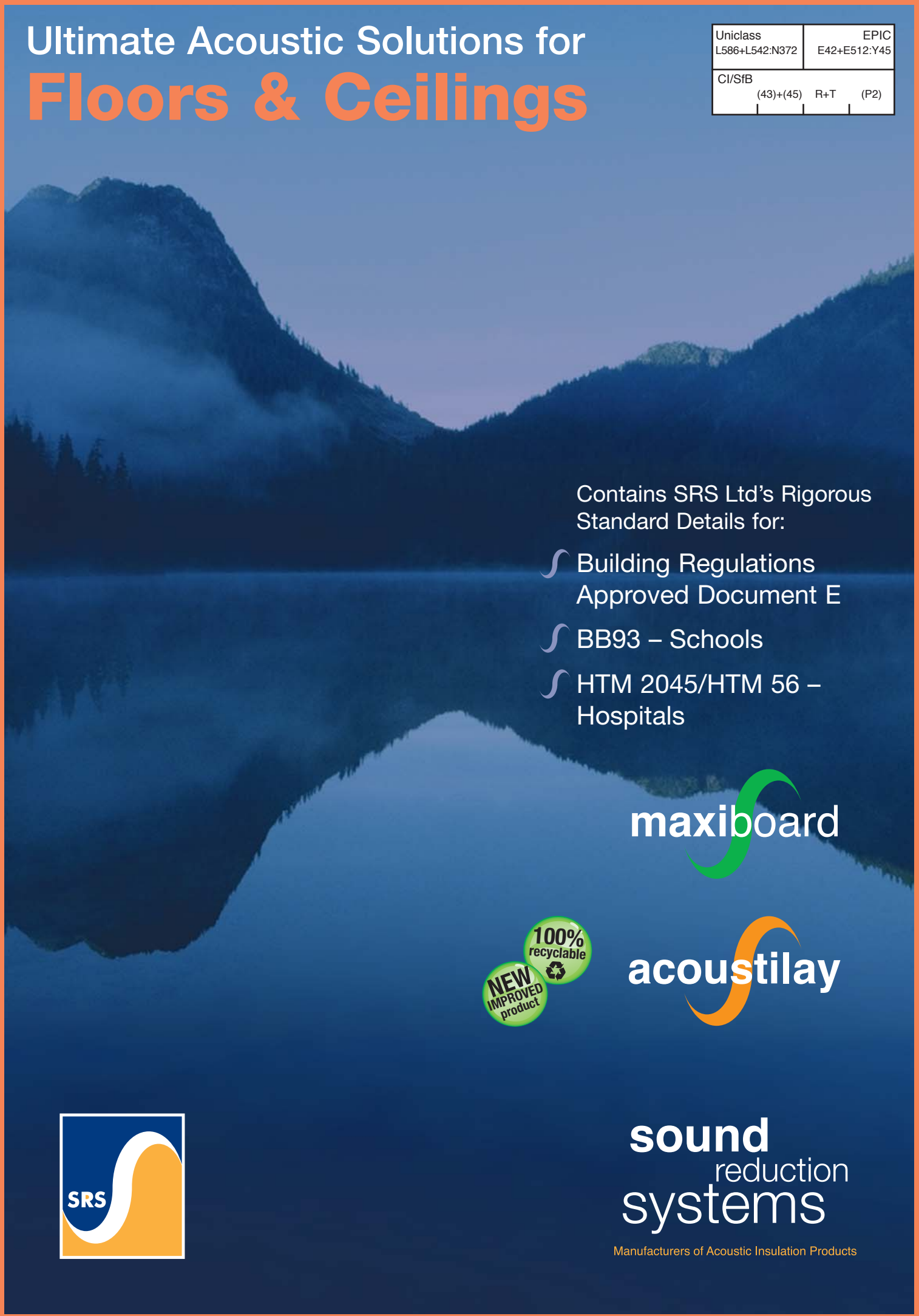
Ultimate Acoustic Solutions for
Floors & Ceilings

Uniclass	EPIC
L586+L542:N372	E42+E512:Y45
CI/SfB (43)+(45) R+T (P2)	



Contains SRS Ltd's Rigorous Standard Details for:

- Building Regulations Approved Document E
- BB93 – Schools
- HTM 2045/HTM 56 – Hospitals

maxiboard

100% recyclable

NEW IMPROVED product

acoustilay

SRS

sound reduction systems

Manufacturers of Acoustic Insulation Products

Introduction

Sound Reduction Systems Ltd. (SRS) manufacture acoustic insulation and absorption products for use in domestic and commercial buildings. Over 25 years experience in the building acoustics industry ensures that our team of qualified acousticians can offer honest, practical advice and effective solutions to any acoustic challenge.

SRS Ltd's expertise includes compliance with current building regulations, in particular with Part E in housing, HTM 2045/HTM 56 in hospitals and Building Bulletin 93 in schools. This brochure details SRS Ltd's range of solutions to these standards.

Navigation symbols

ACOUSTIC DATA FIRE DATA INSTALLATION GUIDANCE

Throughout this brochure you notice these **navigation symbols,** followed by a page number. These point you to corresponding data within the document - follow the symbols to transfer quickly between **acoustic data**, **fire data** and **installation guidance**.

Useful Contact Details:-

Technical and General Enquiries
Tel/Fax: 01204 380074 / 380957
Email: info@soundreduction.co.uk

Contents

Noise Control

To effectively control noise, it is important to understand the difference between sound absorption and sound insulation. Sound absorption relates to the amount of echo and reverberation within a room and its effect on sound quality and audibility. Sound insulation, on the other hand, relates to the actual attenuation of sound travelling from one area to another through a separating wall, floor or ceiling.

Sound transmission in buildings results from both airborne and impact noise sources.

Airborne sound is generated from sources such as human voices, Hi Fi's or TV sets, and travels through the air into the structure of a building.

Impact sound is the result of physical excitation of the structure of a floor from impacts such as footfall and dropped items.

The acoustic integrity of any separating structure can be compromised by flanking. Flanking sound occurs when there is an alternative path that sound can use to bypass an insulating element, this could be due to factors such as service penetrations and hidden cavities. Possible flanking paths must be identified and eliminated before effective sound insulation can be achieved.

The Regulations

Poor acoustic separation can lead to disturbance between residential dwellings, discomfort or lack of privacy in hospitals and in schools it leads to an environment which is not conducive to teaching or learning. The following regulations have been introduced to ensure that New Build and converted dwellings, schools and hospitals have an adequate level of acoustic separation.

Building Regulations Part E
Building Bulletin 93
HTM 2045/HTM 56

The Testing Process

Under the current Building Regulations, introduced in July 2003, acoustic testing is required to demonstrate compliance with the insulation standards for all conversions and for new build projects if not constructed using Robust Details. The tests will need to be carried out by an independent, accredited acoustic consultant and this can be arranged through our network of distributors. An additional list of suitable companies can be found on the internet at **www.association-of-noise-consultants.co.uk**.

Sound Reduction Systems Ltd technical team are also able to carry out the tests to the appropriate standards where required, although as a manufacturer, we cannot claim the status of an independent consultant. If you are unable to find a solution for your specific acoustic insulation problem or require further advice, please contact our experienced technical team on **01204 380074** or email **info@soundreduction.co.uk** where an advisor will be happy to assist.

The Airborne Test (on site)

The airborne test is designed to measure the difference in sound level between two rooms with a large, steady sound source operating in one of the rooms. The result is known as the weighted Standardised Level Difference, or D_{nTw}, which is essentially the difference in sound level between the two rooms, adjusted to take account of the reverberation in the receiving room. The result is adjusted again by the addition of the spectrum adaptation term, or C_{tr}, which is intended to place more emphasis on low frequency sound, such as that produced by the subwoofer in a modern home cinema or hi-fi system. Since this test measures the difference in sound level between the rooms, then the higher the figure, the better the insulation.

The Impact Test

The impact test measures the sound level downstairs when a standard tapping machine is operating upstairs. This is intended to replicate noise such as footsteps and moving furniture, that travels through the separating floor. The result is known as the weighted Standardised Impact Sound Pressure Level, or L_{nTw} and the lower the sound pressure level downstairs, the better the insulation. In the case of the impact test, no additional adaptation term is used.

It is likely that the floor finish will be decided after the impact test has been performed. It is, therefore, prudent to perform the test on a 'worst case scenario' basis. The Association of Noise Consultants advise that a rigid board, which need be no more than 50% larger than the base of the tapping machine, be placed on top of resilient floor coverings prior to testing. This way, the acoustic consultant can be satisfied that the Acoustilay will comply with Document E, regardless of floor finish. Building Control bodies often require that the Acoustilay is bonded to the floor, to reduce the risk of its removal after testing.

Residential : Building Regulations Part E – Resistance to the Passage of Sound

Acoustic noise control in buildings for residential use is regulated using Approved Document E. This Building Regulation now applies to any kind of building used as a dwelling, including houses and apartments; and rooms for residential purposes, such as students and nurses accommodation, nursing homes and hotels. It also applies to dwellings that have been created as a result of a conversion or material change of use.

The aim of the regulation is to protect residents from the noise of activities in other rooms or adjoining properties. This has been highlighted as a major cause of tension between residents. The acoustic requirements are shown below in tables 1.1a & 1.1b:-

Table 1.1a: Dwelling-houses and flats - performance standards for separating floors, and stairs that have a separating function.

	Airborne sound insulation $D_{nT,w} + C_{tr}$ dB (Minimum Values)	Impact sound insulation $L'_{nT,w}$ dB (Maximum Values)
Purpose built dwelling-houses or flats		
Floors and Stairs	45	62
Dwelling-houses or flats formed by material change of use		
Floors and Stairs	43	64

Table 1.1b: Rooms for residential purposes - performance standards for separating floors, and stairs that have a separating function.

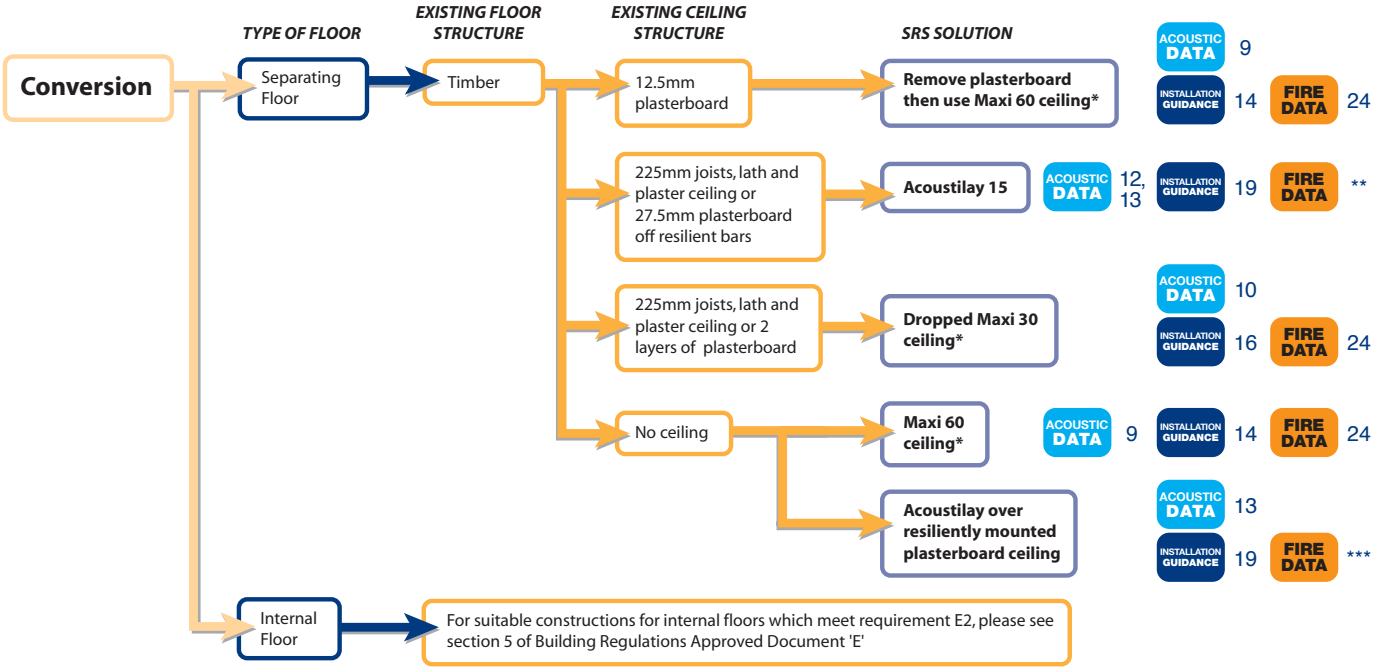
	Airborne sound insulation $D_{nT,w} + C_{tr}$ dB (Minimum Values)	Impact sound insulation $L'_{nT,w}$ dB (Maximum Values)
Purpose built rooms for residential purposes		
Floors and Stairs	45	62
Rooms for residential purposes formed by material change of use		
Floors and Stairs	43	64

In addition to these targets, separating structures within a dwelling must also meet or exceed the following targets as set out in table 1.1c. It is anticipated that these standards should improve the level of privacy within a dwelling.

