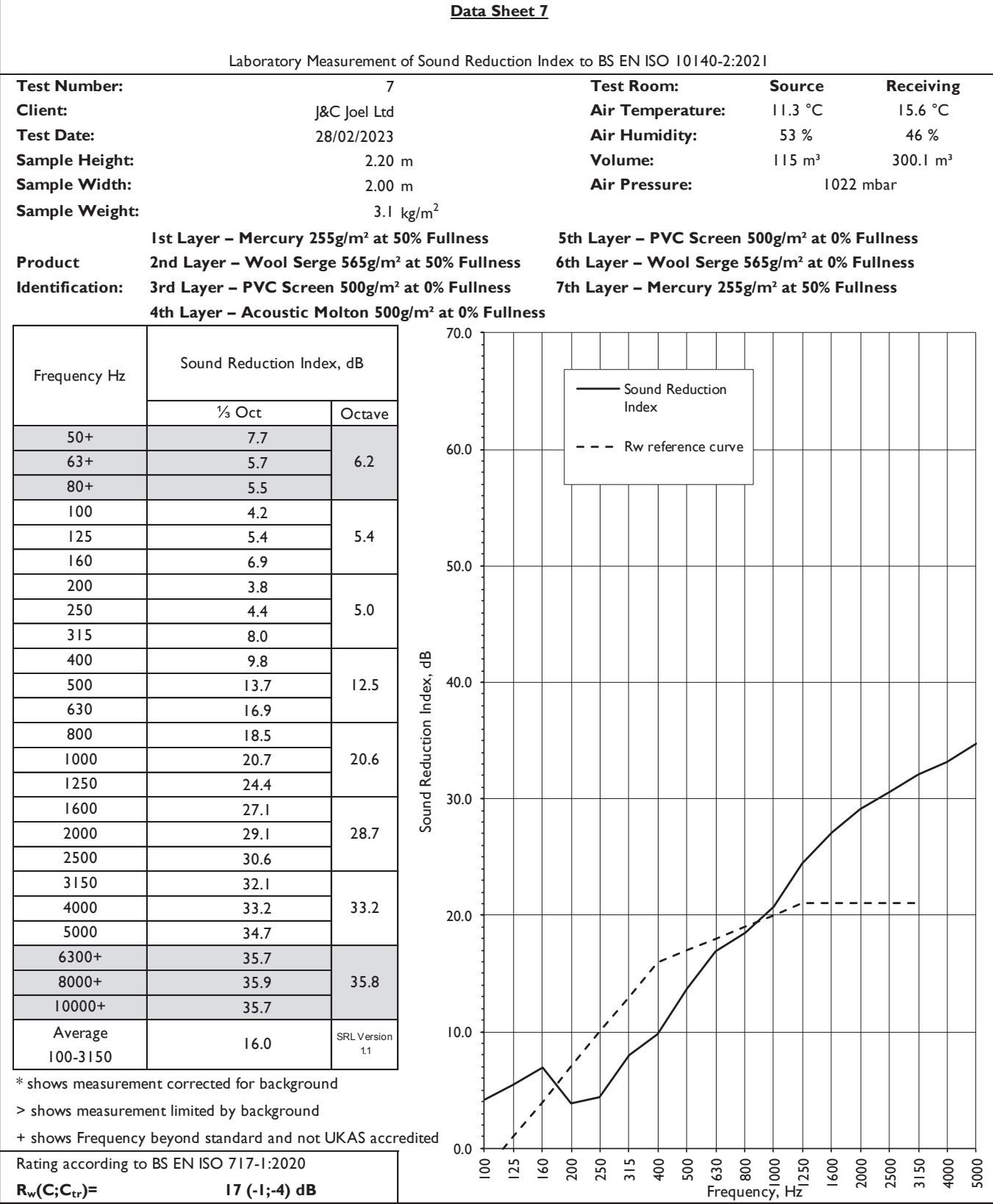
Acoustic Test Report - Insulation

Decibel Reduction: 15 dB
Fabrics: Mercury, PVC Screen, Acoustic Molton, PVC Screen, Mercury



Acoustic Test Report - Insulation

Decibel Reduction: 17 dB
Fabrics: Mercury, Wool Serge 565, PVC Screen, Acoustic Molton, PVC Screen, Wool Serge 565, Mercury



Acoustic Test Report - Insulation

Decibel Reduction: 8 dB
(Calculated in accordance with BS EN ISO 717-1 : 2013)
Fabrics: PVC Screen



Data Sheet 8

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

Test Number:	8	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	11.3 °C	15.6 °C
Test Date:	28/02/2023	Air Humidity:	53 %	46 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1022 mbar	
Sample Weight:	0.5 kg/m²			

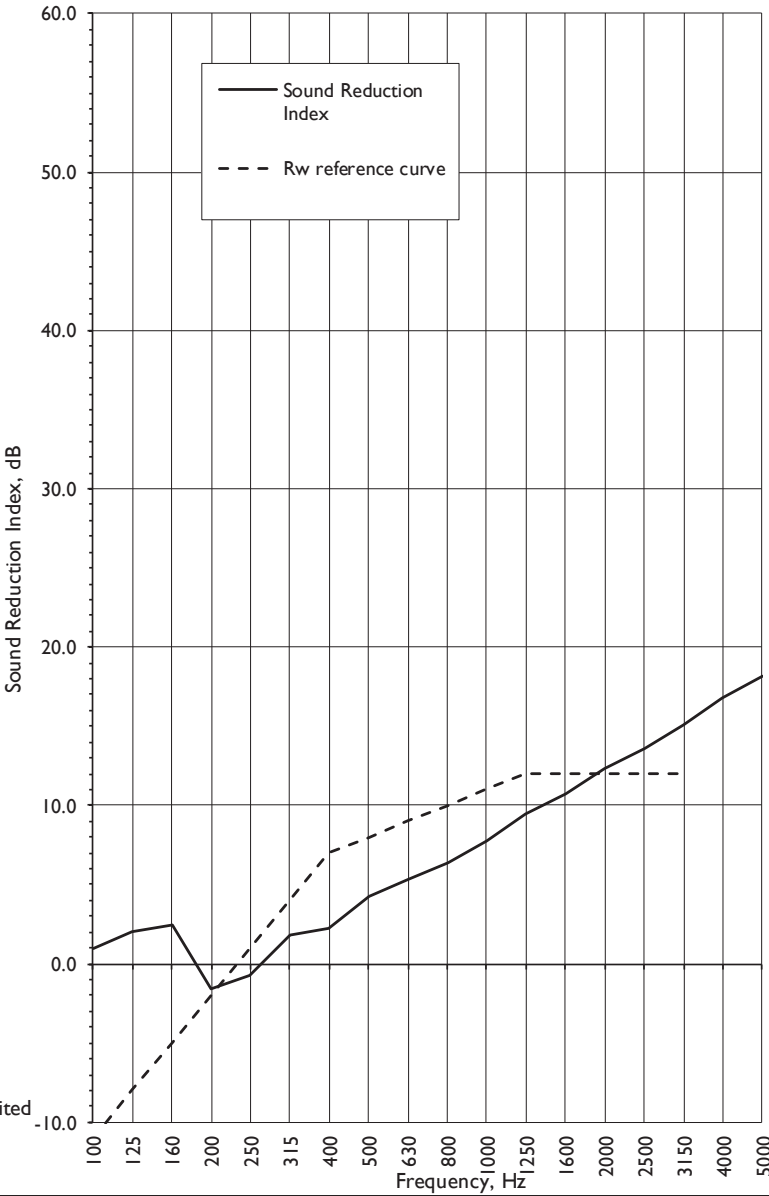
Product PVC Screen 500g/m² at 0% Fullness
Identification:

