



**Icopal Limited**

Barton Dock Road  
Stretford, Manchester  
M32 0YL

Tel: 0161 866 6540

Fax: 0161 866 6527

Email:

acoustics.uk@icopal.com

www.monarfloor.co.uk



# SoundProof

## Proven sound reduction solutions from Icopal.

Every effort has been taken in the preparation of this leaflet to ensure the accuracy of representations contained herein. Recommendations as to the use of materials, construction details and methods of installation are given in good faith and relate to typical situations. However, every site has different characteristics and reliance should not be placed upon the forgoing recommendations. Advice can be given as to specific applications of the products upon request.

[www.monarfloor.co.uk](http://www.monarfloor.co.uk)



# SoundDecision

Acoustic performance of multi storey dwellings has never been higher on the agenda. With revisions to Part E for England & Wales in 2003, revised Section 5 for Scotland in 2010, Technical Guidance Document E of the Irish Building Regulations, the introduction of Robust Standard Details and The Code for Sustainable Homes, achieving compliance with these regulations is an even more complex challenge than before, particularly when dealing with low frequencies. The simple, cost-effective answer is to talk to the team at Icopal.

## Any problem, one solution

As the current market leader in sound insulation, we are in a unique position to provide a one-stop source of products, service and technical support. Our range is one of the largest in the UK covering all new build, conversion and refurbishment applications whether the underlying floor structure is wood, steel or concrete. Comprehensive solutions that include systems now universally accepted as the industry standard, proven over and over again in use.



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## SoundAdvice

Icopal offers FREE technical advice and assistance on all aspects of acoustic systems to help ensure that the solutions we provide are the most appropriate from both a cost and performance point of view. We can also undertake site visits to provide contractors with advice and assistance at every stage of a project from concept to completion.

**For further information call our advice line on 0161 866 6540**

# SoundProof

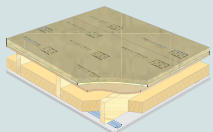
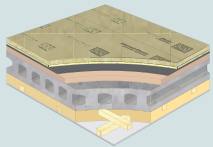
Proven high performance floating floor treatments (FFTs) and acoustic systems for conversion, refurbishment and new build specifically designed to:



- **Support floor loadings** defined in BS: 6399-1:1996
- **Have superior performance** – the recycled Low Resonance Acoustic Chip (LRAC) foam used has excellent impact improvement characteristics and superior stability within a single layer
- **Be flame retardant** – all LRAC foam used in Monarfloor® systems is flame retardant
- **Conform to Robust Details** – a number of Monarfloor® floating floor treatments are accepted for use within Robust Standard Details
- **Be quality assured** – Monarfloor® products meet all current standards

## Choosing the right system

Use the tables opposite to identify the construction you have to insulate and the Monarfloor® solution, then turn to the page shown for full details.



## New Build

	Deck 9	Deck 18	Deck 22	Acoustic Strip	Structure Deck	Tri-Deck	Acoustic Batten	Acoustic Cradle	Impact 18	Tri-Board
<b>Timber Frame</b>							11	12		
<b>Timber + Masonry Facade</b>										
Supported by a sub-floor (decking ply or equivalent) height critical	6	6								15
Supported by a sub-floor (decking ply or equivalent) not height critical			7				12			
Treatment to be applied direct to joists				8	9					
<b>Concrete</b>										
Planks, in situ-slab, slab + shutter							12	13	14	
<b>Steel Joists</b>		6								

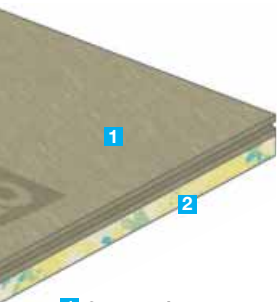
## Conversion

	Deck 9	Deck 18	Deck 22	Acoustic Strip	Structure Deck	Tri-Deck	Acoustic Batten	Acoustic Cradle	Impact 18	Tri-Board
<b>Timber + Masonry Facade</b>										
Floor to remain, height critical	6	6								15
Floor to remain, height not critical			7				12			
Floor to be removed				8	9	10				
<b>Concrete</b>										
Planks, slab, slab + shutter, beam + block							12	13	14	

## Monarfloor® Deck Overlay Systems

The simplest way of improving the airborne and impact sound performance of an existing floor is to overlay the floor with an isolating layer and a new wearing surface.