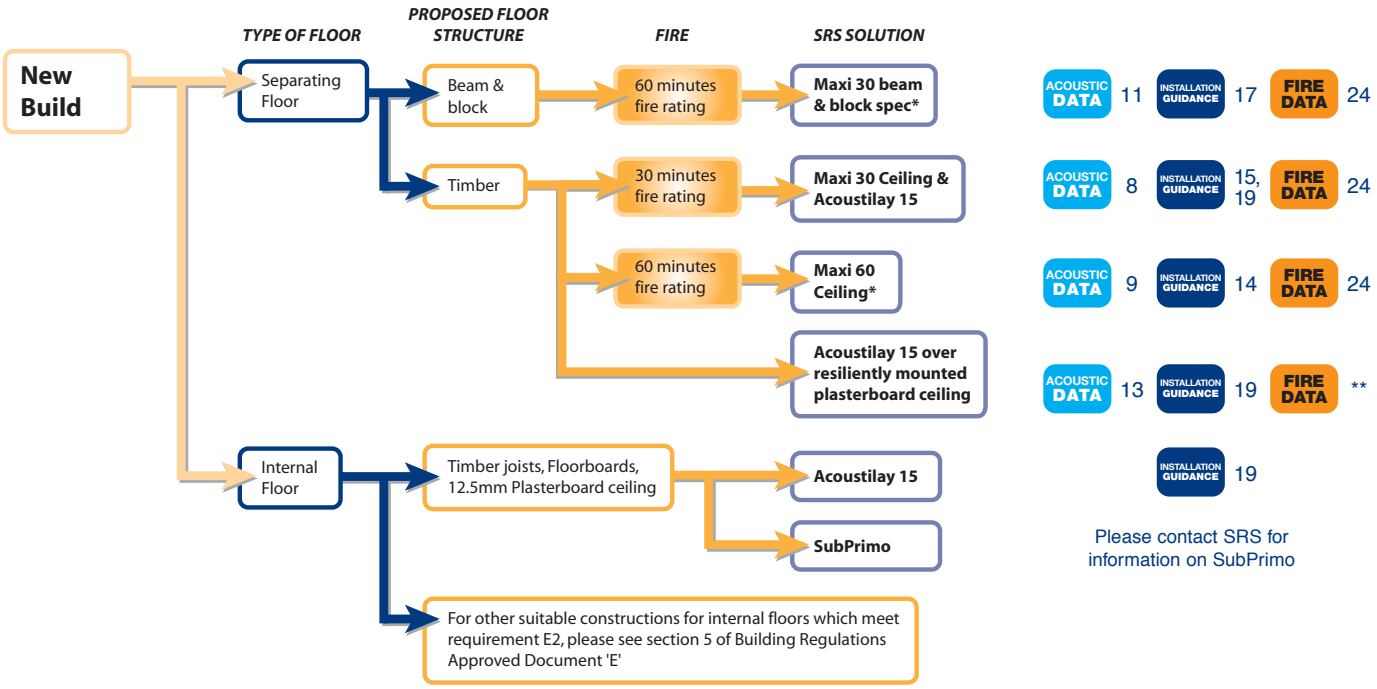
Table 1.1c: laboratory values for new internal floors within: dwelling-houses, flats and rooms for residential purposes, whether purpose built or formed by material change of use.

	Airborne sound insulation R_w dB (Minimum Values)
Floors	40

Approved Document E



Notes:
* For additional acoustic performance, Acoustilay can be used in conjunction with the Maxiboard ceiling.
** Any fire resistance will be due to the lath and plaster ceiling and any additional ceiling/cavity treatments.
*** For information on fire resistance, please refer to plasterboard manufacturer's details.



Notes:
* For additional acoustic performance, Acoustilay can be used in conjunction with the Maxiboard ceiling.
** For information on fire resistance, please refer to plasterboard manufacturer's details.

Can't find an SRS solution?

Should your application/construction differ from those listed above, please contact our technical department on **01204 380074** for assistance.

Schools : Building Bulletin 93 – Acoustic Design of Schools

It is widely recognised that improving acoustic separation within a school can significantly improve children's ability to learn without distraction from activities in other areas of the buildings. Building Bulletin 93 (BB93) gives guidance on the performance of separating structures within schools depending on the noise level or sensitivity of the activities occurring on either side of it. Tables 1.2a & 1.2b have been created using data from BB93, and describe the minimum weighted standardised level difference $D_{nT\ (Tmf,max),w}$ (dB) between the most common teaching rooms. The relationship between $D_{nT\ (Tmf,max),w}$ and D_{nTw} is dependant upon the required reverberation time in the receiving room. For most teaching rooms $D_{nTw} = D_{nT\ (Tmf,max),w} + 2/3dB$, though for rooms requiring higher reverberation times, such as gymnasiums and music performance rooms, the relationship can be as high as $D_{nTw} = D_{nT\ (Tmf,max),w} + 5dB$. Similarly, for impact sound insulation, the relationships should be $L'_{nTw} = L'_{nT\ (Tmf,max),w} - 2/3$ dB and $L'_{nTw} = L'_{nT\ (Tmf,max),w} - 5dB$ respectively.

Table 1.2a:

	Nursery Play Room	Nursery Quiet Room	Primary/Secondary Classroom	Open Plan Teaching / Resource area	Music Classroom	Music Performance Room	Lecture Room (Fewer than 50)	Lecture Room (More than 50)	Science Laboratory	Drama Studio	Assembly Hall	Gymnasium	Dining Room
Nursery Play Room	55												
Nursery Quiet Room	55	40											
Primary/Secondary Classroom	55	45	45										
Open Plan Teaching / Resource	50	45	45	40									
Music Classroom	55	55	55	55	55								
Music Performance Room	55	55	55	55	60	60							
Lecture Room (Fewer than 50)	55	45	45	45	55	55	45						
Lecture Room (More than 50)	55	45	50	50	60	60	50	50					
Science Laboratory	50	45	45	40	55	55	45	50	40				
Drama Studio	55	55	55	50	60	60	55	55	50	55			
Assembly Hall	55	55	55	50	55	55	55	55	50	55	55		
Gymnasium	55	55	55	50	55	55	55	55	50	55	55	50	
Dining Room	55	55	55	50	55	55	55	55	50	55	55	50	45

In addition to the airborne performance of separating structures, BB93 also gives performance standards for impact noise transmission through floors.

Table 1.2b:

	Level - $L'_{nT(Tmf,max),w}$ (dB)
Nursery Play Room	65
Nursery Quiet Room	60
Primary/Secondary Classroom	60
Open Plan Teaching / Resource area	60
Music Classroom	55
Music Performance Room	55
Lecture Room (Fewer than 50)	60
Lecture Room (More than 50)	55
Science Laboratory	65
Drama Studio	55
Assembly Hall	60
Gymnasium	65
Dining Room	65

Hospitals : HTM 2045/HTM 56

Requirements for acoustic separation in hospitals and buildings used for health care is given in HTM 56, and also in HTM 2045. Within hospitals acoustic separation is required for areas of privacy as well as treatment rooms and the comfort of in-patients. Table 1.3a below gives the performance requirement for airborne sound insulation between floors in dB (R_w). R_w is a laboratory rating of sound insulation. There is no fixed relationship between R_w and D_{nTw}, but as a guide R_w is at least 5dB higher than the equivalent D_{nTw}.

Table 1.3a: Minimum requirement for airborne sound insulation between floors in dB (R_w) from HTM 56

	Consulting Room	Examination Rooms	Treatment Rooms	Speech Therapy Rooms	Offices	Seminar Rooms	Single-bed Wards	Multi-bed Wards	Day Rooms	Nurseries	Toilets and Bathrooms	Utility Rooms	Ward Pantries
Consulting Room	43												
Examination Rooms	43	43											
Treatment Rooms	*	53	43										
Speech Therapy Rooms	48	48	*	48									
Offices	43	43	53	48	48								
Seminar Rooms	48	43	48	53	43	38							
Single-bed Wards	43	43	*	48	43	48	43						
Multi-bed Wards	53	53	48	*	48	43	53	43					
Day Rooms	53	53	43	*	48	43	53	43	38				
Nurseries	*	*	43	*	53	48	*	48	43	43			
Toilets and Bathrooms	48	48	48	53	43	43	48	48	48	48	43		
Utility Rooms	*	*	43	*	53	48	*	48	43	43	48	43	
Ward Pantries	48	48	48	53	43	38	48	43	43	48	43	48	38

* These relationships should be 'designed out' as the sound insulation requirements would require special construction.

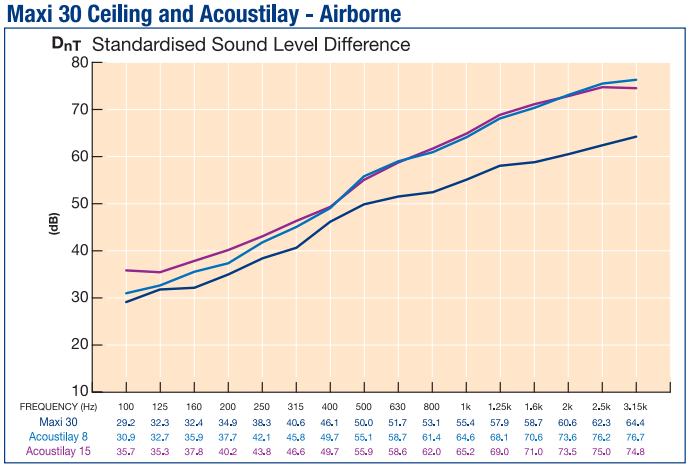
HTM 2045 encourages the principle of acoustic zoning, through the concepts of intrusive noise and privacy factors. The privacy is based upon the subjective privacy requirement for the area under consideration (PF) with a correction applied for the mechanical service noise levels (B) in that area.

Further corrections are applied where adjacent areas might be a source of increased voice effort (C) e.g. maternity wards, nurseries and A&E. In such areas the site tested weighted apparent sound reduction index (R'_w) is equal to PF – B + C. For example, in the case of a private office above a maternity ward R'_w becomes 80 – 30 + 20 i.e. 70dB, a much more rigorous solution than given by HTM 56.

In terms of impact sound performance, when tested, L'_{nTw} should not exceed 61dB with no individual value being greater the 65dB.

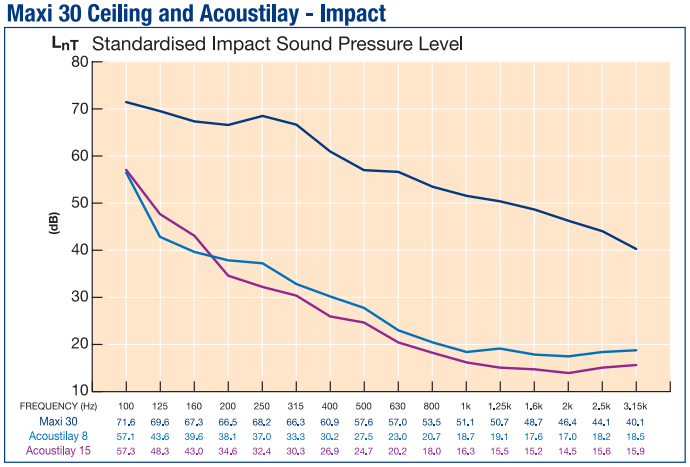
Maxi 30 Ceiling

Maxi 30 Ceiling and Acoustilay - Airborne



FREQUENCY (Hz)	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k
Maxi 30	29.2	32.3	32.4	34.9	38.3	40.6	46.1	50.0	51.7	53.1	55.4	57.9	58.7	60.6	62.3	64.4
Acoustilay 8	30.9	32.7	35.9	37.7	42.1	45.8	49.7	55.1	58.7	61.4	64.6	68.1	70.6	73.6	76.2	76.7
Acoustilay 15	35.7	35.3	37.8	40.2	43.8	46.6	49.7	55.9	58.6	62.0	65.2	69.0	71.0	73.5	75.0	74.8

Maxi 30 Ceiling and Acoustilay - Impact



FREQUENCY (Hz)	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k
Maxi 30	71.6	69.6	67.3	66.5	68.2	66.3	60.9	57.6	57.0	53.5	51.1	50.7	48.7	46.4	44.1	40.1
Acoustilay 8	57.1	43.6	39.6	38.1	37.0	33.3	30.2	27.5	23.0	20.7	18.7	19.1	17.6	17.0	18.2	18.5
Acoustilay 15	57.3	48.3	43.0	34.6	32.4	30.3	26.9	24.7	20.2	18.0	16.3	15.5	15.2	14.5	15.6	15.9

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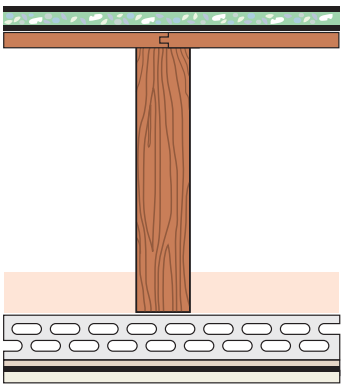


Maxi 30 ceiling consists of 100mm mineral fibre between the floor joists, with resilient bars fixed to the underside of the joists at 400mm centres. Maxiboard is then fixed to the bars using Maxi HP screws (30mm x 3.9mm). All joints are sealed with SRS Gripfix and the perimeter is finished with a bead of SRS acoustic sealant.

