

Icopal Ltd

Barton Dock Road
Stretford
Manchester M32 0YL

Tel: 0161-854 4444 Fax: 0161-864 2616
e-mail: acoustics.technical.uk@icopal.com
website: www.monarfloor.co.uk



Agrément Certificate
99/3600
Product Sheet 2

MONARFLOOR ACOUSTIC SYSTEMS

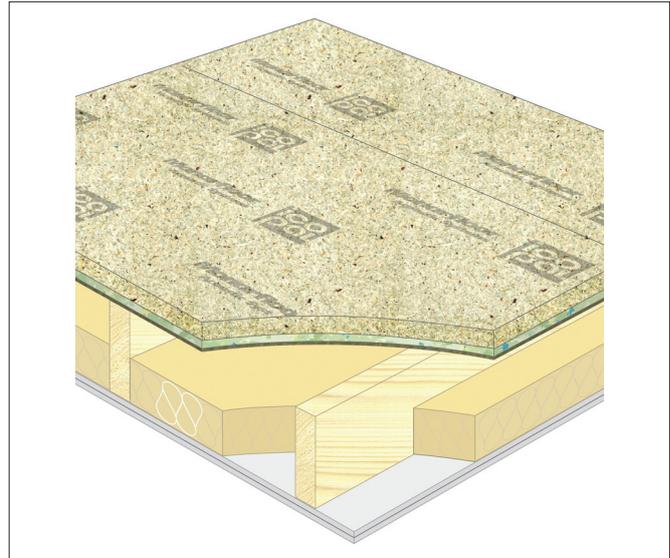
MONAFLOOR TRI DECK SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Monarfloor Tri Deck System, for use in separating timber floors to reduce sound transmission in conversions and renovations of dwellings and flats.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Sound insulation — the system can be used to improve sound insulation in separating floors (see section 6).

Floor loading — the system can support the design loading for self-contained dwelling units (see section 7).

Durability — the system will perform satisfactorily and provide impact and airborne sound insulation for the life of the building (see section 9).

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'John Albon'.

Date of Second issue: 12 September 2014

John Albon — Head of Approvals
Energy and Ventilation

A handwritten signature in black ink, appearing to read 'Claire Curtis-Thomas'.

Claire Curtis-Thomas
Chief Executive

Originally certificated on 4 September 2009

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

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tel: 01923 665300
fax: 01923 665301
e-mail: customerservices@bba.star.co.uk
website: www.bbacerts.co.uk

Regulations

In the opinion of the BBA, the Monarfloor Tri Deck System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: E1	Protection against sound from other parts of the building and adjoining buildings
Requirement: E2	Protection against sound within a dwelling-house etc
Requirement: E3	Reverberation in the common internal parts of buildings
Comment:	The system can contribute to satisfying these Requirements. See sections 6.1, 6.2 and 6.4 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The system is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)	Durability, workmanship and fitness of materials
Comment:	The system can contribute to satisfying this Regulation. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 5.1	Noise separation
Standard: 5.2	Noise reduction between rooms
Comment:	Laboratory test data show that when the system is installed on a suitable floor, it can contribute to satisfying these Standards with reference to clauses 5.1.1 ⁽¹⁾ , 5.1.2 ⁽¹⁾ and 5.2.3 ⁽¹⁾ . See sections 6.1, 6.3 and 6.4 of this Certificate.
Regulation: 12	Building standards applicable to conversions
Comment:	All comments given for the system under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾ and Schedule 6 ⁽¹⁾ . (1) Technical Handbook (Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23	Fitness of materials and workmanship
Comment:	The system is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation: 49	Protection against sound from other parts of the building and from adjoining buildings
Regulation: 50	Protection against sound within a dwelling or room for residential purposes
Regulation: 51	Reverberation in the common internal parts of a building containing flats or rooms for residential purposes
Comment:	Laboratory test data show that when the system is installed on a suitable floor, it can contribute to satisfying these Regulations. See sections 6.1 and 6.4 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.2) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of the Monarfloor Tri Deck System, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.4 *Timber and concrete upper floors*.