Frequency Hz	Sound Reduction Index, dB	
	1/3 Oct	Octave
50+	3.6	2.1
63+	2.3	
80+	0.9	
100	1.0	1.8
125	2.0	
160	2.4	
200	-1.6	-0.4
250	-0.7	
315	1.8	
400	2.2	3.7
500	4.3	
630	5.3	
800	6.4	7.7
1000	7.8	
1250	9.5	
1600	10.7	12.0
2000	12.3	
2500	13.6	
3150	15.1	16.5
4000	16.8	
5000	18.2	
6300+	19.7	20.5
8000+	20.4	
10000+	21.6	
Average 100-3150	5.8	SRL Version 1.1

* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 8 (0;-3) dB



Acoustic Test Report - Insulation

Decibel Reduction: 8 dB
(Calculated in accordance with BS EN ISO 717-1 : 2013)
Fabrics: Acoustic Molton



Data Sheet 9

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

Test Number:	9	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	11.3 °C	15.6 °C
Test Date:	28/02/2023	Air Humidity:	53 %	46 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1022 mbar	
Sample Weight:	0.5 kg/m²			

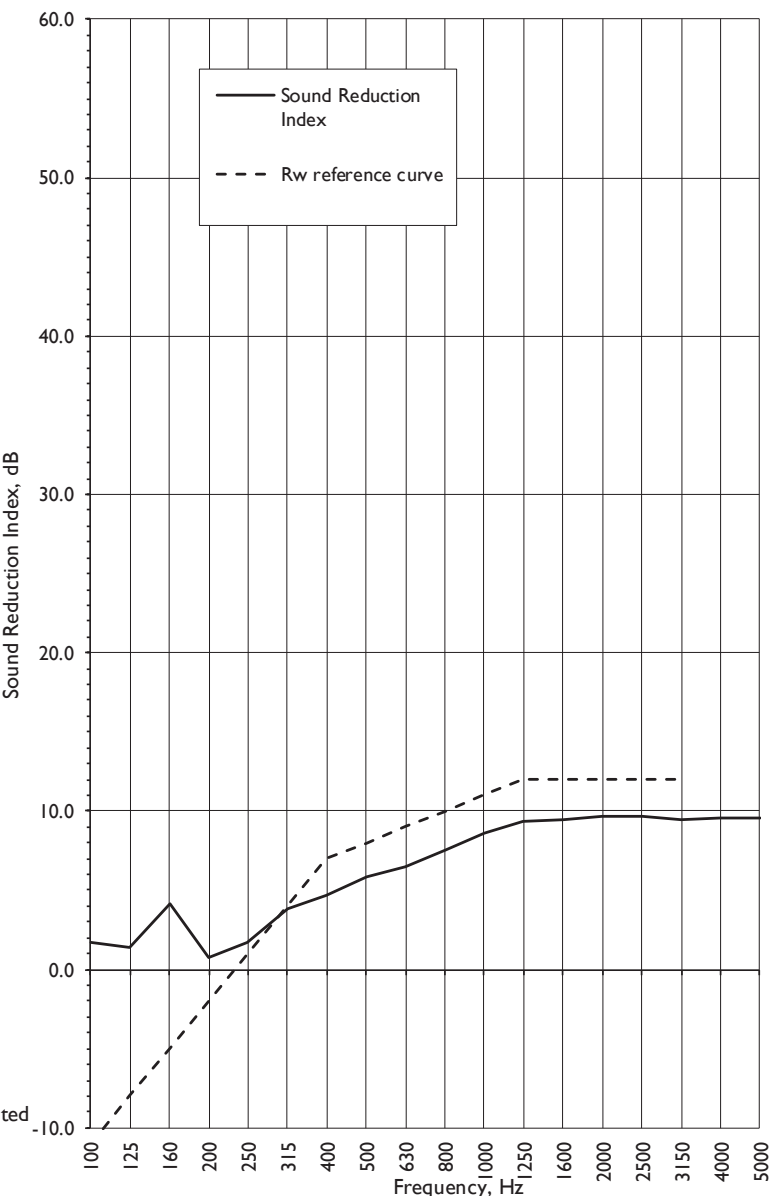
Product Acoustic Molton 500g/m² at 0% Fullness
Identification:

Frequency Hz	Sound Reduction Index, dB	
	1/3 Oct	Octave
50+	2.8	1.8
63+	1.1	
80+	1.7	
100	1.7	2.3
125	1.4	
160	4.2	
200	0.8	1.9
250	1.7	
315	3.8	
400	4.7	5.6
500	5.9	
630	6.5	
800	7.6	8.4
1000	8.6	
1250	9.3	
1600	9.5	9.6
2000	9.7	
2500	9.7	
3150	9.5	9.6
4000	9.6	
5000	9.6	
6300+	9.7	9.6
8000+	9.8	
10000+	9.4	
Average 100-3150	5.9	SRL Version 1.1

* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 8 (0;-1) dB



Acoustic Test Report - Insulation

Decibel Reduction: 6 dB
(Calculated in accordance with BS EN ISO 717-1 : 2013)
Fabrics: Wool Serge 565



Data Sheet 10

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

Test Number:	10	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	11.3 °C	15.6 °C
Test Date:	28/02/2023	Air Humidity:	53 %	46 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1022 mbar	
Sample Weight:	0.6 kg/m²			