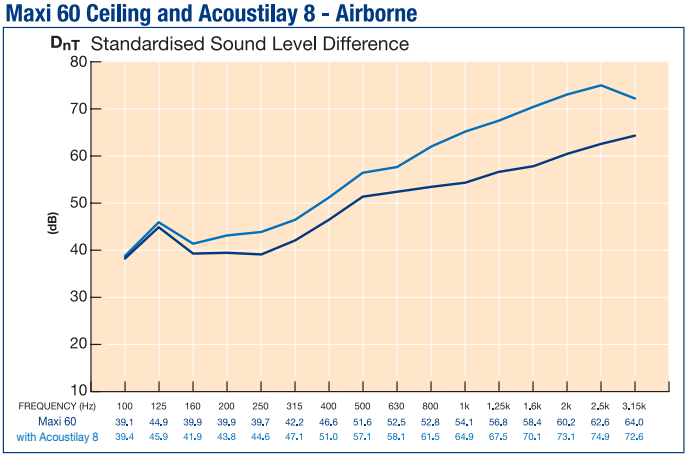
Acoustic tests on Maxi 30 ceilings carried out independently by Noise Control Services, (conducted prior to the ANC advice to impact test on a rigid board) 16/05/03 in accordance with ISO 140 parts 4 and 7. Rated to ISO 717 parts 1 and 2. Test reference numbers: 5031-5036.

Fire performance: achieves 1/2 hour fire resistance to BE EN 1365-2 floor/roof (WARRES 124986).

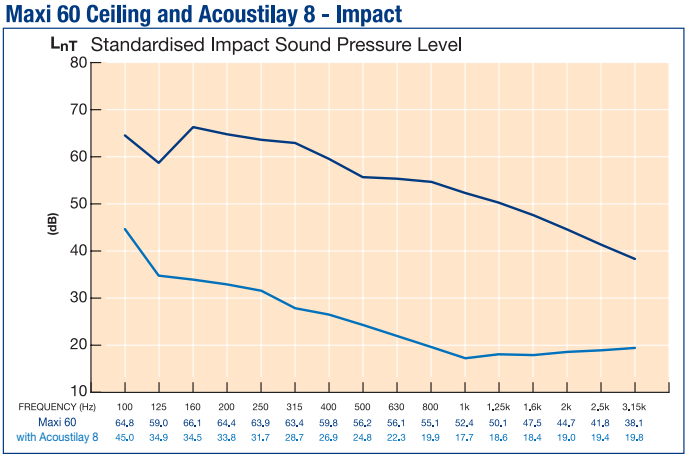
Maxi 30 Ceiling			
	Airborne		Impact
	$D_{nT,w}$ (dB)	$D_{nT,w} + C_{tr}$ (dB)	$L_{nT,w}$ (dB)
Maxi 30 only	50	43	61
With Acoustilay 8 - without board	53	46	35
With Acoustilay 15 - without board	55	49	37

When impact testing Acoustilay above a Maxi 30 Ceiling, ANC advice would be to test on a rigid board. In this situation, SRS Ltd would expect the impact performance to be around 6dB better than when testing on the bare floor above the ceiling system.

Maxi 60 Ceiling and Acoustilay 8 - Airborne



Maxi 60 Ceiling and Acoustilay 8 - Impact



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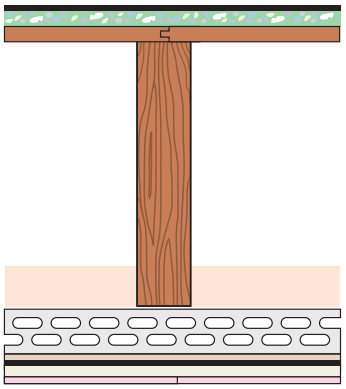


Maxi 60 ceiling consists of 100mm 45kg/m^3 mineral wool slabs between the floor joists, with Maxi resilient bars fixed to the underside of the joists at 300mm centres. Maxiboard is then fixed to the bars using Maxi HP screws (30mm x 3.9mm). A single layer of 12.5mm fire rated plasterboard is fixed below the Maxiboard. All joints are sealed with SRS Gripfix and the perimeter is finished with a bead of SRS acoustic sealant.

Acoustic tests on Maxi 60 ceilings carried out independently by Noise Control Services, (conducted prior to the ANC advice to impact test on a rigid board) 02/06/03 in accordance with ISO 140 parts 4 and 7. Rated to ISO 717 parts 1 and 2. Test reference numbers: 06031/1-4.

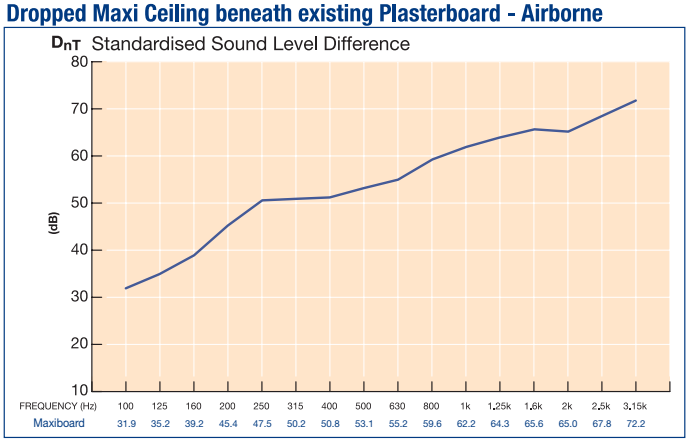
Fire performance: achieves 1 hour fire resistance to BE EN 1365-2 floor/roof (WARRES 127725).

Maxi 60 Ceiling			
	Airborne		Impact
	$D_{nT,w}$ (dB)	$D_{nT,w} + C_{tr}$ (dB)	$L_{nT,w}$ (dB)
Maxi 60 only	53	48	57
With Acoustilay 8 - without board	58	52	30

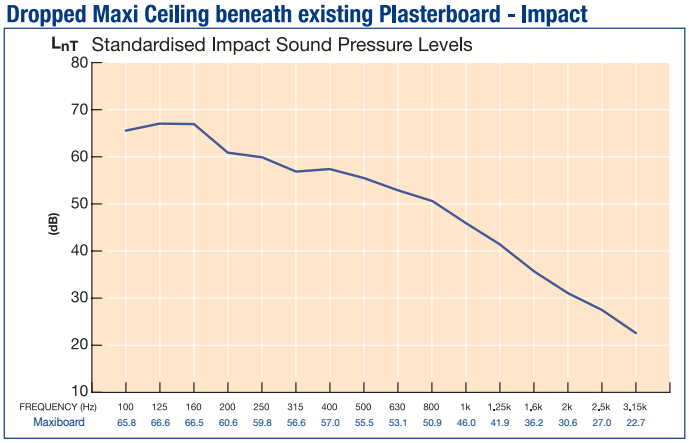
When impact testing Acoustilay above a Maxi 60 Ceiling, ANC advice would be to test on a rigid board. In this situation, SRS Ltd would expect the impact performance to be around 6dB better than when testing on the bare floor above the ceiling system.

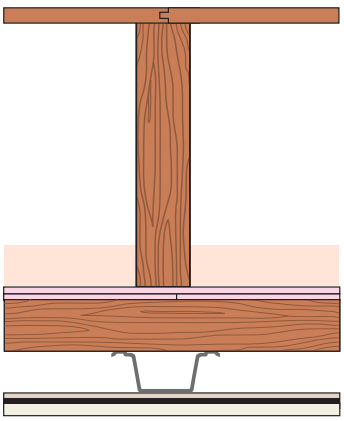
INSTALLATION GUIDANCE 16

Dropped Maxi Ceiling beneath existing Plasterboard - Airborne



Dropped Maxi Ceiling beneath existing Plasterboard - Impact



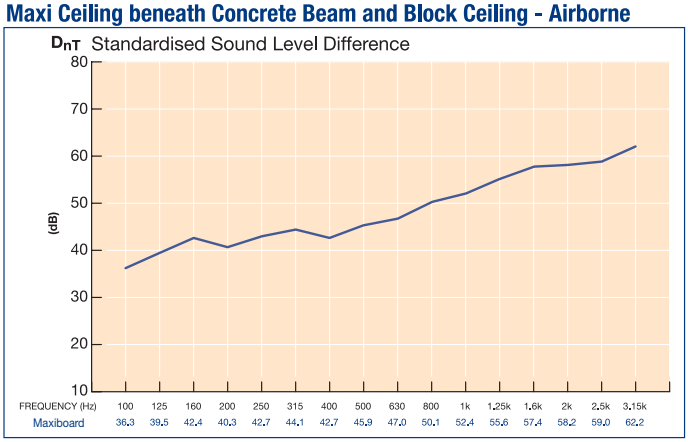


An existing plasterboard ceiling can be significantly upgraded by installing a Maxi 30 ceiling below it. 50mm x 50mm softwood timber battens are fixed at 600mm centres with mineral wool to the underside of the existing ceiling and the Maxi 30 system installed beneath.

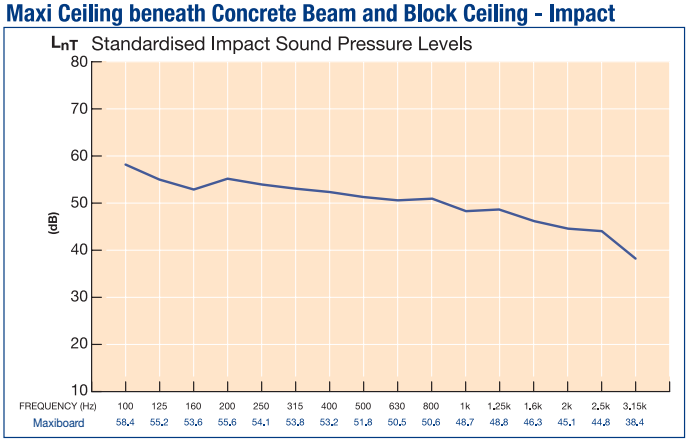
Acoustic tests on Maxi ceiling carried out independently by Noise Control Services, 11/11/05 in accordance with ISO 140 parts 4 and 7. Rated to ISO 717 parts 1 and 2. Test reference number 11056/1, 11056/3.

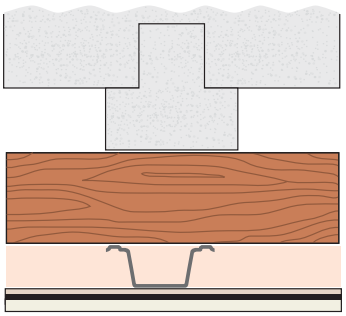
Maxi ceiling below existing plasterboard			
	Airborne		Impact
	$D_{nT,w}$ (dB)	$D_{nT,w} + C_{tr}$ (dB)	$L_{nT,w}$ (dB)
Dropped Maxi 30	56	48	56

Maxi Ceiling beneath Concrete Beam and Block Ceiling - Airborne



Maxi Ceiling beneath Concrete Beam and Block Ceiling - Impact





INSTALLATION GUIDANCE 17
FIRE DATA 24

A variation of the Maxi 30 ceiling can be installed below a beam and block floor to achieve the required level of sound insulation stipulated by the building regulations.

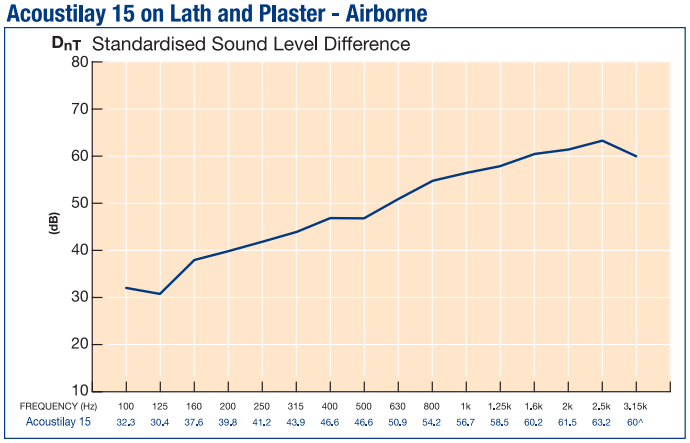
50mm x 50mm softwood battens are fixed via proprietory clips to the underside of the beam and block floor at 600mm centres. 50mm mineral wool slabs are friction fitted between the battens. SRS resilient bars are then fitted across the battens, at 400mm centres.