Monarfloor® offers three deck overlay systems for such applications:



- 1 9mm moisture resistant MDF
- 2 8mm LRAC foam type II

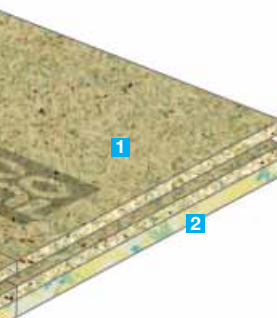
### Monarfloor® Deck 9

#### Resilient overlay shallow platform floor system.

Overlay system for timber floors designed for projects where the increase in floor level has to be kept to a minimum, Deck 9 increases the floor level by only 17mm.

#### Product Data

Board Size	1200mm x 600mm
Thickness	17mm
Board Weight	5.10kg (nominal)
Weight/m <sup>2</sup>	6.40kg (nominal)
DnT,w	57dB
DnT,w + Ctr	48dB
L'nT,w	48dB



- 1 18mm V313 P5 chipboard
- 2 8mm LRAC foam type II

### Monarfloor® Deck 18

#### Resilient overlay platform floor system.

Overlay system for use with timber floors where the existing timber deck remains. Can be used on steel frame floors over a sub-floor of chipboard and plasterboard.

#### Product Data

Board Size	2400 x 600mm
Thickness	26mm
Board Weight	22.20kg (nominal)
Weight/m <sup>2</sup>	15.41kg (nominal)
DnT,w	58dB
DnT,w + Ctr	49dB
L'nT,w	49dB

### Monarfloor® Deck 22

#### Resilient overlay platform floor system.

Overlay system for timber floors designed for projects where a heavy domestic application is anticipated.

#### Product Data

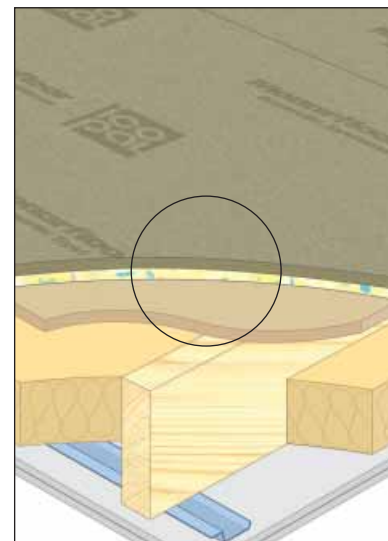
Board Size	2400mm x 600mm
Thickness	30mm
Board Weight	29.90kg (nominal)
Weight/m <sup>2</sup>	20.76kg (nominal)
DnT,w	59dB
DnT,w + Ctr	Complies with Robust Details Ref E-FC-1; E-FC-2 and E-FS-1
L'nT,w	49dB

#### Installation

Monarfloor® Deck Overlay Systems may be used over 18mm chipboard, OSB board or a decking ply sub floor. They should be installed directly onto the sub-floor, in a broken bond pattern with all joints glued and perimeters flanked.

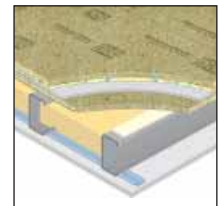


- 1 22mm V313 P5 chipboard
- 2 8mm LRAC foam type II



Installation of Monarfloor® Deck 9 on a timber sub-floor.

Installation of Monarfloor® Deck 18 over steel joists.



## Monarfloor® Acoustic Strip

Reduces sound transmission through timber floors where the existing flooring will be removed.