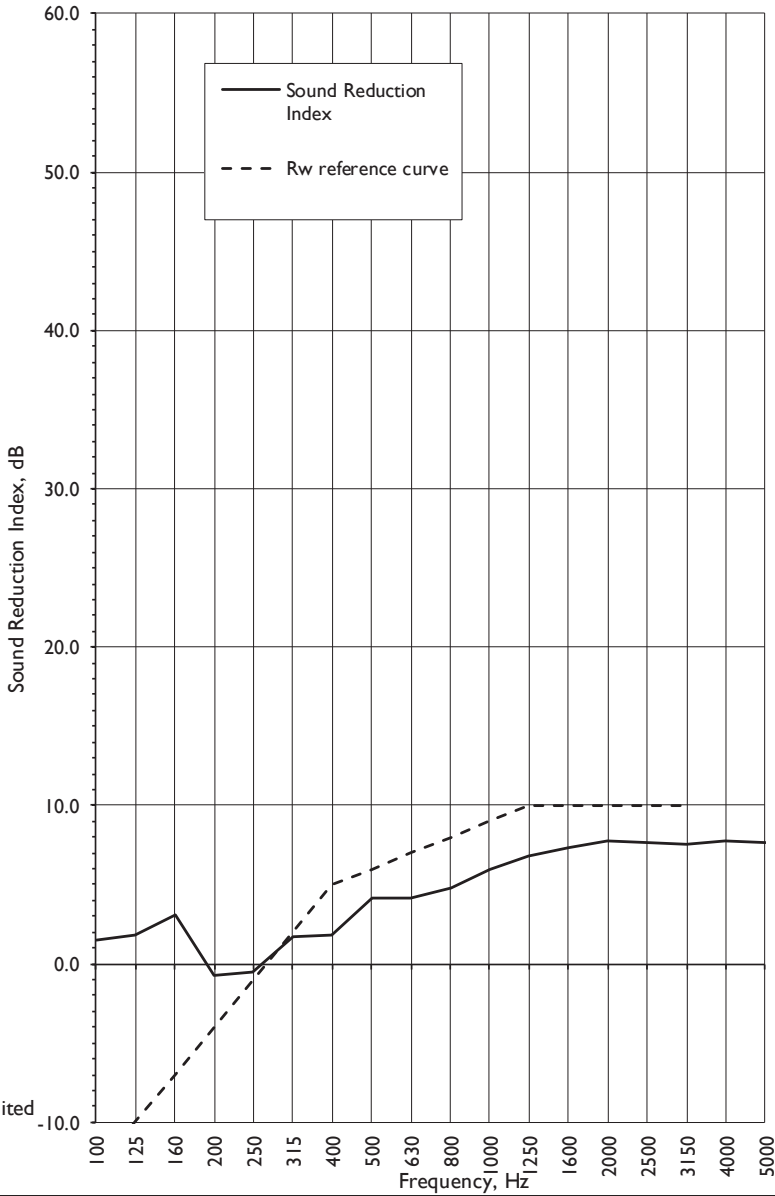
Product Wool Serge 565g/m² at 50% Fullness
Identification:

Frequency Hz	Sound Reduction Index, dB	
	⅓ Oct	Octave
50+	3.2	2.2
63+	2.7	
80+	1.0	
100	1.5	2.1
125	1.8	
160	3.1	
200	-0.7	0.0
250	-0.5	
315	1.7	
400	1.8	3.2
500	4.1	
630	4.2	
800	4.8	5.8
1000	6.0	
1250	6.8	
1600	7.3	7.6
2000	7.8	
2500	7.7	
3150	7.6	7.7
4000	7.8	
5000	7.7	
6300+	7.7	7.6
8000+	7.8	
10000+	7.5	
Average 100-3150	4.1	SRL Version 1.1

* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 6 (0;-2) dB



Acoustic Test Report - Insulation

Decibel Reduction: 6 dB
(Calculated in accordance with BS EN ISO 717-1 : 2013)
Fabrics: Coliseum Velvet



Data Sheet 11

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

Test Number:	11	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	10.5 °C	16.1 °C
Test Date:	01/03/2023	Air Humidity:	55 %	52 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1021 mbar	
Sample Weight:	0.5 kg/m²			

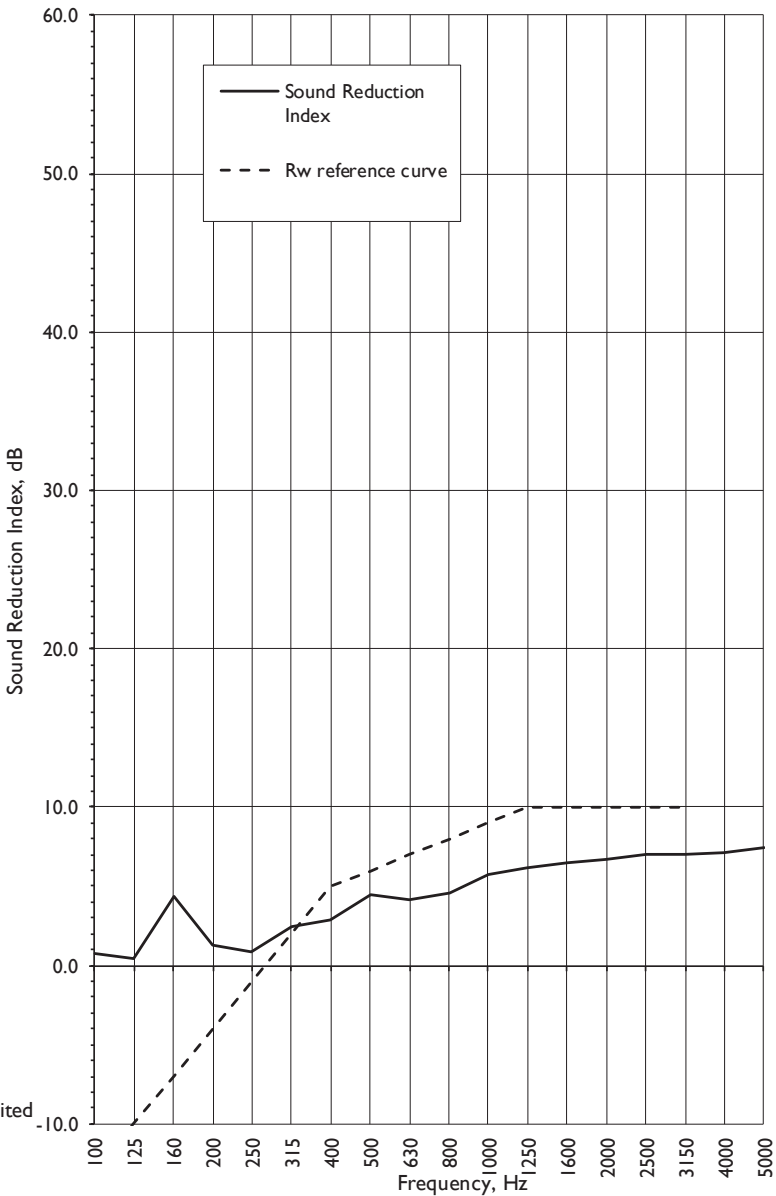
Product Coliseum Velvet 500g/m² at 50% Fullness
Identification:

Frequency Hz	Sound Reduction Index, dB	
	⅓ Oct	Octave
50+	3.1	2.1
63+	1.3	
80+	2.0	
100	0.8	1.5
125	0.4	
160	4.4	
200	1.3	1.5
250	0.9	
315	2.4	
400	2.9	3.8
500	4.5	
630	4.1	
800	4.6	5.4
1000	5.7	
1250	6.2	
1600	6.5	6.7
2000	6.7	
2500	7.0	
3150	7.0	7.2
4000	7.1	
5000	7.4	
6300+	7.2	7.2
8000+	7.3	
10000+	7.0	
Average 100-3150	4.1	SRL Version 1.1

* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 6 (0;-1) dB



Acoustic Test Report - Insulation

Decibel Reduction: 12 dB
(Calculated in accordance with BS EN ISO 717-1:2013)
Fabrics: PVC Screen,
Wool Serge 1000,
PVC Screen