Acoustic tests on Maxi ceiling carried out by SRS Ltd, 09/06/04 in accordance with ISO 140 parts 4 and 7. Rated to ISO 717 parts 1 and 2. Test reference number EXET03-04.

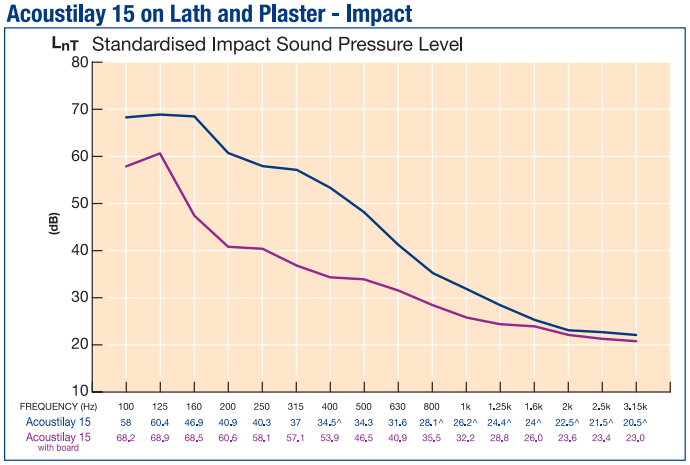
Fire performance: achieves 1 hour fire resistance to BE EN 1365-2 floor/roof (WARRES 143085).

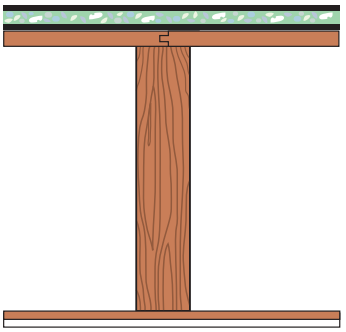
Maxi ceiling below beam & block			
	Airborne		Impact
	$D_{nT,w}$ (dB)	$D_{nT,w} + C_{tr}$ (dB)	$L_{nT,w}$ (dB)
Maxi B&B	51	47	52

Acoustilay 15 on Lath and Plaster - Airborne



Acoustilay 15 on Lath and Plaster - Impact



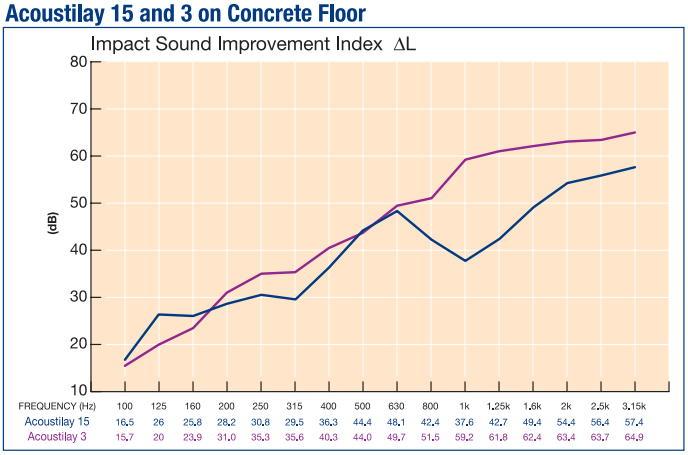


The performance achieved over a lath and plaster ceiling can be variable, as it is dependent on the condition of the ceiling and floorboards to some extent. The joist sizes in the test situation were 75mm x 225mm. The figures quoted here describe what can be achieved from Acoustilay over a floor/ceiling in good condition, but cannot be guaranteed.

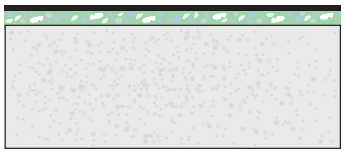
Acoustic tests on Acoustilay carried out independently by Noise Control Services at a site in Darwen on 03/11/03, (conducted prior to the ANC advice to impact test on a rigid board) in accordance with ISO 140 parts 4 and 7. Rated to ISO 717 parts 1 and 2. Test references: NCS 11031/1, NCS 11031/2. Impact test on Acoustilay, covered with a rigid board, carried out by Floorscan Installations & Surveys Ltd on 20/10/06, in accordance with ISO 140 part 7. Rated to ISO 717 part 2. Test Reference 1260.

Acoustilay with a lath & plaster ceiling			
	Airborne		Impact
	$D_{nT,w}$ (dB)	$D_{nT,w} + C_{tr}$ (dB)	$L_{nT,w}$ (dB)
With Acoustilay 15 - without board	52	45	43
With Acoustilay 15 - with board	–	–	57

Acoustilay 15 and 3 on Concrete Floor



INSTALLATION GUIDANCE 19

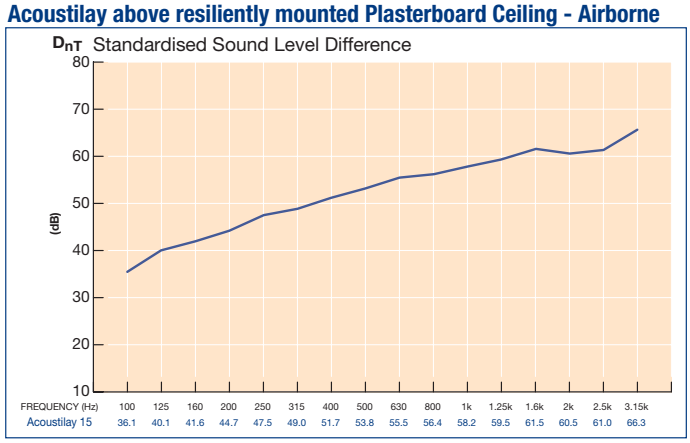


Acoustilay laid over a concrete floor will significantly reduce the amount of impact noise received in the rooms below.

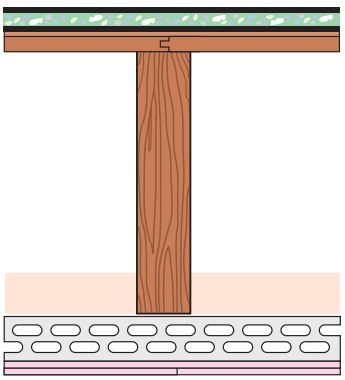
Acoustic tests carried out at University of Salford 23/05/96 to ISO 140 Part 8. Report number AT/96/47

Acoustilay on a concrete floor	
	Impact ΔL_w (dB)
Acoustilay 3 - without board	42
Acoustilay 15 - without board	42

Acoustilay above resiliently mounted Plasterboard Ceiling - Airborne



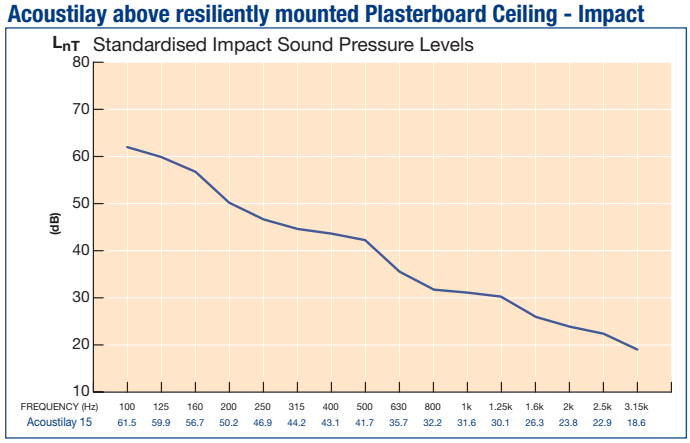
INSTALLATION GUIDANCE 19



Acoustilay 15 can be installed above a double boarded ceiling, fixed on resilient bars, to meet the Building Regulations. The ceiling in this test construction consisted of resilient bars fixed to the joists, with a layer of 15mm Soundbloc plasterboard and a layer of 12.5mm plasterboard fixed to the resilient bars. A rigid board was placed over the Acoustilay prior to the impact test.

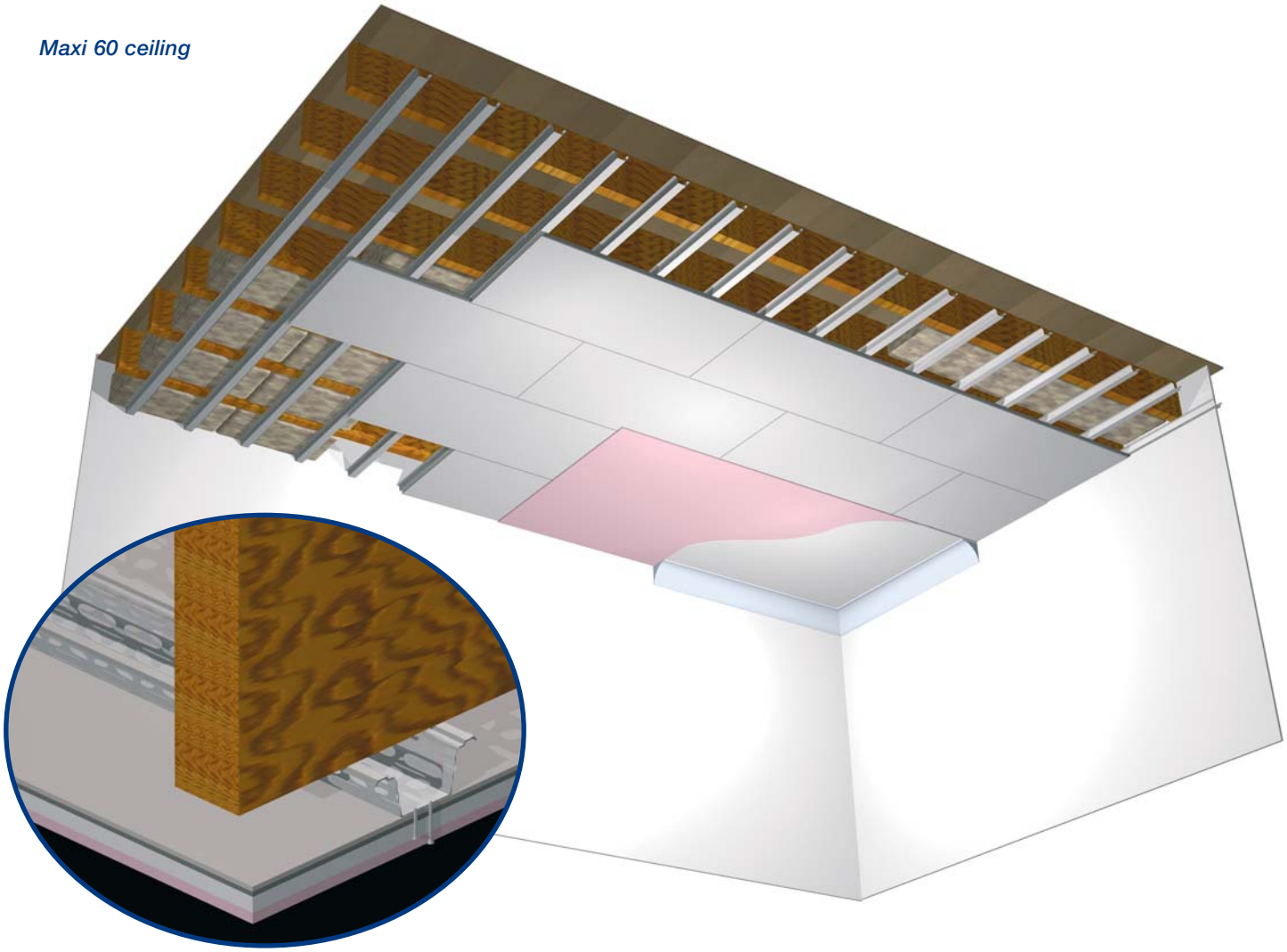
Acoustic tests carried out by Floorscan Acoustic Installation & Surveys Ltd, 14/09/05 in accordance with ISO 140 parts 4 and 7. Rated to ISO 717 parts 1 and 2. Test reference numbers 195-3, 195-4 (results averaged over two tests).

Acoustilay above resiliently mounted Plasterboard Ceiling - Impact



Acoustilay above plasterboard on resilient bars			
	Airborne		Impact
	$D_{nT,w}$ (dB)	$D_{nT,w} + C_{tr}$ (dB)	$L_{nT,w}$ (dB)
Acoustilay 15 - with board	57	51	48

Maxi 60 ceiling



Maxiboard ceilings – Timber Framed Buildings

Maxi 60 Ceiling

1 Hour Fire Rated

ACOUSTIC DATA 9
FIRE DATA 24

Installation

Maxiboard can be installed onto a ceiling in order to meet Approved Document E of the Building Regulations (2003) and also achieves 1 hours fire protection. Firstly 100mm 45kg/m^3 mineral wool slabs are friction fitted between the joists. SRS Maxi Resilient Bars are then fixed to span the timber joists across the full width of ceiling, using 70mm x 5mm self-drilling screws. They are fitted at the edges of the ceiling and at a maximum of 300mm centres in between.