### Product Data

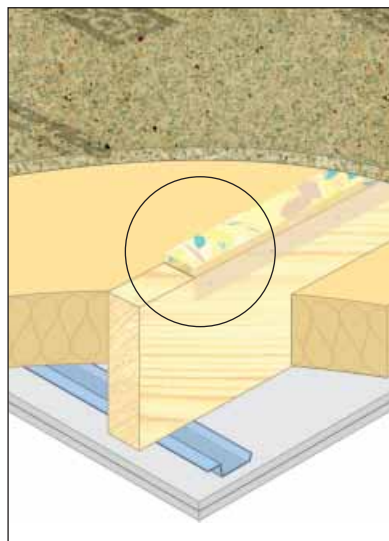
<b>Sizes</b>	2400mm long x 45mm wide 2400mm long x 75mm wide
<b>Thickness</b>	21mm
<b>DnT,w</b>	57dB
<b>DnT,w + Ctr</b>	48dB
<b>L'nT,w</b>	51dB

### Installation

Monarfloor® Acoustic Strip is fitted to the top of the exposed floor joists and fixed in place by nailing or stapling the securing membrane to the side of the joists. 22mm tongue and grooved chipboard is then laid onto the acoustic strip in a broken bond pattern with all joints glued.



- 1** 15mm LRAC foam type II
- 2** Securing fibrous membrane
- 3** 6mm ply strip



Installation of Monarfloor® Acoustic Strip on timber joists.

## Monarfloor® Structure Deck

**Resilient overlay platform direct to joist floor system.**

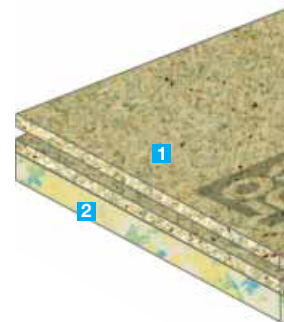
Reduces sound transmission through timber floors where the existing flooring will be removed.

### Product Data

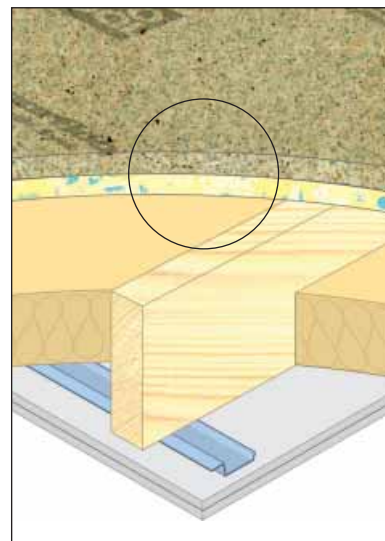
<b>Board Size</b>	2400mm x 600mm
<b>Thickness</b>	37mm
<b>Board Weight</b>	27.10kg (nominal)
<b>Weight/m²</b>	18.81kg (nominal)
<b>DnT,w</b>	57dB
<b>DnT,w + Ctr</b>	48dB
<b>L'nT,w</b>	51dB

### Installation

Monarfloor® Structure Deck should be laid directly onto the joists in a broken bond pattern with all joints glued and perimeters flanked.



- 1** 22mm V313 P5 moisture resistant chipboard
- 2** 15mm LRAC foam type III

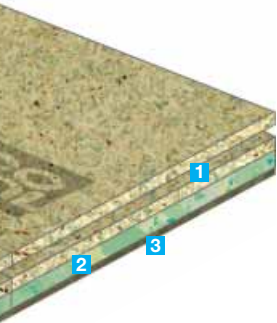


Installation of Monarfloor® Structure Deck on timber joists.

## Monarfloor® Tri-Deck

### Resilient overlay platform direct to joist floor system.

Reduces sound transmission through timber floors where the existing timber floor will be removed but access to work on the ceilings below is restricted.



- 1** 22mm V313 P5 moisture resistant chipboard
- 2** 8mm LRAC foam type I
- 3** 5mm foam rubber

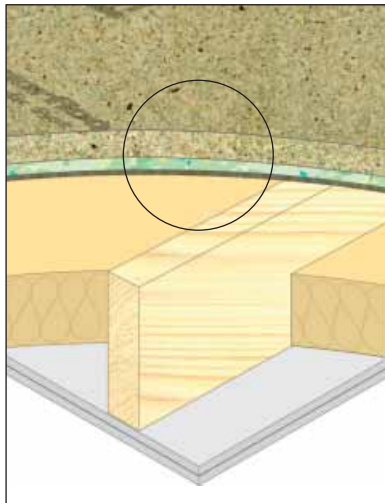
### Product Data

<b>Board Size</b>	2400mm x 600mm
<b>Thickness</b>	35mm
<b>Board Weight</b>	30.50kg (nominal)
<b>Weight/m<sup>2</sup></b>	21.18kg (nominal)
<b>D<sub>nT,w</sub></b>	55dB
<b>D<sub>nT,w</sub> + C<sub>tr</sub></b>	46dB
<b>L'<sub>nT,w</sub></b>	56dB

### Installation

Monarfloor® Tri-Deck should be laid directly onto the joists in a broken bond pattern with all joints glued and perimeters flanked.