Technical Specification

1 Description

1.1 The Monarfloor Tri Deck System consists of 22 mm V313 P58 moisture-resistant tongue-and-groove chipboard bonded to an 8 mm layer of polyurethane foam, type 1 (density 64 kg·m⁻³), bonded to a further 5 mm foam rubber. The nominal characteristics of the board are shown in Table 1:

Table 1 Nominal Characteristics

Characteristics	Dimensions
Thickness (mm)	35
Board size (mm)	2400 x 60
Weight (kg)	30.5
Weight per m ² (kg)	21.18

1.2 The moisture-resistant V313 P5 chipboard satisfies the minimum relevant requirements of BS EN 312 : 2010.

1.3 Ancillary materials include Monarfloor Acoustic Flanking Band, for use between skirting and flooring and around pipes, and Monarfloor Adhesive.

2 Manufacture

2.1 The boards are manufactured via production procedures identified in specification sheets issued to the factory for the various systems.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Icopal Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BM Trada Limited (Certificate 158).

3 Delivery and site handling

3.1 The boards are delivered to site shrink-wrapped in polythene on pallets. The corners are reinforced and, where straps run around the consignment, cardboard plates are used as protection. Installation instructions are also enclosed.

3.2 Boards must be stored flat and under cover in dry, well-ventilated conditions (similar to those to be experienced in service), and away from naked flames.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Monarfloor Tri Deck System.

Design Considerations

4 Use

4.1 The Monarfloor Tri Deck System is for use on timber floors in conversion or renovation projects where the existing timber floor will be removed but access to work on the ceiling below is restricted.

4.2 The system reduces airborne and impact sound transmission through separating floors of dwellings and flats. The system has not been assessed for use on exposed, semi-exposed and ground floors, or on steel floors.

4.3 Mechanical fixings must not be used.

5 Practicability of installation

The system is designed to be installed by a competent general builder, or a contractor, experienced with this type of system.

6 Sound insulation

6.1 Test data to BS EN ISO 140-4 : 1998 and BS EN ISO 140-7 : 1998 (calculated in accordance with BS EN ISO 717-1 : 1997 and BS EN ISO 717-2 : 1997 respectively), indicate that the separating floor construction shown in Figure 1 can provide satisfactory resistance to airborne and impact sound transmission in conversions, when used in conjunction with suitable flanking elements. (See also Tables 3 to 5 and section 6.4).

Figure 1 Section through floor used for impact and airborne sound insulation tests

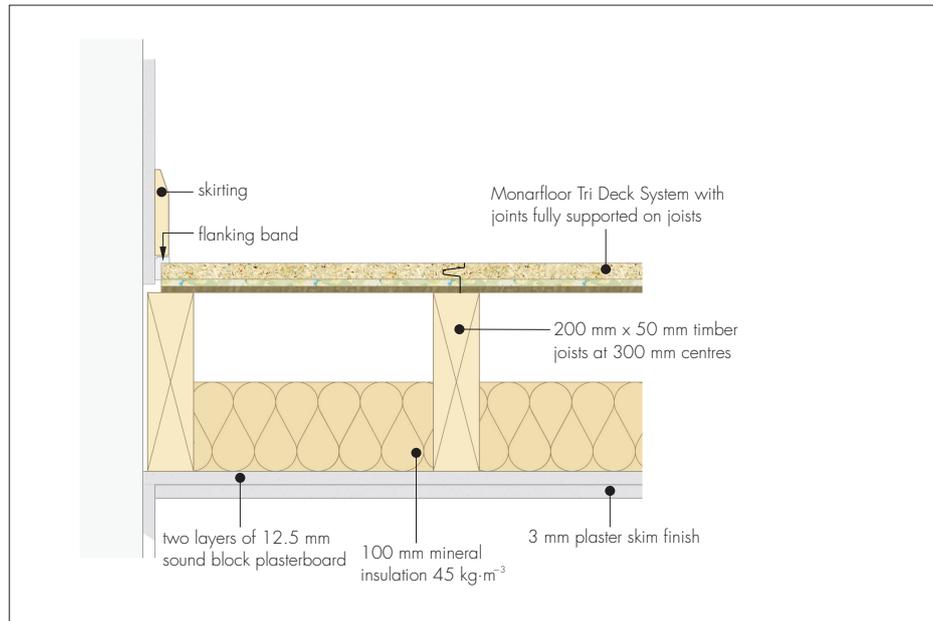


Table 2 Sound Insulation (dB) — pre-completion test results

Airborne $D_{nT,w}$ ($C:C_{tr}$)	Impact $L'_{nT,w}$ (C_1)
55 (-2 : -9)	56(1)