The Maxiboard panels are fixed into the resilient bars using 30mm x 3.9mm Maxi HP screws. Fixing must be to the resilient bar alone and not through into the timber joists. The Maxiboards are secured in a staggered half panel overlap, with the 10mm white gypsum layer facing outwards, unless specification requirements determine otherwise. The screw fixings are at a maximum of 300mm centres, positioned 20mm from the edges of each board and at the midpoint. A bead of SRS Gripfix is applied to each panel's shiplap edge prior to installation. Where the Maxiboard panels adjoin a perimeter wall, the shiplap edge should be removed, and a bead of SRS Acoustic Sealant applied to the edge. It is essential that no gaps occur between the Maxiboard panels.

12.5mm fire rated plasterboards are then fixed through the Maxiboard and into the resilient bars using 50mm drywall screws.

Please see 'Finishing and Plastering' section on page 25 for finishing details.

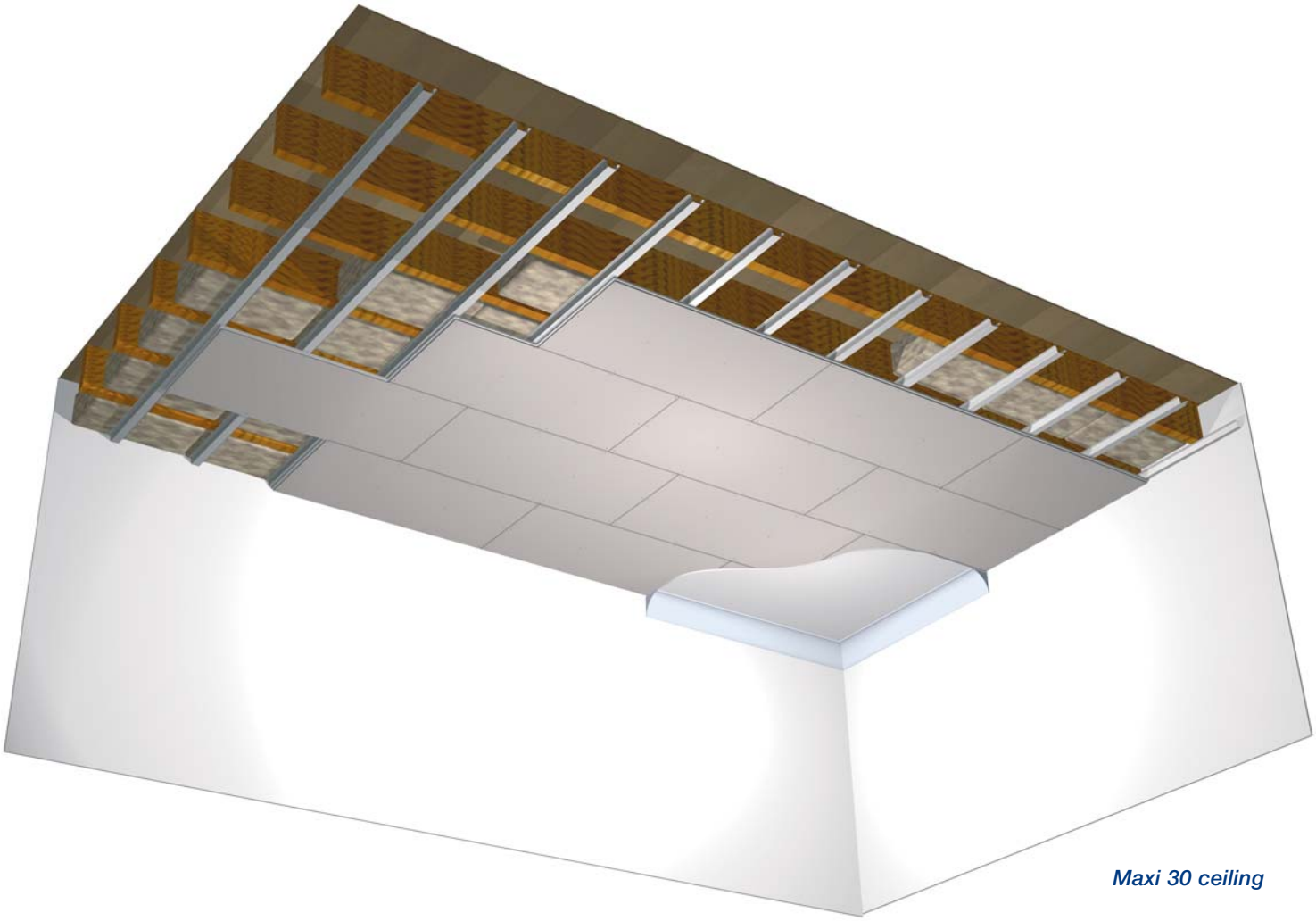
Maxi 30 Ceiling

1/2 Hour Fire Rated

ACOUSTIC DATA 8
FIRE DATA 24

For a half hour fire rating through the ceiling, the 12.5mm fire rated plasterboard is omitted from the previously detailed Maxi 60 ceiling construction and the resilient bars need only be installed at 400mm centres. The Maxiboard panels can be fixed directly to the resilient bars using 30mm x 3.9mm Maxi HP screws.

Please see 'Finishing and Plastering' section on page 25 for finishing details.



Maxi 30 ceiling

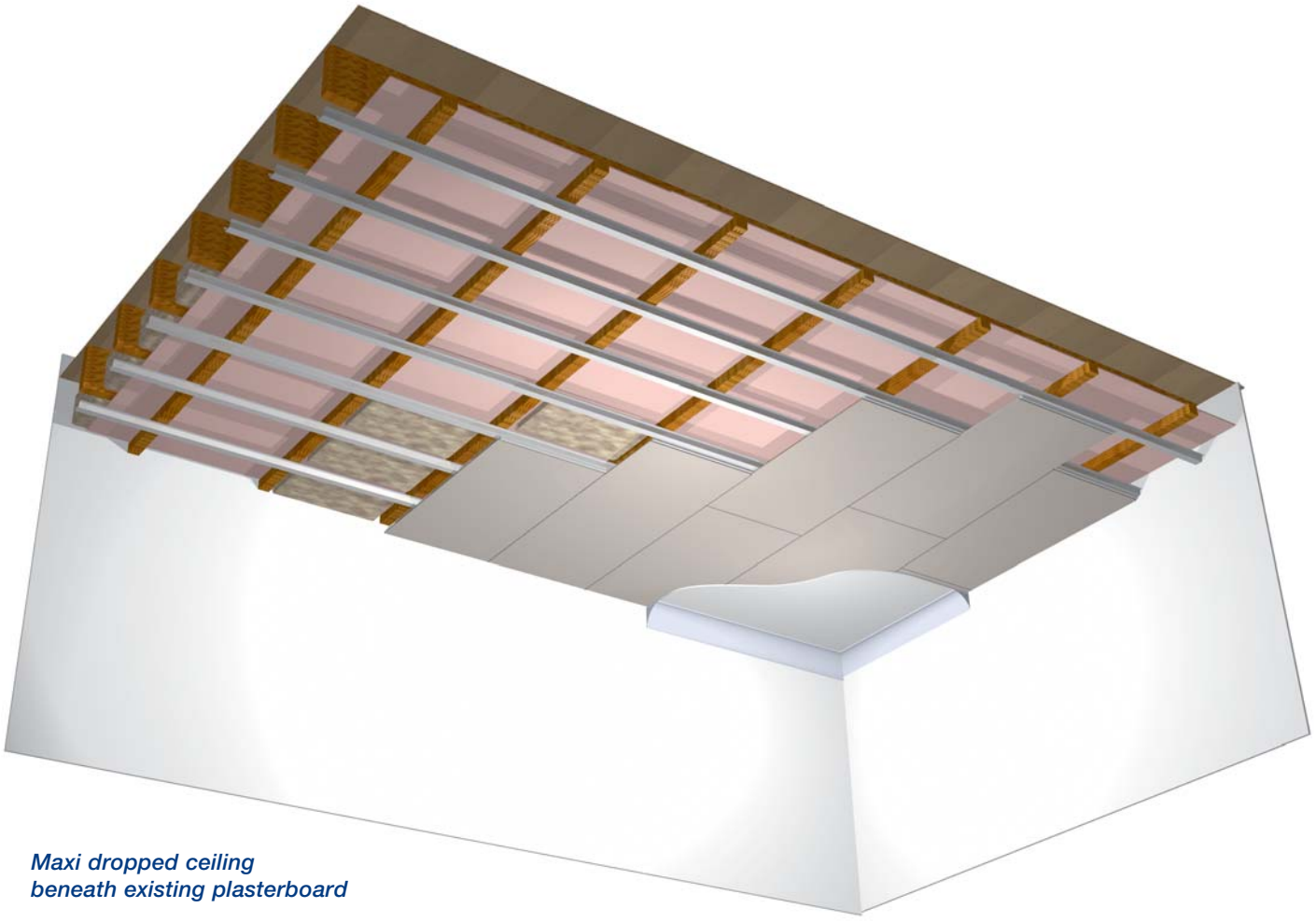
Maxi dropped ceiling - beneath existing plasterboard ceilings

ACOUSTIC DATA 10

It is also possible to achieve the Building Regulations Part E by installing a Maxiboard ceiling beneath an existing Lath and Plaster or Plasterboard ceiling. Softwood battens are fitted through the existing ceiling, to the joists at 600mm centres. SRS Resilient Bars are then fixed at 90° to the softwood battens, across the full width of ceiling. They are secured at the extremities of the ceiling and at 400mm centres in between, commencing from one edge. 50mm 45kg/m^3 mineral fibre slabs are friction fitted between the battens and behind the resilient bars.

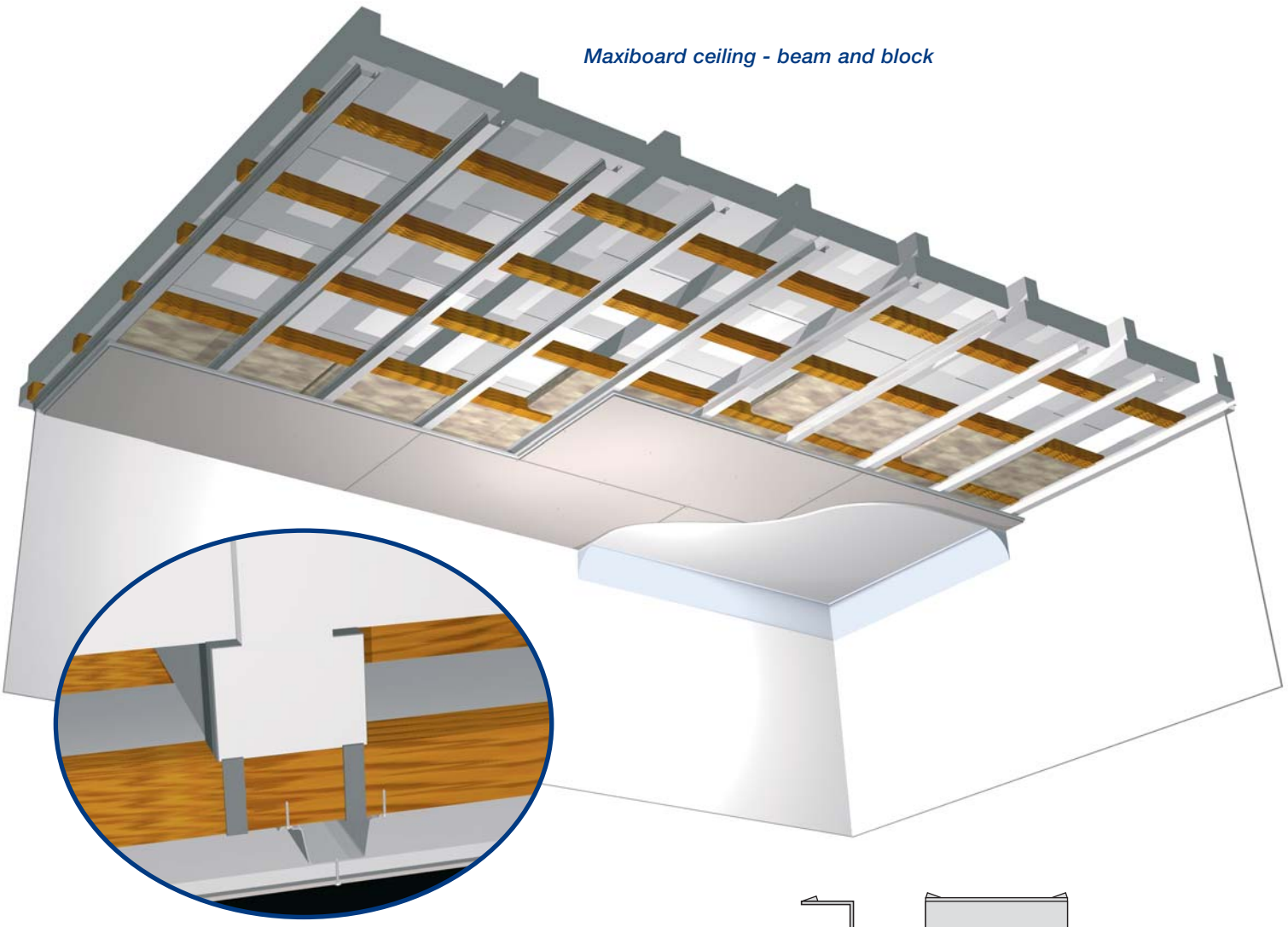
Maxiboard panels are fixed to the resilient bars using 3.9mm x 30mm Maxi HP screws. Fixing must be to the resilient bar alone and not through into the timber battens. The Maxiboards are secured in a staggered half panel overlap. The shiplap edge is removed where the Maxiboard abuts other surfaces, and SRS Acoustic Sealant is applied to all cut edges. There are to be three screws along each short edge of the Maxiboard panel, positioned 20mm from the edges and at the midpoint. A bead of SRS Gripfix is applied to each panel's shiplap edge prior to installation.