Data Sheet 12

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

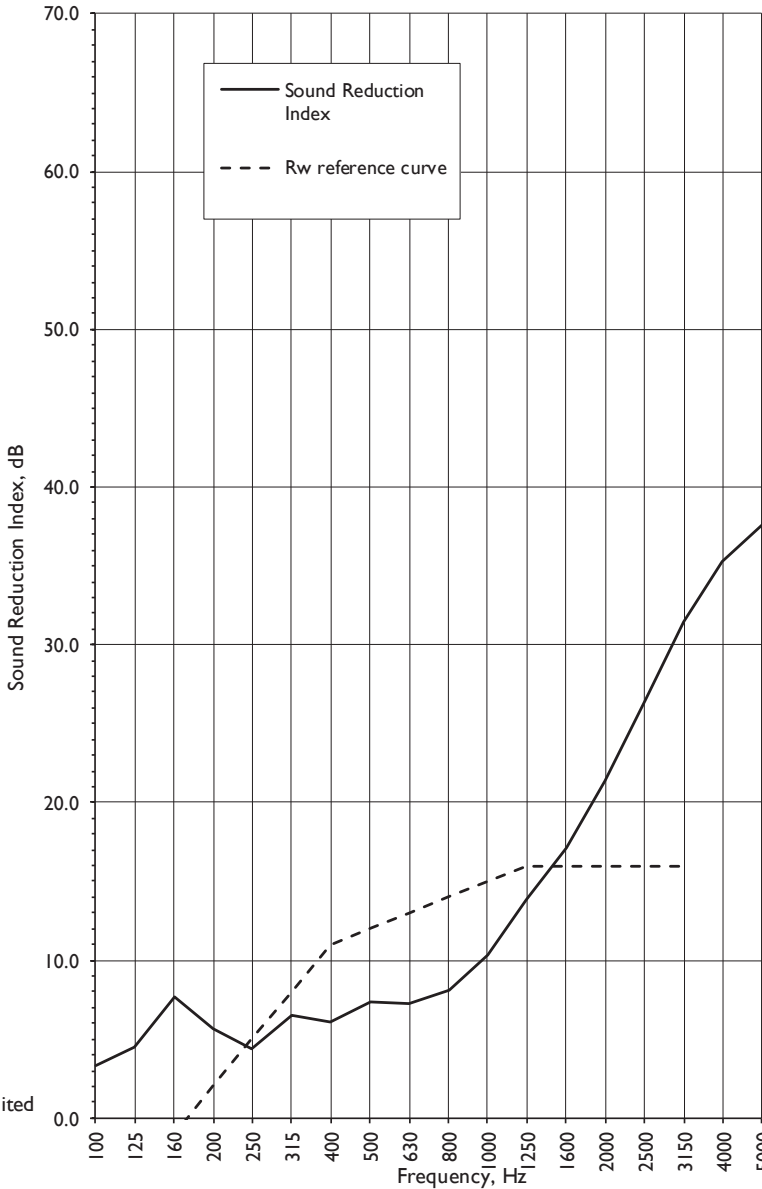
Test Number:	12	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	10.5 °C	16.1 °C
Test Date:	01/03/2023	Air Humidity:	55 %	52 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1021 mbar	
Sample Weight:	2.0 kg/m²			
Product Identification:	1st Layer – PVC Screen 500g/m² at 0% Fullness			
	2nd Layer – Wool Serge 1000g/m² at 0% Fullness			
	3rd Layer – PVC Screen 500g/m² at 0% Fullness			

Frequency Hz	Sound Reduction Index, dB	
	½ Oct	Octave
50+	6.1	4.8
63+	4.1	
80+	4.5	
100	3.3	4.8
125	4.5	
160	7.7	
200	5.7	5.4
250	4.4	
315	6.5	
400	6.1	6.9
500	7.4	
630	7.2	
800	8.1	10.1
1000	10.3	
1250	13.8	
1600	17.1	20.1
2000	21.4	
2500	26.5	
3150	31.5	34.1
4000	35.3	
5000	37.6	
6300+	40.6	40.1
8000+	40.3	
10000+	39.6	
Average 100-3150	11.3	SRL Version 1.1

* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 12 (-1;-3) dB



Acoustic Test Report - Insulation

Decibel Reduction: 16 dB
(Calculated in accordance with BS EN ISO 717-1:2013)
Fabrics: Coliseum Velvet, PVC Screen,
Wool Serge 1000, PVC Screen,
Coliseum



Data Sheet 13

Laboratory Measurement of Sound Reduction Index to BS EN ISO 10140-2:2021

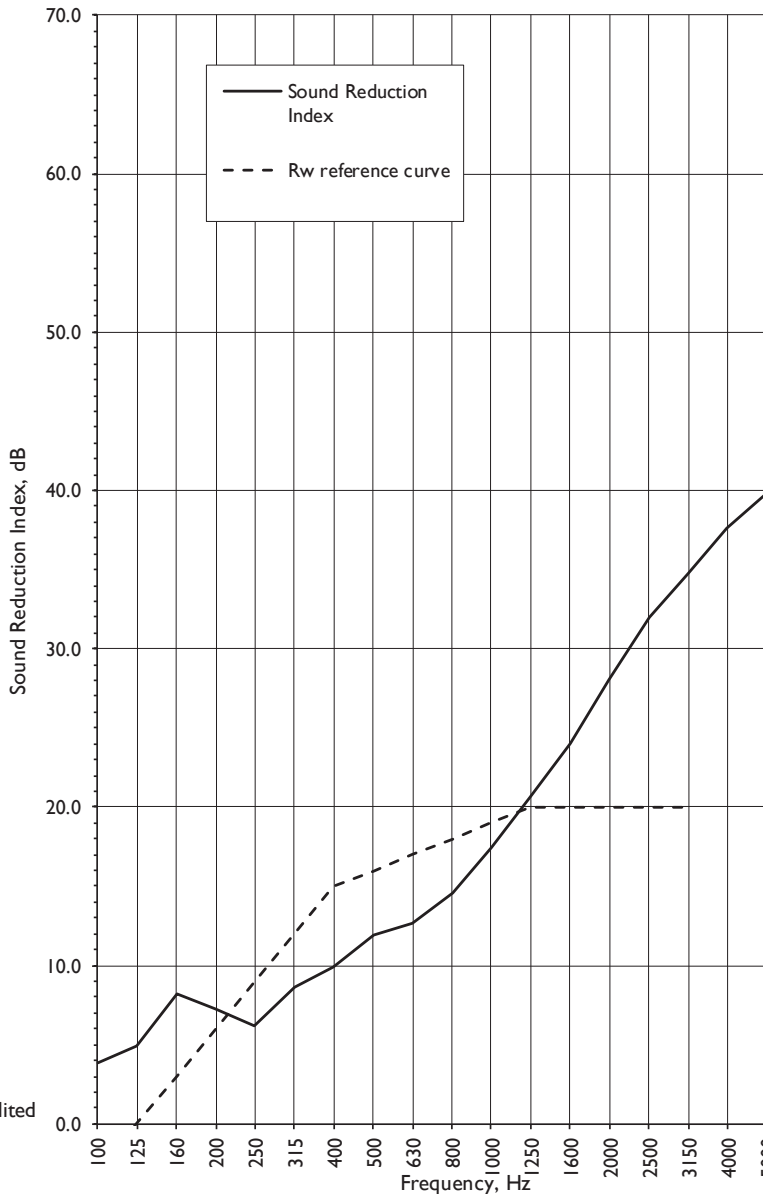
Test Number:	13	Test Room:	Source	Receiving
Client:	J&C Joel Ltd	Air Temperature:	10.5 °C	16.1 °C
Test Date:	01/03/2023	Air Humidity:	55 %	52 %
Sample Height:	2.20 m	Volume:	115 m³	300.1 m³
Sample Width:	2.00 m	Air Pressure:	1021 mbar	
Sample Weight:	3.0 kg/m²			
Product Identification:	1st Layer – Coliseum Velvet 500g/m² at 50% Fullness		4th Layer – PVC Screen 500g/m² at 0% Fullness	
	2nd Layer - PVC Screen 500g/m² at 0% Fullness		5th Layer - Coliseum Velvet 500g/m² at 50% Fullness	
	3rd Layer - Wool Serge 1000g/m² at 0% Fullness			