*Note: Guidance should be sought if you are in any doubt as to the quality or density of the surrounding structural elements before proceeding.*



Installation of Monarfloor® Tri-Deck on timber joists.

## Monarfloor® Acoustic Tri-Batten

### FFT1 Resilient composite deep batten system.

### FFT3 Resilient composite standard batten system.

Reduces sound transmission through timber floors within a timber-framed structure.

### Product Data

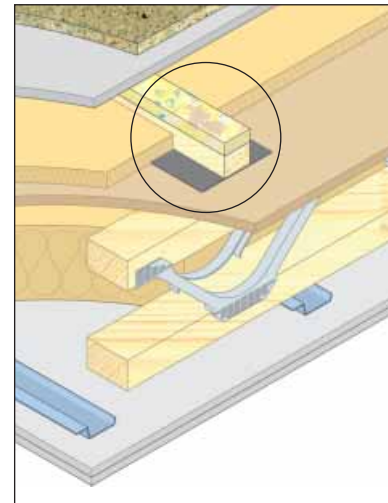
<b>Size</b>	1800mm long x 45mm wide
<b>Thickness</b>	53mm and 78mm available
<b>D<sub>nT,w</sub></b>	57dB
<b>D<sub>nT,w</sub> + C<sub>tr</sub></b>	48dB
<b>L'<sub>nT,w</sub></b>	54dB

### Installation

Monarfloor® Tri-Batten should be positioned on the existing sub-floor and stapled in place through the geotextile mat. It should then be overlaid with plasterboard plank and chipboard flooring laid in a broken bond pattern.



- 1** 15mm LRAC foam type III
- 2** 35mm softwood batten
- 3** 3mm geotextile fibrous mat – improves impact sound performance and enables easy and secure fixing to the sub-floor



Installation of Monarfloor® Tri-Batten on a timber sub-floor.

## Monarfloor® Acoustic Batten

**FFT1 Resilient composite deep batten system.**

**FFT3 Resilient composite standard batten system.**

For use on both timber frame and concrete floors and can be overlaid directly with an 18mm or 22mm chipboard deck.



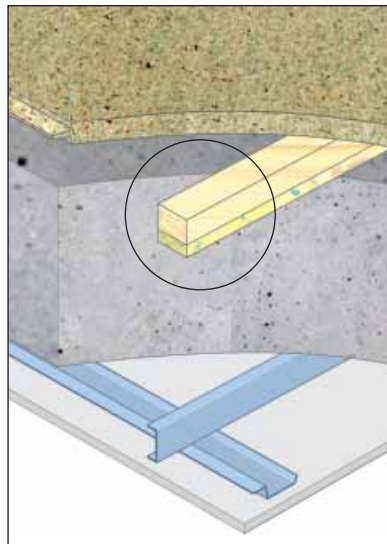
- 1 Timber batten
- 2 15mm LRAC foam type III

### Product Data

<b>Size</b>	1800mm long x 45mm wide
<b>Height</b>	50 or 75mm available (other sizes are available to special order)
<b>DnT,w</b>	60dB
<b>DnT,w + Ctr</b>	Complies with Robust Details Ref E-FC-1; E-FC-2; E-FS-1; E-FS-2; E-FT-1 and E-FT-2
<b>L'nT,w</b>	53dB

### Installation

Monarfloor® Acoustic Batten is laid either foam side up or down at the appropriate centres with a continuous run of batten 50mm in from all perimeter walls. It should then be overlaid with 18mm or 22mm tongue and grooved chipboard in a broken bond pattern with all joints glued.



Installation of Monarfloor® Acoustic Batten on a concrete sub-floor.

## Monarfloor® Acoustic Cradle

**FFT2 Resilient cradle and batten system.**

Reduces sound transmission through timber and concrete floors which are uneven or have a camber.