Please see 'Finishing and Plastering' section on page 25 for finishing details.



Maxi dropped ceiling beneath existing plasterboard

Maxiboard ceiling - beam and block



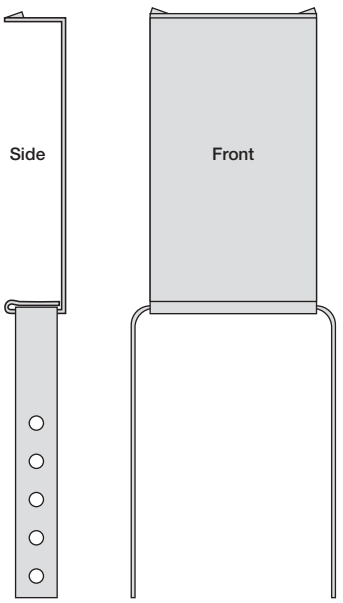
Maxiboard - Beam and block floor installation

1 Hour Fire Rated

ACOUSTIC DATA 11
FIRE DATA 24

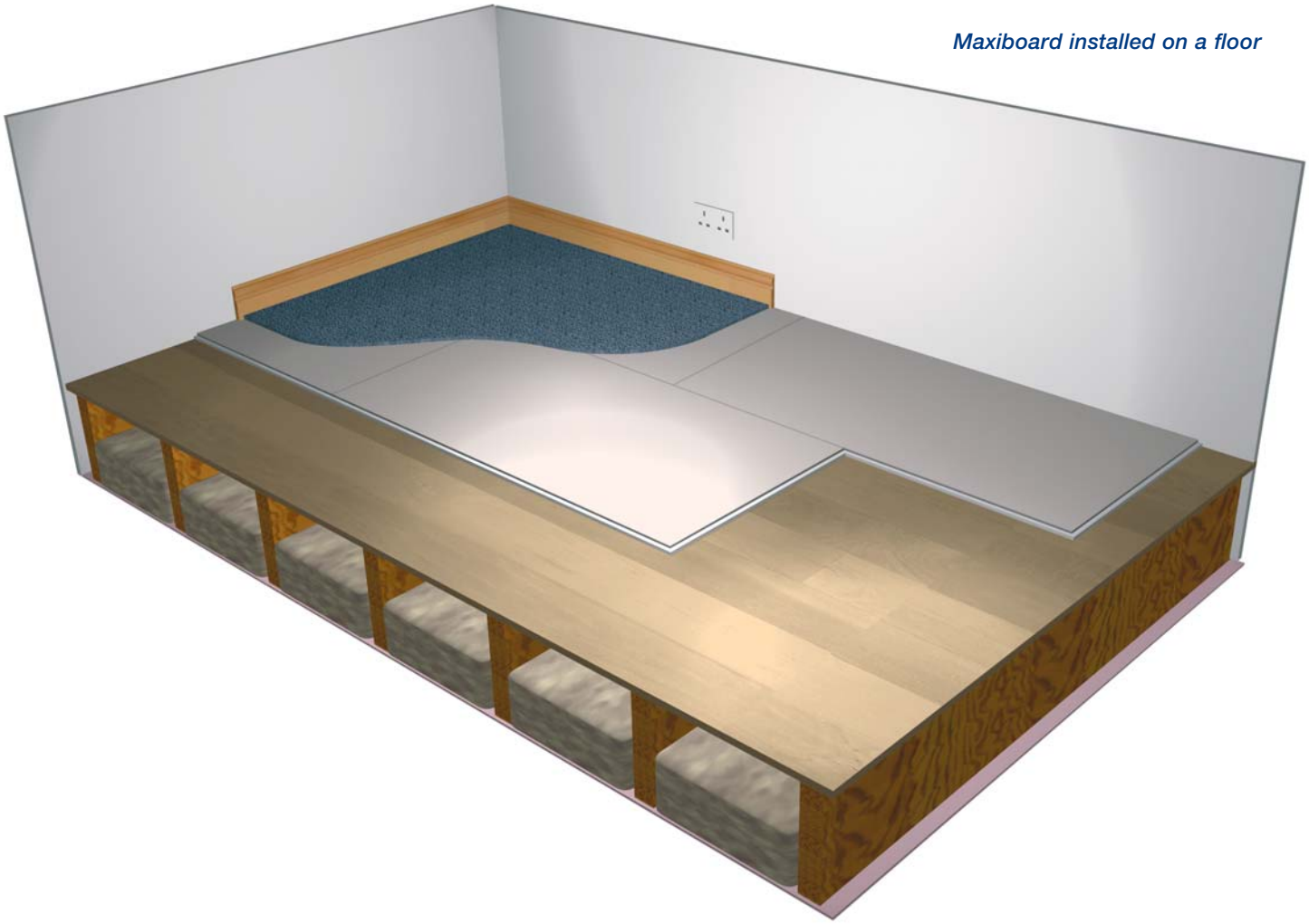
Prior to grouting, 50mm softwood battens are fitted to the beams at 600mm centres using screw fixings through proprietory ceiling clips. Resilient bars are fixed at 90° to the softwood battens, across the full width of the ceiling. They are secured at the extremities of the ceiling and at 400mm centres in between, commencing from one edge. 50mm 45kg/m^3 mineral wool slabs are friction fitted between the battens and behind the resilient bars.

Maxiboard panels are fixed to the resilient bars using 30mm x 3.9mm self-drilling countersunk screws. The panels are secured in a staggered half panel overlap. The shiplap edge is removed where the Maxiboard abuts other surfaces. Acoustic sealant is applied to all cut edges. There are to be three screws along each short edge of the Maxiboard panel, positioned 20mm from the edges and at the midpoint.



Ceiling clips

Please see ‘Finishing and Plastering’ section on page 25 for finishing details.



Maxiboard installed on a floor

Maxiboard - Floor installation

ACOUSTIC DATA CONTACT SRS TECHNICAL DEPT

SRS 15mm 3/15 Soundseal is adhered to the bottom of the skirting boards or wall, around the whole perimeter of the room. Where the Maxiboard panels meet the Soundseal, they should compress it to the wall by two thirds of its expanded size. The Maxiboard is laid in brick bond pattern over the existing floor with the 10mm lighter coloured gypsum board facing upwards, and screw fixed into position for stability.

As the panels are placed together a bead of SRS Gripfix should be applied to the joints to eliminate any gaps. Utmost care should be taken to ensure no gaps occur between panels. A layer of 5mm Impactafoam may be included below the Maxiboard for levelling purposes.

Acoustic Performance

Maxiboard laid over a floor can improve the airborne sound insulation performance by around 9dB and impact performance by 7dB, dependent on existing floor / ceiling configuration.

Acoustilay Flooring

ACOUSTIC DATA 8, 9, 12, 13

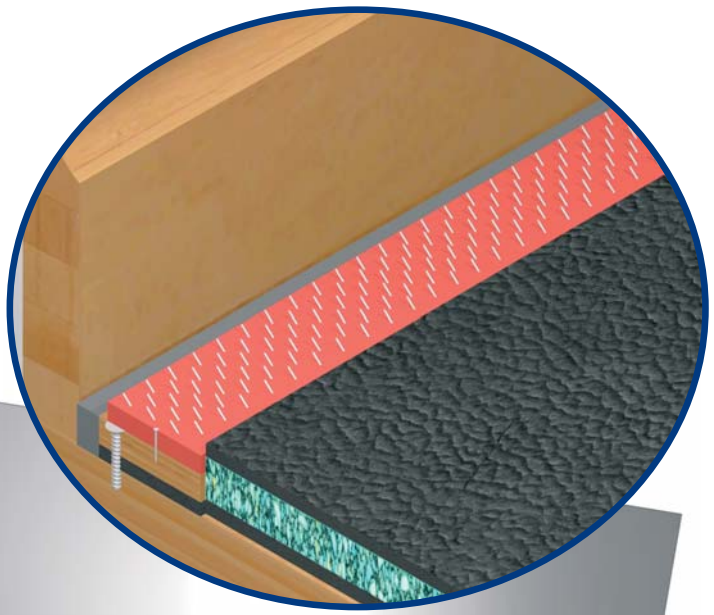
Acoustilay can be used above most Lath and Plaster and resiliently fixed, double plasterboarded ceilings to bring the overall floor / ceiling construction up to the standards of Approved Document E (2003)

Utmost care should be taken to ensure that no gaps occur between the panels. In some situations it may be necessary to bond the Acoustilay to the sub-floor to comply with Building Regulations Approved Document E (2003).

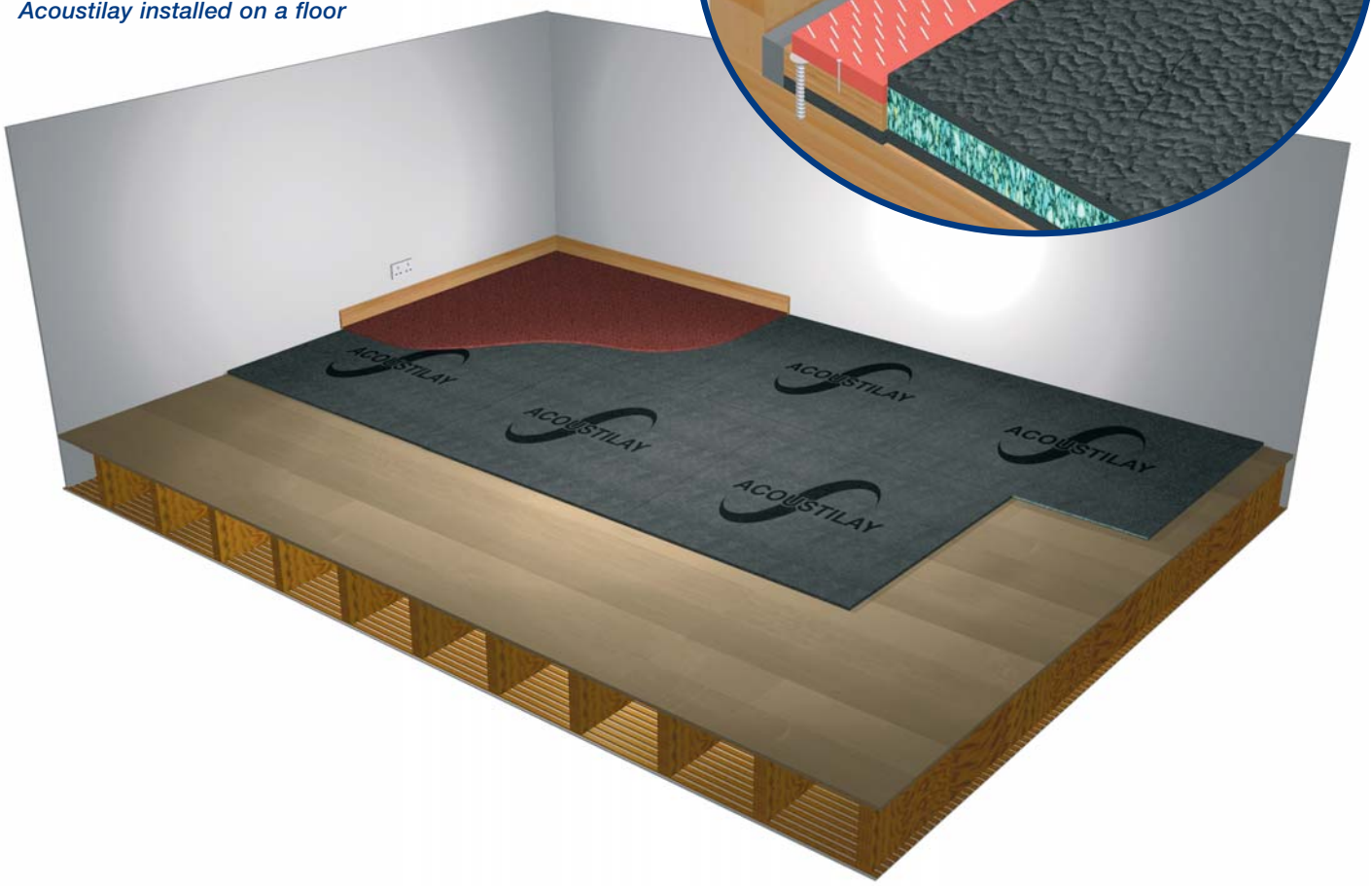
Acoustilay Installation
Carpet Finishes (Fitted with gripper)

Acoustilay perimeter strips are nailed or glued around the perimeter of the room with the black barrier layer facing down and the acoustic seal, compressed by two thirds, to the wall or skirting board. Carpet gripper rods are then nailed in place on top of the perimeter strip, raising them to the correct height to take the carpet. Acoustilay panels are tightly butted up to the perimeter detail, and loose laid in brick bond pattern onto the existing floorboards or Maxiboard panels.