Frequency Hz	Sound Reduction Index, dB	
	½ Oct	Octave
50+	7.4	6.1
63+	5.0	
80+	6.1	
100	3.8	5.3
125	4.9	
160	8.2	
200	7.2	7.2
250	6.2	
315	8.6	
400	9.9	11.3
500	11.9	
630	12.7	
800	14.6	16.9
1000	17.4	
1250	20.6	
1600	24.0	26.9
2000	28.1	
2500	32.0	
3150	34.7	36.9
4000	37.6	
5000	39.8	
6300+	42.0	40.4
8000+	41.8	
10000+	38.5	
Average 100-3150	15.3	SRL Version 1.1

* shows measurement corrected for background
> shows measurement limited by background
+ shows Frequency beyond standard and not UKAS accredited

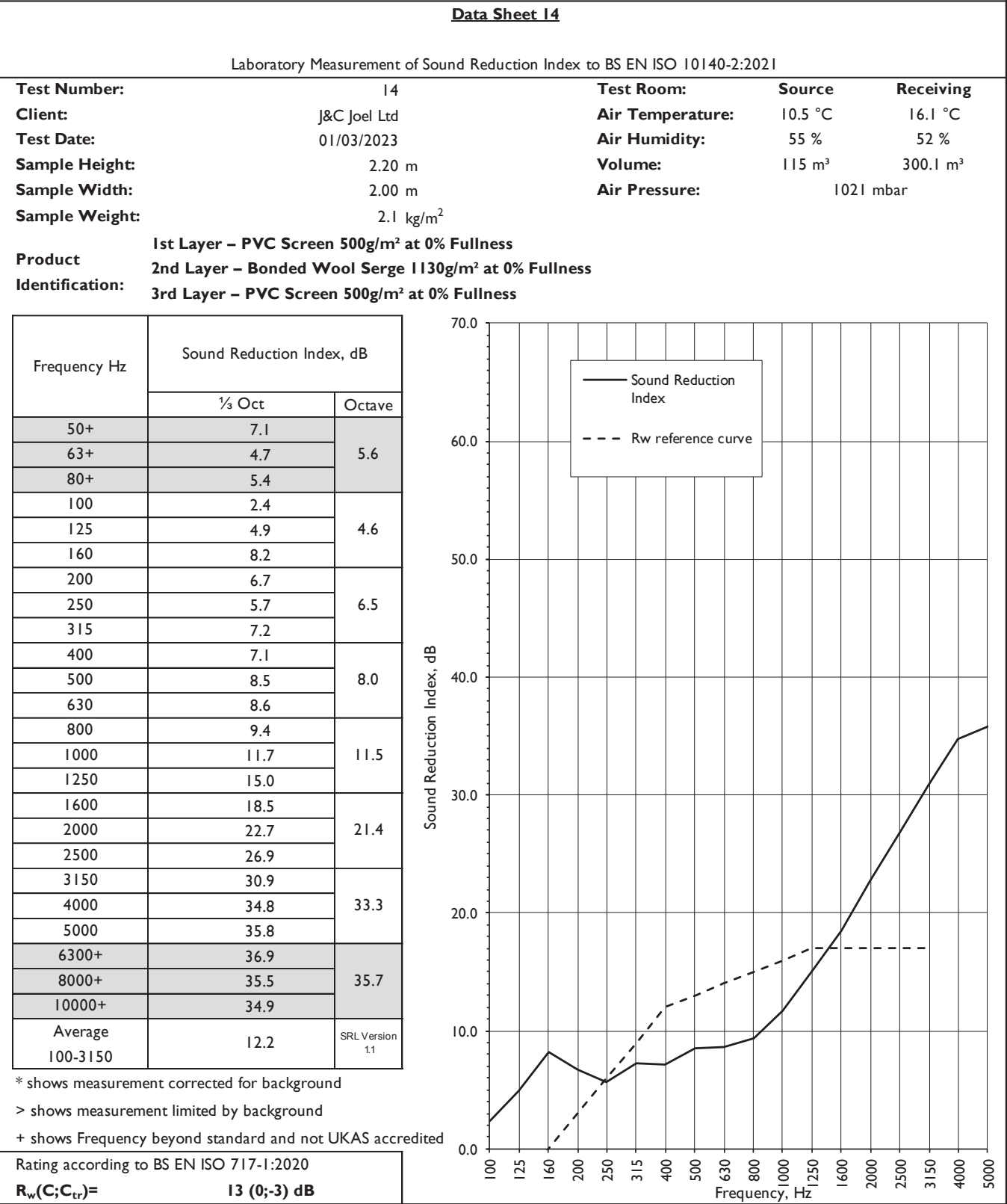
Rating according to BS EN ISO 717-1:2020