### Product Data

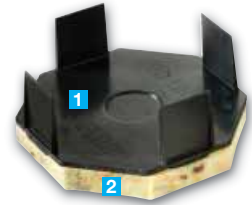
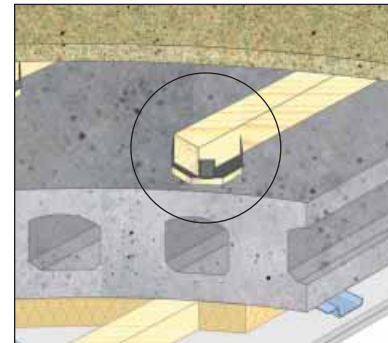
<b>Size</b>	105mm x 105mm
<b>Height</b>	60mm minimum (includes timber batten)
<b>DnT,w + Ctr</b>	Complies with Robust Details Ref E-FS-1, E-FC-1 and E-FC-2 performance
<b>L'nT,w</b>	50dB

### Cradle Packers Data

<b>Size</b>	105mm x 105mm
<b>Height</b>	2mm, 3mm and 5mm available

### Installation

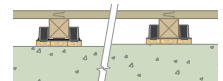
Monarfloor® Acoustic Cradles are commonly set out at 450 to 600mm centres on the sub-floor. 45mm x 45mm softwood battens should then be fitted into each run of Acoustic Cradles. Monarfloor® Cradle Packers should be used to level the battens on each cradle. The battens should be overlaid with 18mm or 22mm chipboard laid in broken bond pattern with all joints supported and glued.



- 1 Injection moulded plastic cradle
- 2 10mm LRAC foam type IV



**Monarfloor® Cradle Packers – allow level floors to be formed even on uneven concrete slabs.**



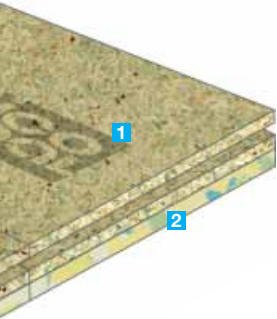
Installation of Monarfloor® Acoustic Cradle on a concrete deck.

## Monarfloor® Impact 18

### FFT4 Resilient overlay platform floor system.

Overlay system designed for use over a levelling screed.

When installed as part of a complete sound reduction system it enables a concrete floor to meet the sound transmission regulations of Part E.



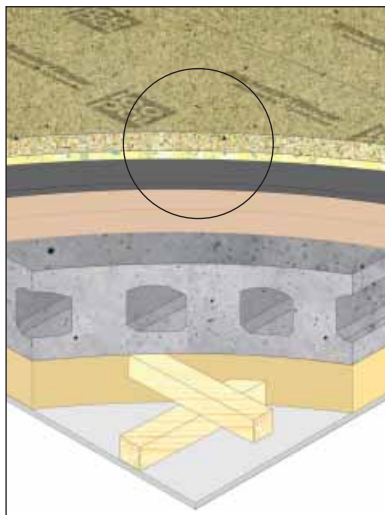
- 1** 18mm V313 P5 chipboard
- 2** 8mm LRAC foam type I

### Product Data

<b>Board Size</b>	2400mm x 600mm
<b>Thickness</b>	26mm
<b>Board Weight</b>	22.20kg (nominal)
<b>Weight/m<sup>2</sup></b>	15.42kg (nominal)
<b>DnT,w</b>	58dB
<b>DnT,w + Ctr</b>	Complies with Robust Details Ref E-FC-1, E-FC-2 and E-FS-1
<b>L'nT,w</b>	56dB

### Installation

Monarfloor® Impact 18 should be installed in a broken bond pattern with adhesive applied to all tongue and grooved joints, on a moisture control barrier with a min 80kg/m<sup>2</sup> sand/cement screed on a hollow core plank sub-floor.



Installation of Monarfloor® Impact 18 on a concrete deck.