Gripper detail



Acoustilay installed on a floor



Vinyl & Bonded Carpet Finishes

The Acoustilay should be bonded to the sub-floor in brick bond pattern, using the appropriate SRS adhesive. 6mm tongued and grooved Acoustilay MDF is then bonded to the top of the Acoustilay, with appropriate SRS adhesive. Alternatively, two layers of 3mm ply or MDF can be bonded onto the Acoustilay, taking care to avoid coincident joints. The MDF or plywood layer prevents point loading and joint damage in the case of vinyl and wooden floor finishes and aids installation in the case of bonded carpet and carpet tile finishes. The T&G Acoustilay MDF edge detail should be a minimum of 50mm away from any Acoustilay joint and an isolation gap of 5-10mm should be left between the wall and the MDF/Plywood to avoid sound transmission flanking into the structure, the isolation gap should be filled with a flexible sealer.

Please note that timber based products are prone to expansion and contraction, as such SRS recommend that expansion gaps are introduced across the Acoustilay MDF or plywood layers, as well as at the edges, in large applications. Further details on expansion gaps can be found at the Timber Research and Development Association website: www.trada.co.uk

The Acoustilay MDF boards need to be bonded to each other using a PVA adhesive on the joint. In areas where the floor covering is returned, a timber fillet, the same thickness as the Acoustilay, should be placed around the perimeter to create a solid edge.

The floor finish should then be installed on top of the Acoustilay MDF or plywood as per the manufacturer's instructions.

Commercial & Educational Applications

In commercial and educational environments, such as offices and schools, it is recommended that the MDF/plywood layer is installed onto the Acoustilay to eliminate the risk of carpet rucking under wheeled furniture and to protect the carpet from heavy traffic wear.

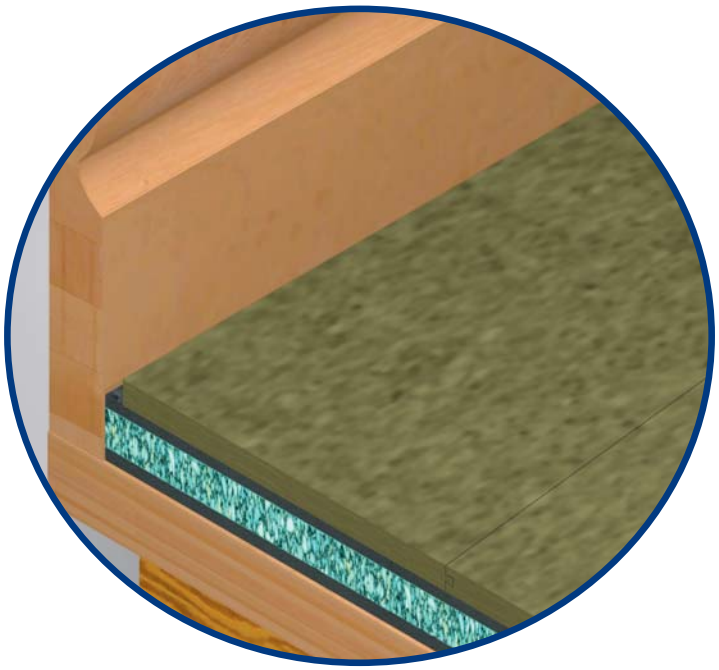
Timber Floor Finishes

Acoustilay can be used as an underlay to timber floor finishes, to provide impact and airborne sound insulation superior to that achieved using standard underlays. The suitability of the floor finish for use with Acoustilay should be checked with the floor finish manufacturer prior to installation. The resulting floor may feel a little softer than with a standard underlay and there may be a slight movement in the finished product.

If the timber floor manufacturer or installer feels that the movement is excessive, the joints should be supported by installing a layer of 6mm MDF or ply, bonded to the top of the Acoustilay, as per previous instructions in 'Vinyl & Bonded Carpet Finishes' section. In this case the Acoustilay should first be bonded to the floor. This treatment is also normally recommended for commercial or office applications.

As with all floating floor installations, no fixings should be allowed to penetrate the resilient layer and an expansion gap should be allowed around the perimeters and services.

SRS will be happy to provide samples to the floor manufacturer for test purposes. The density of the open cell resilient layer in all the Acoustilay products is 135kg/m^3.



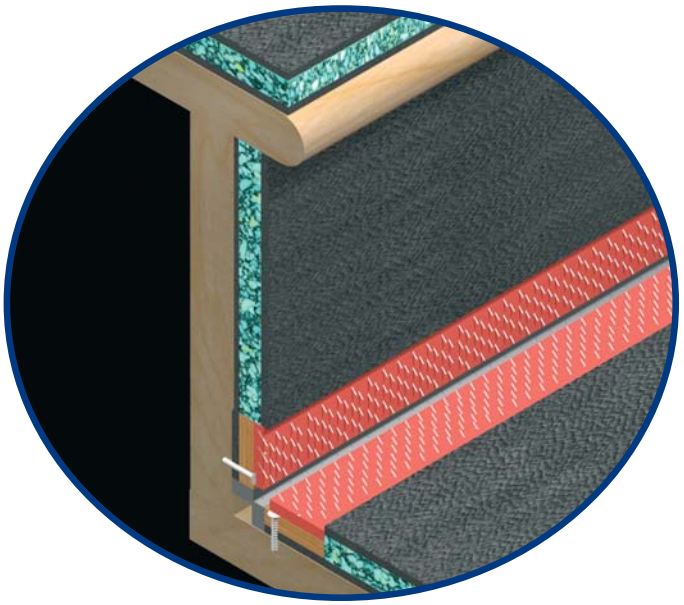
MDF detail

Stairs

The Acoustilay panels should first be cut to the appropriate size. Acoustilay should then be bonded to the tread of the stair and, if airborne insulation is required, bonded to the riser using appropriate SRS adhesive. Acoustilay 3 can be formed around the nosing of the stair, as with conventional underlay.

The Acoustilay 8 and 15 must be installed with Acoustilay Perimeter Strips. The perimeter strip is nailed to the tread or riser as displayed in the diagram. In areas where a nosing detail is required, a fillet of MDF, the same thickness as the Acoustilay should be installed beneath the nosing to ensure a uniform height.

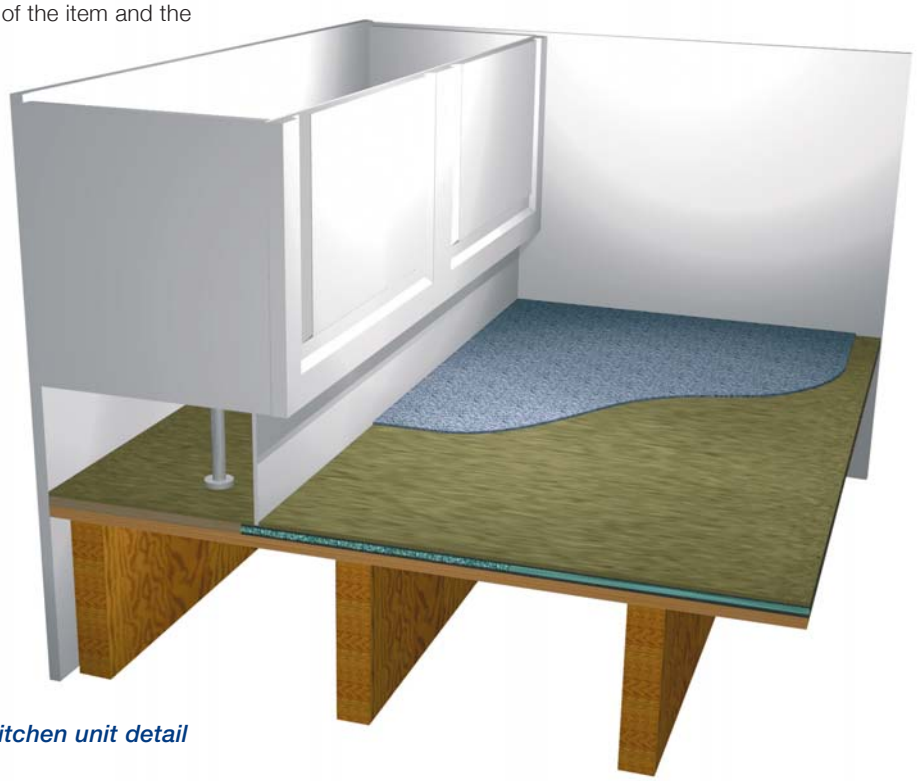
Stair detail



Fixtures and Fittings

When installing Acoustilay it is important not to fix directly though the product into the sub-floor due to the risk of sound bridging.

When items such as kitchen or bathroom units need to be securely fixed to the floor they should first be mounted and fixed onto an MDF plinth to the same height as the Acoustilay being used. Ideally the plinth will cover the footprint of the item and the Acoustilay can them be butted up to the MDF, maintaining a consistent floor level and providing secure fixing points. In the case of fitted cupboards and wardrobes, Acoustilay should be used to treat floors inside the cupboard to prevent flanking by airborne sound.



Kitchen unit detail

Physical Properties

acoustilay

Fire properties:

The materials used in the manufacture of Acoustilay are flame retardant. The foam is Combustion Modified and meets Schedule 1 Part 1 of Statutory Instrument 1324 Amendment 1989. The surface barrier layer is self extinguishing to FMVS S302.

Compression and dynamic loading:

Acoustilay has been tested in according with BS4098:1998 (1999) work of compression BS4052:1987 (1996) Dynamic loading test and meets the requirements of BS5808:1991 (1996) Classified luxury use, domestic/contract where high energy absorption is required.

Thermal resistance:

Acoustilay 3	Tog 2.33
Acoustilay 8	Tog 2.35
Acoustilay 15	Tog 2.38

Tested in accordance with BS4745:1990 (ISO 5085-1:1989). Tests carried out by British Textile Technology Group, 2002.

Dimensions:

Sheet size = 1200 x 1200mm

Thickness:	Acoustilay 15	15mm
	Acoustilay 8	12mm
	Acoustilay 3	10mm
Weight:	Acoustilay 15	15kg/m^2
	Acoustilay 8	8kg/m^2
	Acoustilay 3	3kg/m^2

Cutting

By sharp long bladed trimming knife. Score the surface then run through with knife several times to avoid tearing. When shaping use large scissors or tin snips. A circular saw should be used for large numbers of straight cuts.

Storage

Must be laid flat and kept dry and protected from frost.