R_w(C;C_{tr})= 16 (0;-3) dB



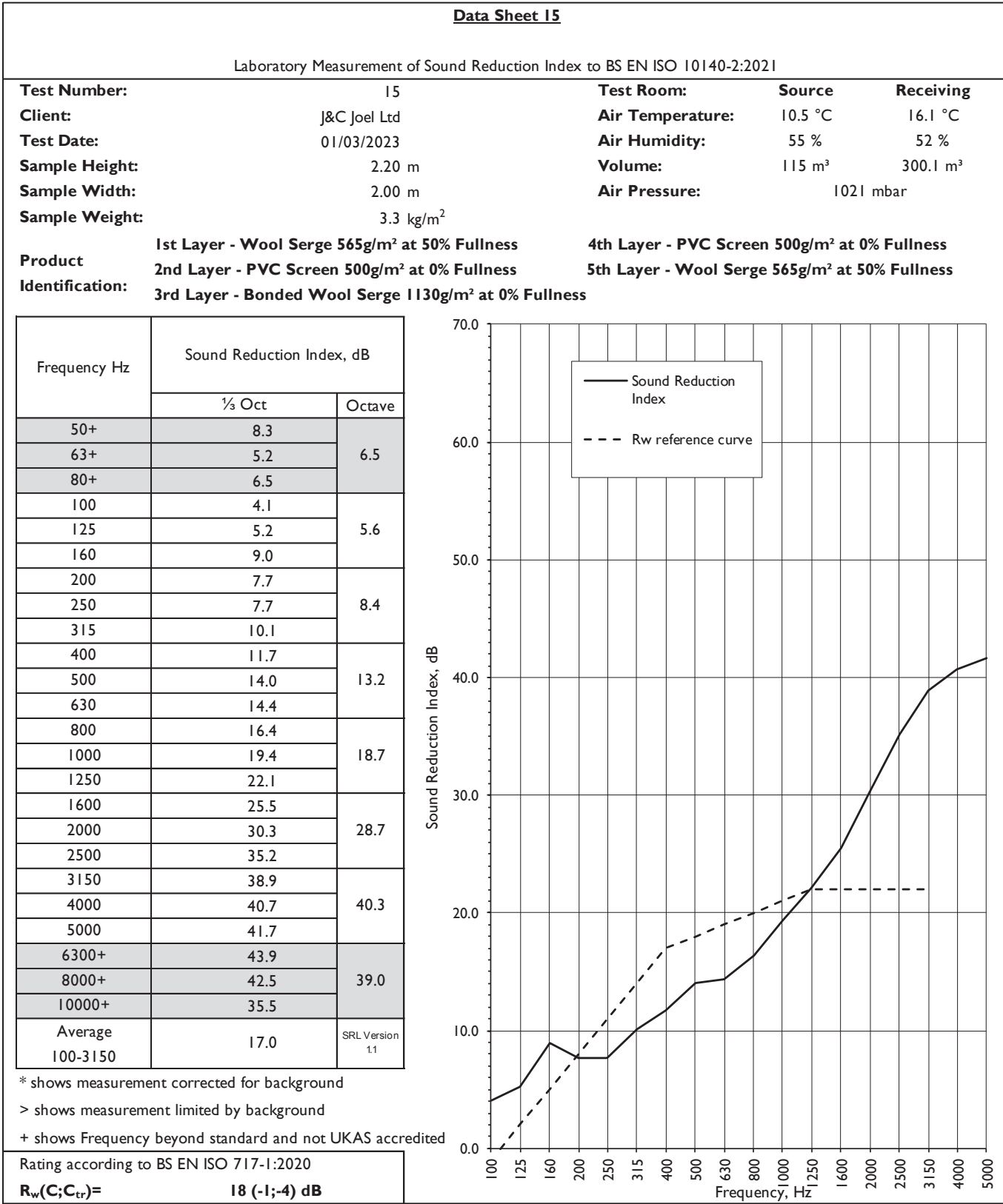
Acoustic Test Report - Insulation

Decibel Reduction: 13 dB
(Calculated in accordance with BS EN ISO 717-1: 2013)
Fabrics: PVC Screen,
Bonded Wool Serge,
PVC Screen



Acoustic Test Report - Insulation

Decibel Reduction: 18 dB
(Calculated in accordance with BS EN ISO 717-1: 2013)
Fabrics: Wool Serge 565, PVC Screen,
Bonded Wool Serge, PVC Screen,
Wool Serge 565



Sound is made up of vibrations or sound waves, formed by objects shaking back and forth. These sound waves travel through air, water and solid objects. When they reach our ears, they make the delicate skin of the eardrums vibrate and translate into sounds we recognise.

The scientific study of sound waves is known as acoustics.

The following pages are designed to act as a guide to help you understand some of the key factors involved in acoustics. Our aim is to get you thinking about your space, the type of performance(s) you are wanting to stage and the problems you are seeking to overcome.

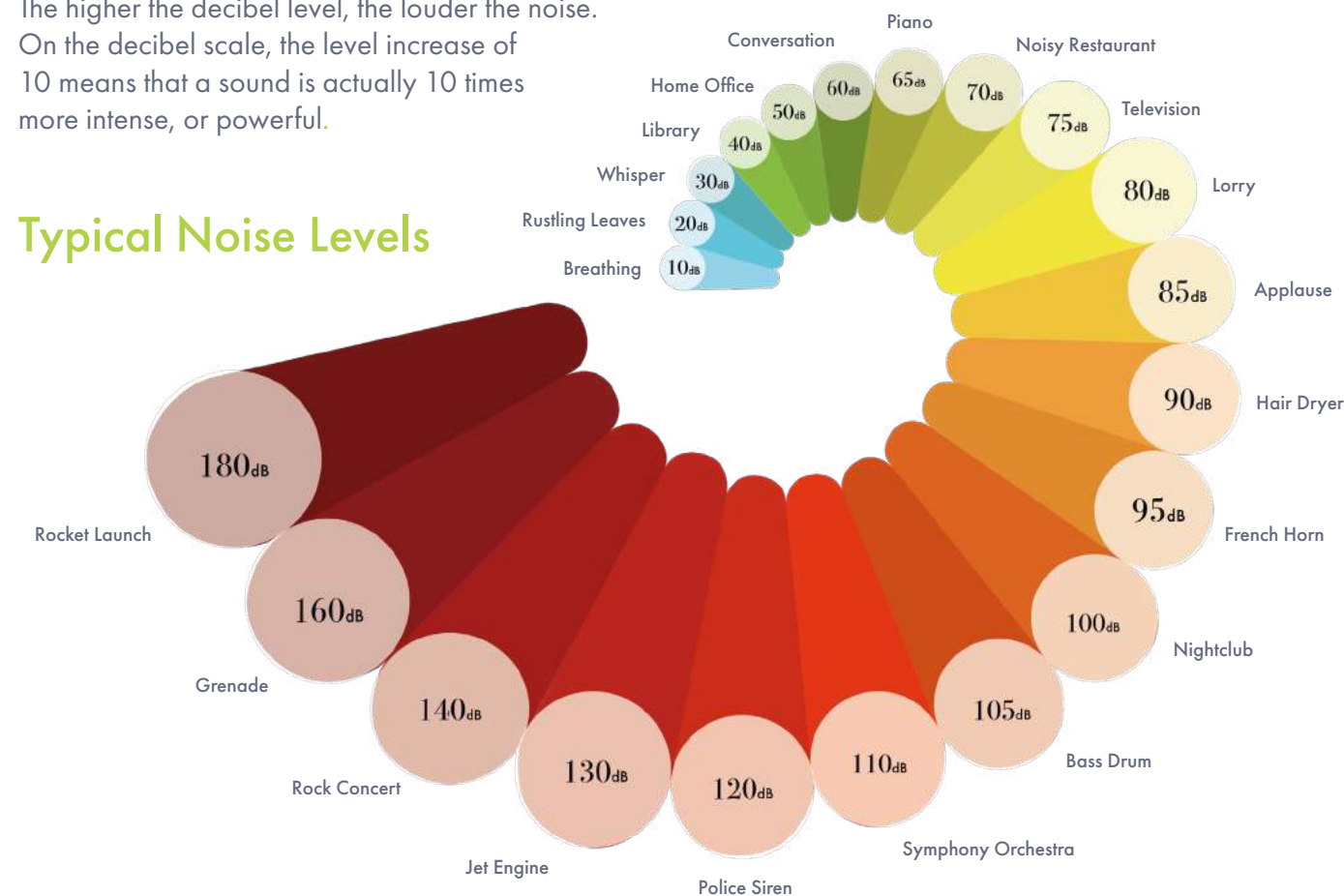
We would always advise you to seek input from a professional acoustician. Our expert team is always on hand to facilitate such a conversation, offering guidance and support as to which products are most suitable to meet your needs.