## Monarfloor® Tri-Board

### Resilient overlay shallow platform floor for timber frame dwellings.

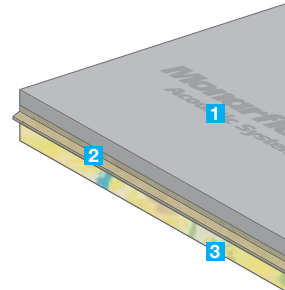
Overlay system designed to reduce sound transmission through timber floors in situations where the increase in floor height has to be kept to a minimum.

### Product Data

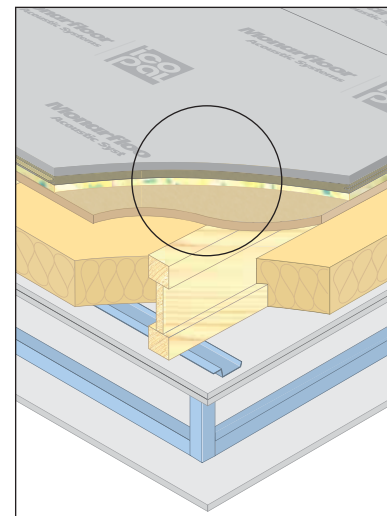
<b>Board Size</b>	1200mm x 600mm
<b>Thickness</b>	25mm
<b>Board Weight</b>	18kg (nominal)
<b>Weight/m<sup>2</sup></b>	20.4kg
<b>DnT,w</b>	52db
<b>DnT,w + Ctr</b>	46db
<b>L'nT,w</b>	51db

### Installation

Monarfloor® Tri-Board should be installed over a new sub-floor in a broken bond pattern with adhesive applied to all tongue and groove panel joints.



- 1** 9mm calcium silicate board
- 2** 8mm moisture resistant MDF
- 3** 8mm layer of LRAC foam type II

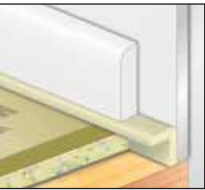


Monarfloor® Tri-Board on a timber sub-floor.

## Ancillary Products & Accessories

### Monarfloor® Flanking Band

Acoustic band designed to reduce sound transmission through timber and floors by isolating party and flanking walls. Standard and deep angled and flat versions available to cover all applications.



#### Product Data

Flat Bands	Availability
Standard: 75mm wide x 6mm thick x 2000mm long Deep: 150mm wide x 6mm thick x 2000mm long	Packed in boxes of 5
Angled Bands	Availability
Standard: 20mm x 35mm x 6mm thick x 2000mm long Deep: 75mm x 50mm x 6mm thick x 2000mm long	Packed in boxes of 5

### Monarfloor® Isolation Strip

Isolates walls and partitions from the sub-floor reducing the structural flanking sound transmission path within the building.

#### Product Data

<b>Roll Sizes</b>	100mm wide x 8000mm long x 3mm thick 150mm wide x 8000mm long x 3mm thick
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### Monarfloor® PVA Adhesive

Modified PVA adhesive for use with all systems in all applications.

#### Product Data

<b>Container Sizes</b>	1 litre 5 litres
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### Monarfloor® High Performance Acoustic Adhesive

High Performance modified adhesive for use with all systems in all applications.

#### Product Data

<b>Spray Cans</b>	500ml cans (12 per box)
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# SoundSense

## Requirements for Acoustic Insulation

Part E of the Building Regulations 2003 (England and Wales), Section 5 of the Scottish Building Standards and Technical Guidance Document E of the Irish Building Regulations address the noise levels suffered by occupants within multi storey and attached dwellings, which result from inadequate sound insulation.

The problem has increased in recent years through a combination of heightened expectations on the part of occupiers, more sound producing equipment and above all the poor success rate in achieving the sound insulation standards already in place. Part E of the Building Regulations was revised to address those issues by:

- Extending the types of constructions covered
- Setting new performance levels for those constructions
- Introducing pre-completion acoustic testing for separating walls and floors

### Performance Requirements

Table 1: Approved Document E

Element	Airborne Sound – Site Test $D_{nT,w} + C_{tr}$ (100 to 3150Hz)	Impact Sound – Site Test $L_{nT,w}$
Separating floors between dwellings and rooms for residential purpose	Equal to or higher than 45dB	Equal to or lower than 62dB
Separating floors between rooms created by a change of use	Equal to or higher than 43dB	Equal to or lower than 64dB