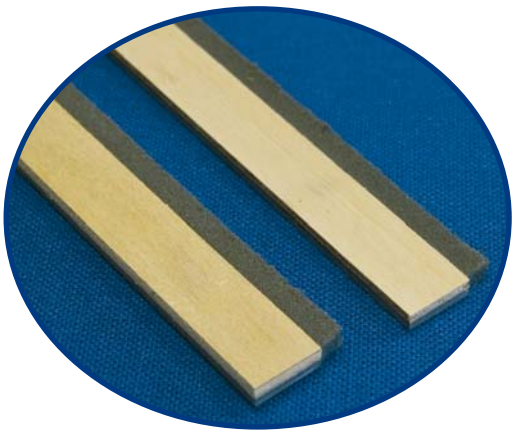
Acoustilay Accessories

Perimeter strip:

1200mm long x 25mm wide

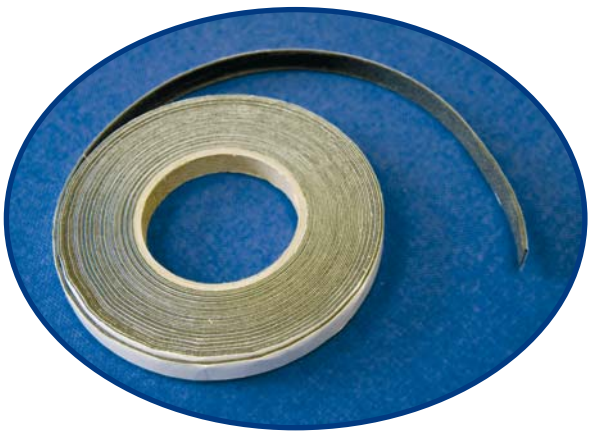
Acoustilay 8 strip = 6mm thick

Acoustilay 15 strip = 9mm thick



Perimeter sealer:

Rolls 8m x 15mm wide and 3/15mm thick



Adhesive

Release tackifier:

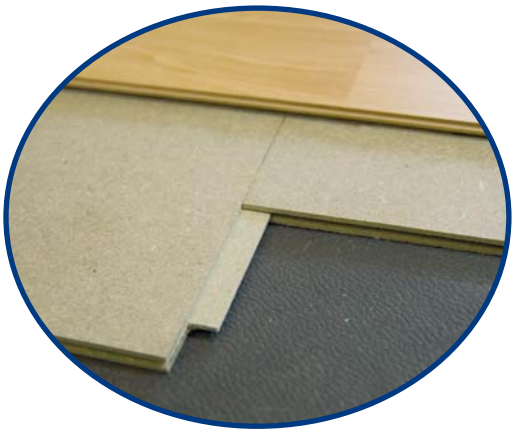
10 litre tub - coverage up to 50m² per tub depending on substrate

Acrylic adhesive:

5 litre tub - coverage up to 20m² per tub depending on substrate

Acoustilay MDF:

1200 x 1200 x 6mm



New, Improved Acoustilay Barrier Mat

Environmental Sustainability & Human Health Credentials

- UK manufactured - reduces carbon footprint
- Acoustilay Barrier Mat can be manufactured from pre and post industrial waste sources. When it has completed a full service life it can be recycled again
- Free from Vinyl Chloride Monomers, Lead, Bitumen, unrefined aromatic oils and allows halogen free modification
- Uses more sustainable production and disposal methods than PVC
- Safer disposal - Acoustilay Barrier Mat is made from a proprietary polyolefin polymer structure that is one of the least polluting plastics. It therefore poses fewer environmental risks and has a higher potential for mechanical recycling
- When Acoustilay Barrier Mat burns, no hydrogen chloride gas or dioxins are formed
- No PVC means that it does not require any plasticisers restricted by REACH, therefore no migration problems in landfill sites and easier disposal
- Good organoleptic properties
- During manufacture no toxic additives or stabilisers are used which make it easy to recycle and less harmful to the environment

Physical Properties

maxiboard

Fire properties:
Fire propagation BS 476:Part 6: 1989 Class 0

Surface spread of flame:
BS 476:Part 7: 1997 Class 1

MAXI 60 CEILING SYSTEM
Fire resistance:
BS EN 1365-2: 2000

Loadbearing capacity	86 min
Integrity	85 min
Insulation	85 min

MAXI 30 CEILING SYSTEM
Fire resistance:
BS EN 1365-2: 2000

Loadbearing capacity	44 min
Integrity	42 min
Insulation	42 min

MAXI BEAM & BLOCK SYSTEM
Fire resistance:
BS EN 1365-2: 2000

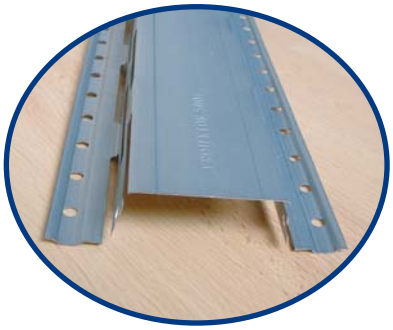
Loadbearing capacity	132 min
Integrity	132 min
Insulation	132 min

Maxiboard Dimensions:

Size = 1200 x 600mm (nominal)
Thickness = 17mm
Weight = 24kg/m^2

Maxiboard Accessories

Resilient Bars = 3000mm x 120 x 30mm



SRS Gripfix = 310ml tube

SRS Acoustic Sealant = 900ml tube

Maxi HP Screws = 3.9 x 30mm

Cutting:
Best cut using circular saw with dust extraction fitted. Can also be cut using a jigsaw or hand saw fixed with a heavy duty blade.

Storage: Maxiboard must be laid flat and kept dry. Maxiboard should only be stored on site if the building has been sealed and is completely dry.

Finishing & Plastering Maxiboard

Maxi 30 Ceiling:
We recommend that plasterboard be fitted over the Maxiboard and finished according to manufacturer's instructions.

Maxi 60 ceiling:
12.5mm fire rated plasterboard must be fitted over the Maxiboard and finished according to manufacturer's instructions.

However, should you need to plaster directly onto the Maxiboard, we advise skimming the 10mm lighter coloured, gypsum board side of the Maxiboard. Prior to skimming, all Maxiboard joints should be filled with proprietary joint filler and taped, using paper tape, applied with undiluted plastering PVA. The whole surface should then be bonded with PVA, diluted according to the manufacturer's recommendations. A skim coat of multi-finish may then be applied. Unfortunately, SRS cannot be held responsible for the quality of any plaster finish applied directly onto Maxiboard.

It is essential that the Maxiboard is free from moisture before plastering to avoid the risk of cracking at the joints. Factors such as site conditions and product storage prior to installation must be assessed before applying the skim. Should the plastering contractor suspect moisture in the Maxiboard, they should wait until the boards are fully conditioned on site.

Increased acoustic performance

Should you require an increased impact and/or airborne performance, one of the Acoustilay products can be installed on to the floor above a Maxiboard ceiling.

RSJ Detail

Where an RSJ or similar breaks the ceiling, it is essential that both the Maxiboard and the fire rated plasterboard are continued around the detail, encasing it completely. Timber noggins can be fixed into the recess of the RSJ to enable secure fixing of the boards. The cavity should be filled with mineral fibre.

Downlighters

Creating holes within the ceiling in order to install downlighters can have a detrimental affect on both the acoustic and fire separation properties of the ceiling, affecting both the upstairs and downstairs neighbours. However SRS provide a range of downlighters and lighting hoods that ensure both the acoustic and fire integrity of their ceiling systems. Please refer to our Acoustic Light Treatment brochure or contact the Technical Department on Tel: **01204 380074** or email **info@soundreduction.co.uk** for further details.

Maxiboard – Other Applications

Maxiboard is perfect for constructing small acoustic housings for noisy machinery and services, or whole room enclosures. The durability of Maxiboard combined with its capacity to take direct fixings makes it simple to use as a basic building board. To add acoustic absorption to enclosures and housings SRS Coustifoam should be applied to the internal surfaces. (See separate leaflet).

Patents & Trademarks

'Maxiboard' and 'Acoustilay' are registered trade names of Sound Reduction Systems Ltd. Both are patented products.

Maxiboard Patent No: GB2375358
Acoustilay Patent No: GB2287086

Important Notes

Approved Document E 2003 introduces a new unit of measurement for airborne sound, which places much more emphasis on low frequency performance. Due to the inherent difficulties of measuring low frequency noise, a significant tolerance on the accuracy of airborne sound test results should be expected. In practical test PASM have witnessed relatively large variations in airborne sound results by different measurement contractors on the same floor. Site conditions and workmanship can also limit reproducible results; therefore previous results should be viewed as indicative of performance only.

Site conditions and installation standards vary. SRS cannot take responsibility for the performance of any installed system of which the Maxiboard or Acoustilay is only a part, or that has been installed incorrectly. Prior to installation it is necessary to identify and eliminate possible flanking paths that may compromise the acoustic performance of any SRS system.

Acoustic Testing

The final performance of a separating structure is assessed during a Sound Insulation (SI) test. In the case of both walls and floors, this is done by determining the level difference achieved when measuring a loud noise source through the structure, in accordance with BS EN ISO 140-4 'Measurement Procedure for Airborne Noise transmission'. The result is given as a single figure known as the Standardised Level Difference, or $D_{nT,w}$, in decibels dB. A higher figure indicates better performance. A similar measurement made in a laboratory under ideal conditions gives the Sound Reduction Index (SRI) which is abbreviated to R_w. Typically, an R_w is around 5dB higher than the equivalent $D_{nT,w}$ figure. In Building Regulations Part E – Resistance to the Passage of Sound, relating to residential buildings, there is an additional frequency weighting, C_{tr} which gives greater significance to performance at low frequencies.

Separating floors have an additional test to assess the level of impact noise insulation. This is made using a calibrated tapping machine which delivers regular and repeatable impacts. The level in the receiver room is measured, giving a $L_{nT,w}$ (dB) figure. Similarly, the level measured in a laboratory is given as L_{nw} dB. A lower figure indicates better performance.

When Part E was introduced in 2003, a requirement for pre-completion testing was added. The regulations now require 10% of each type of construction to be tested in order to show that they meet or exceed the Part E standards. The only alternative for new build projects is to use Robust Details. These are a range of constructions which have been demonstrated to exceed Part E standards by at least 5dB.

Ultimate Acoustic Solutions for
Walls & Partitions

Uniclass	EPIC
L384+L516:N372	C441+E23:Y45
CI/SfB (22.3)+(42) R (P2)	

For more acoustic solutions, please refer to our "Walls & Partitions" brochure

Contains SRS Ltd's Rigorous Standard Details for:

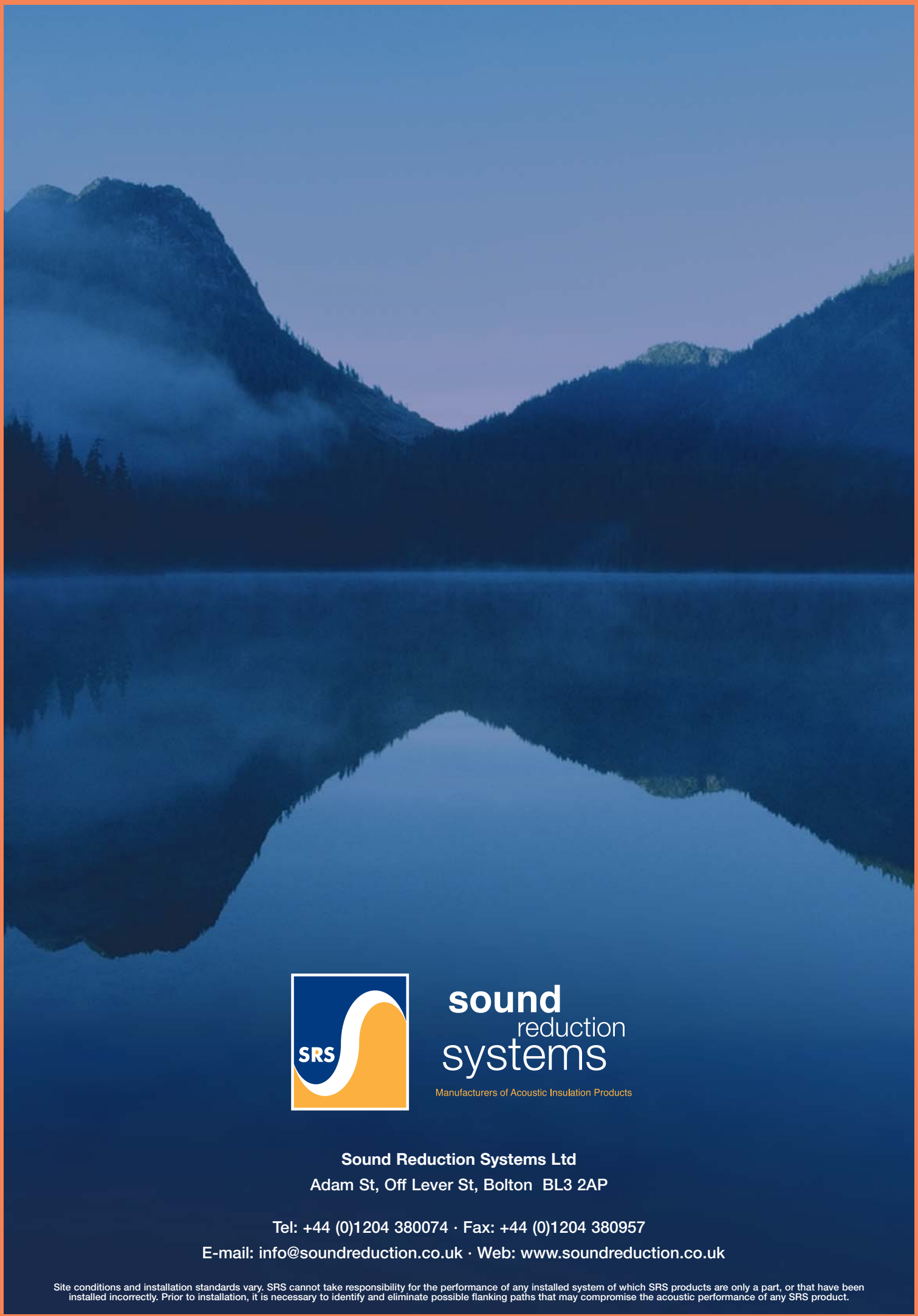
- Building Regulations Approved Document E
- BB93 – Schools
- HTM 2045/HTM 56 – Hospitals

maxiboard

SRS

sound reduction systems

Manufacturers of Acoustic Insulation Products



sound reduction systems

Manufacturers of Acoustic Insulation Products

Sound Reduction Systems Ltd
Adam St, Off Lever St, Bolton BL3 2AP

Tel: +44 (0)1204 380074 · Fax: +44 (0)1204 380957
E-mail: info@soundreduction.co.uk · Web: www.soundreduction.co.uk