Decibels (dB)

The decibel (dB) is the unit used to measure the intensity of a sound. Your ears can hear everything from your fingertip brushing lightly over your skin to a loud jet engine.

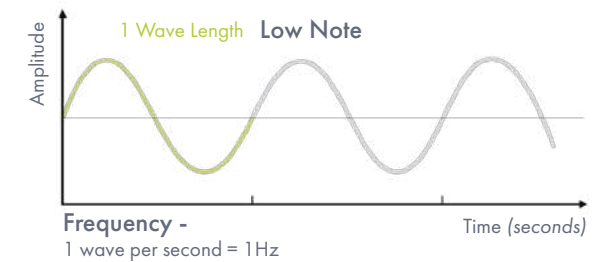
The higher the decibel level, the louder the noise. On the decibel scale, the level increase of 10 means that a sound is actually 10 times more intense, or powerful.

Typical Noise Levels

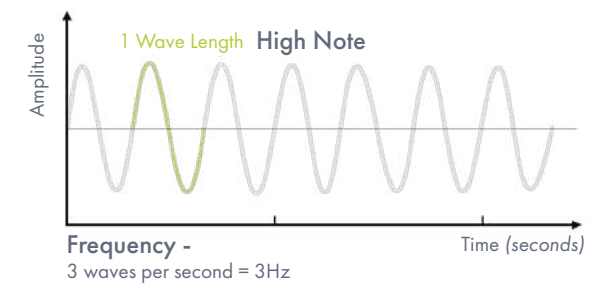


Frequency

Frequency is the speed of the vibration and determines the pitch of the sound. Frequency is measured as the number of wave cycles that occur in one second, this unit is measured in Hertz (Hz). Humans can detect sound in a range of 20Hz to 20kHz.



Sound waves interact with objects in a room differently and can cause acoustic issues. Low frequencies are more difficult to control, due to short reverberation times and often full acoustic solutions are required to deal with these. Mid or high frequencies have a longer line of reverberation, so it's important to understand the sound you are dealing with.

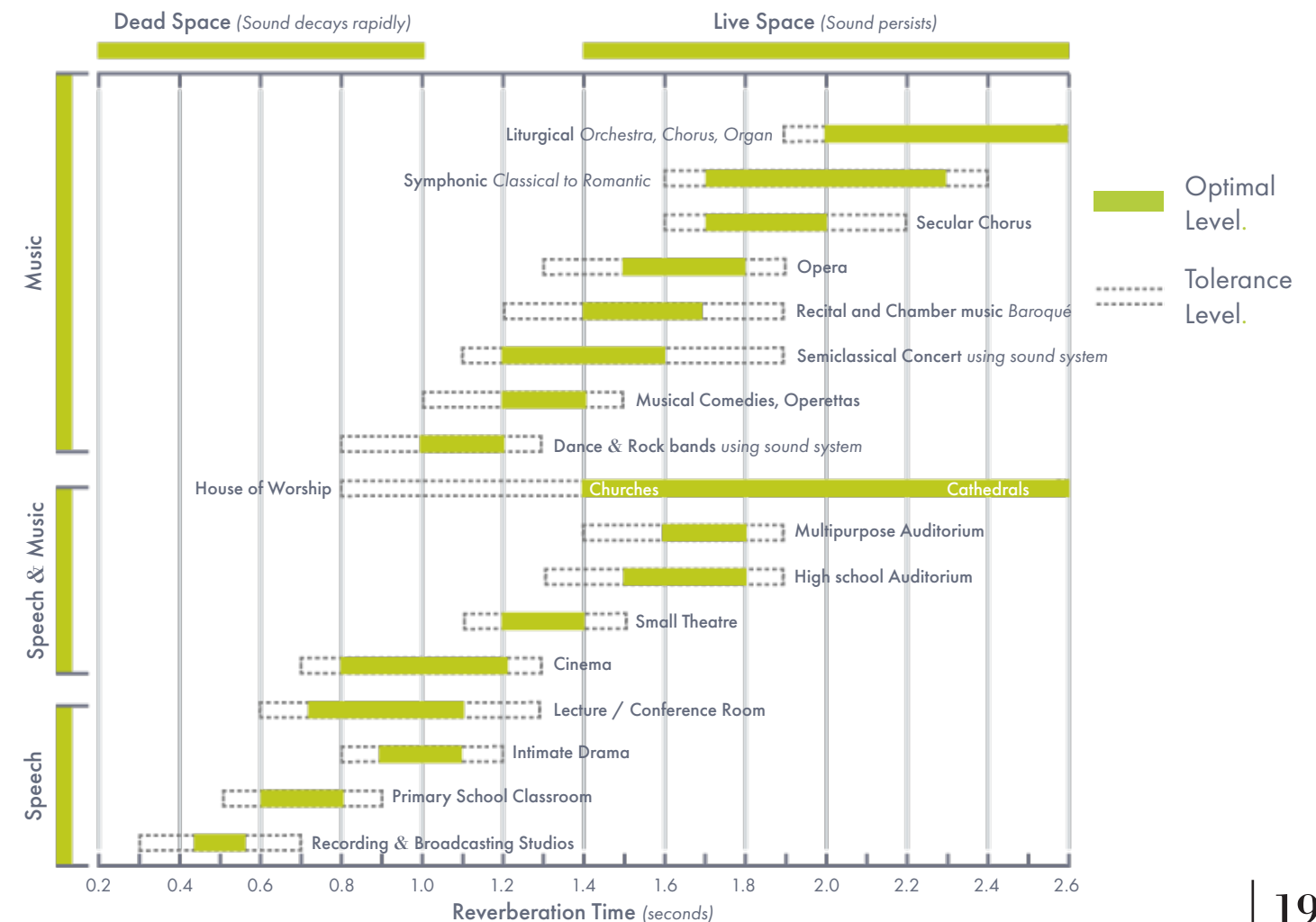


Reverberation Time

Sound in a room will repeatedly bounce off surfaces such as the walls, the ceiling and floor or other hard surfaces. When these reflections combine, a phenomenon known as reverberation is created. Reverberation reduces when the reflections hit absorptive surfaces such as curtains, soft furniture and even people.

The reverberation time of a room or space is defined as the time it takes for sound to reduce (or decay) by 60dB. For example, if the sound in a room took 5 seconds to decay from 90dB to 30dB, the reverberation time would be 5 seconds.