Table 2: Scottish Building Standards, Section 5

Test Levels in dB for Example and Pre-tested Constructions	New Build	Conversions
Minimum airborne sound insulation	56 $D_{nT,w}$	53 $D_{nT,w}$
Minimum impact sound insulation	56 $L_{nT,w}$	58 $L_{nT,w}$
Test Levels in dB for Alternative Constructions		
Minimum airborne sound insulation	56 $D_{nT,w}$	53 $D_{nT,w}$
Minimum impact sound insulation	56 $L_{nT,w}$	58 $L_{nT,w}$

Table 3: Irish Building Regulations Part E (Sound)

Airborne Sound	Individual Value	Mean Value 4 Pair Rooms	Mean Value 8 Pair Rooms
Walls (min values)	49dB	53dB	52dB
Separating floors between rooms (max values)	48dB	52dB	51dB
Impact Sound			
Floors (max values)	65dB	61dB	62dB

**Airborne Sound** – weighted standardised level difference ( $D_{nT,w}$ )

**Impact Sound** – weighted standardised sound pressure ( $L_{nT,w}$ )

## Pre-Completion Testing

To ensure buildings meet the acoustic insulation standards defined in Approved Document E pre-completion acoustic testing is now mandatory for separating walls and floors within both new build developments and those undergoing a change of use.

Icopal have recently been put through a comprehensive program of testing that enhances our testing library to further qualify our advice on a given application.

## Robust Details

The use of Robust Details provides an alternative to pre-completion testing for demonstrating compliance with the performance standards of Part E for new build dwellings. Every dwelling built using Robust Details needs to be registered with Robust Details Ltd, [www.robustdetails.com](http://www.robustdetails.com)

## Design Considerations

Remember, Building Regulations require that new construction and re-furbishment projects over a certain size require Building Regulations approval and inspection by building control.

## Loading

BS 6399-1: 1996 defines the design loading for floors of self-contained dwellings as:

- Intensity of distributed load 1.5 (kPa)
- Concentrated load 1.4 (kN)

All Icopal acoustic-flooring systems can support those loadings without undue deflection.

## Flanking Transmission

The acoustic performance of a floor can be compromised by the passage of sound through walls and ducts, which adjoin or penetrate a floor, a phenomenon known as flanking transmission.

To reduce flanking transmission the acoustic flooring must be isolated from walls and other structural elements. Monarfloor® Acoustic Flanking Band is a flexible foam strip designed to form and seal a 6mm isolation gap between the flooring and the wall (see page 15).

## Monarfloor® Flanking Band

Acoustic band designed to reduce sound transmission through timber floors. Standard and deep angled and flat versions available to cover all applications.

## Pipes and Ducts

Pipes and ducts which penetrate separating floors must be flanked using Monarfloor® Flanking Band. Consult our Technical Department for further assistance.

## Ceiling Treatments

With some floors additional measures will be required to achieve the performance levels specified in Approved Document E:

- **Increasing the mass and absorption of the floor by laying mineral wool between the joists (a technique known as 'pugging'). The mineral wool should be selected given due consideration to the overall floor construction.**
- **Installing the ceiling on resilient bars to supplement the performance of floating floor. The bars should be fixed at right angles to the joists and around the perimeter of the ceiling.**
- **The use of a metal ceiling over resilient bars. Form the ceiling of a minimum of two layers of 10kg/m<sup>2</sup> plasterboard and two layers totalling 23kg/m<sup>2</sup> specifically for timber frame construction.**

## Finishes

Most types of floor finish are suitable for use with Icopal Floating Floor Treatments.

## Services, Fixtures and Fittings

The voids formed by batten and cradle systems may be used to accommodate services, such as heating pipes. To minimise the risk of flanking transmission, sanitary ware such as toilet pans and baths should be adequately isolated. For Icopal Floating Floor Treatments mount sanitary ware on timber packing, and lay the batten or chipboard deck to within 5mm of the base and seal with flexible sealant. Kitchen units should also be installed independently of the acoustic flooring. Recessed light fittings must be acoustically rated to preserve the continuity of ceiling mass. Avoid the use of floor-mounted or sunken loudspeaker systems as they compromise the sound insulation performance of the floor.