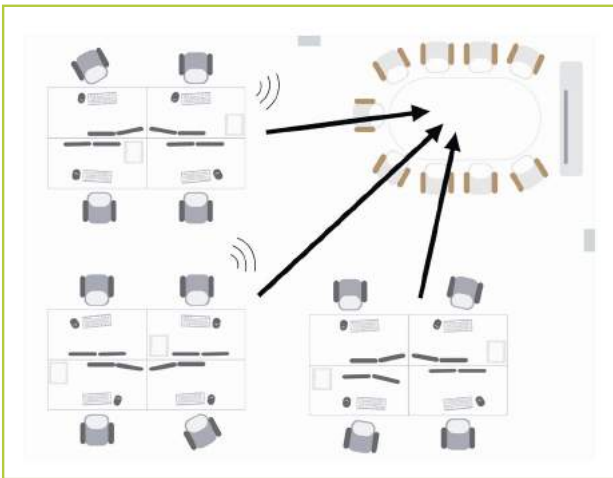
In order to enhance the experience for your audience, it is vital to understand the acoustic requirements of the performance as these need to be in harmony with the reverberation time of the space.



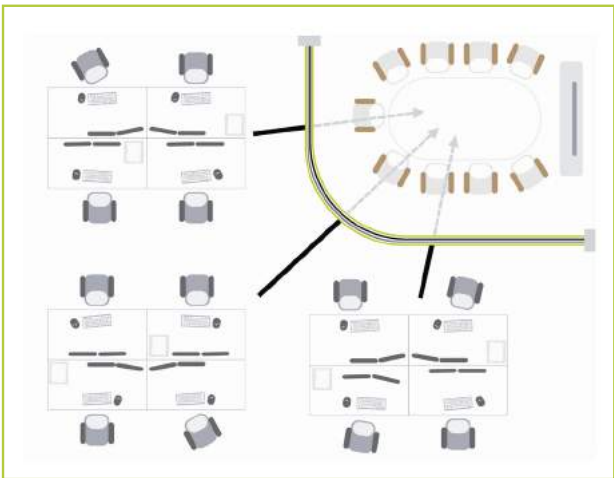
Sound Absorption and Insulation

There is a key difference between acoustic absorption and acoustic insulation. The graphics below are designed to show you this difference and help you achieve the perfect acoustics in your space.

Issue - Sound Transmission

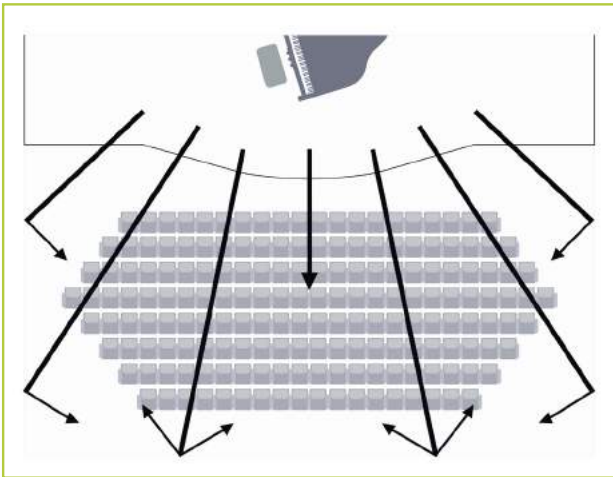


Solution - Acoustically Insulating Drapes

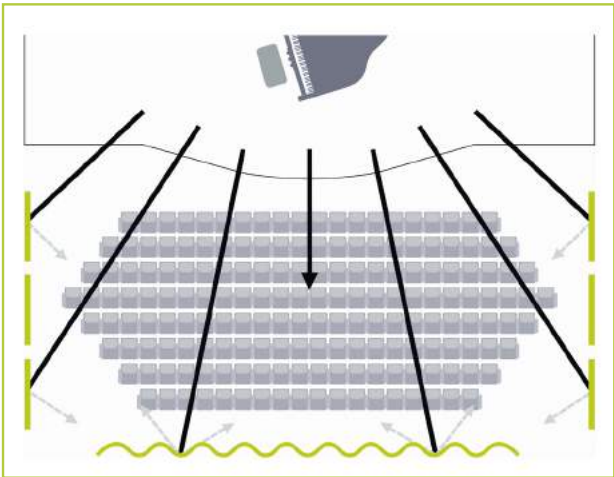


Multilayered drapery can be installed in open office environments to create privacy and prevent sound transmission.

Issue - Slapback Echo

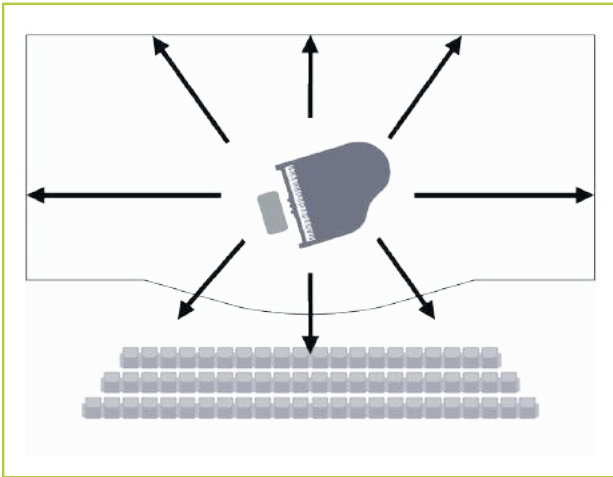


Solution - Measured Absorption

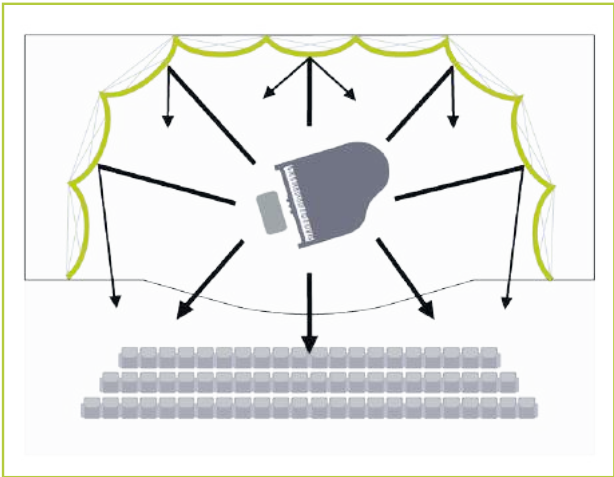


Acoustic drapery, banners and panels can be used to absorb slapback echo within auditoriums and performance venues.

Issue - Sound Dissipation



Solution - Positive Reflection



Acoustic shell systems can be installed on stage to reflect lost sound towards the audience.

— Direction of Sound — Reduced Sound — Audience (bottom images) — Multilayer Drape
— Banner / Panel — Drape — Shell

Fabrics & Flooring



Drapes & Shapes



Stage Engineering & Maintenance Services



Track & Drapery Systems



To download or request our brochures and other technical information please visit our website www.icjoel.com or contact our expert sales team in your local region for assistance.



UK

Europe
Middle East
Vietnam
Macau
Hong Kong

J&C Joel Limited

Corporation Mill, Corporation Street,
Sowerby Bridge, Halifax, HX6 2QQ

+44 (0)1422 833 835

www.jcjoel.com