Table 3 Sound Insulation (dB) — England and Wales

Construction	Airborne $D_{nT,w} + C_{tr}$	Impact
Purpose-built dwelling-houses and flats	≥45	≤62
Dwelling-houses and flats formed by material change of use	≥43	≤64

Table 4 Sound Insulation (dB) — Scotland⁽¹⁾

Construction	Airborne $D_{nT,w}$	Impact $L'_{nT,w}$
New build and conversions (not including traditional buildings)	≥56	≤56
Conversions of traditional buildings	≥53	≤58

(1) See Technical Handbook (Domestic) clause 5.1.2.

Table 5 Sound Insulation (dB) — Northern Ireland

Construction	Airborne $D_{nT,w} + C_{tr}$	Impact $L'_{nT,w}$
New dwellings	≥45	≤62
Dwellings formed by material change of use	≥43	≤64

6.2 Separating floors incorporating the system are subject to pre- or post-completion testing in accordance with Section 1 of Approved Document E.

6.3 Separating floors incorporating the system may be subject to pre-completion testing to demonstrate satisfactory sound insulation in accordance with clause 5.1.12⁽¹⁾ and Annex 5C⁽¹⁾ if a verifier is not satisfied that a specific construction has been built in accordance with the warrant and Mandatory Standard 5.1.

(1) Technical Handbook (Domestic).



6.4 The measures to be taken in design and during installation to avoid direct paths for airborne sound are given in section 11 and in the relevant documents supporting the national Building Regulations.

England and Wales — Approved Document E

Scotland — Technical Standard 5.1, clauses 5.1.1⁽¹⁾, 5.1.2⁽¹⁾ and 5.2.3⁽¹⁾

(1) Technical Handbook (Domestic).

Northern Ireland — Technical Booklet G.

6.5 When undertaking refurbishment, improvements in airborne and impact sound insulation can be achieved with a construction as detailed in this section.

7 Floor loading

7.1 The system is suitable for occupancies defined in this Certificate, and is capable of resisting a uniformly distributed load of 1.5 kN·m⁻² or a concentrated load of 1.4 kN as defined in NA to BS EN 1991-1-1 : 2002 Table NA.2 and BS 6399-1 : 1996, Table 1.

7.2 The system can support these design loadings without undue deflection.

7.3 Before installation, the existing floor structure should be checked for the additional loading to be applied as a consequence of using the system.

8 Maintenance

As the system is confined within the floor and has suitable durability (see section 9), maintenance is not required.

9 Durability



The system is acoustically and dimensionally stable and, when installed with the overlays specified in this Certificate, will remain effective as an insulating material for the life of the building in which it is incorporated.

Installation

10 General

10.1 Installation of Monarfloor Tri Deck System should not commence until the building is weatherproof, and wet trades completed and dried out.

10.2 Installation of the system should be in accordance with the Certificate holder's instructions.

10.3 To minimise wastage, careful planning of the floor area is necessary.

10.4 To minimise sound transmission paths through the floor assembly and the flanking elements, the following points should be observed:

- junctions between the flanking elements and the sub-floor deck must be suitably sealed
- junctions in cavity walls flanking the floor should be stopped
- junctions with internal non-loadbearing walls should be sealed
- panel joints should be staggered, supported on timber joists and glued
- junctions between ceiling and wall linings should be filled and taped
- service risers penetrating the floor should be fire-collared, wrapped with quilt and boxed with two layers of suitable gypsum-based board
- the floor constructions must be as shown in Figure 1
- the floor must incorporate a minimum of 100 mm thick mineral fibre quilt (density 45 kg·m⁻³) in the cavity
- fixings or services must not bridge the resilient layers of the system
- the flanking band should be located at all perimeter junctions between the system and flanking elements, to isolate them (see Figure 1)
- resilient ceiling bars should be mounted at right angles to the joist direction.

11 Procedure

11.1 An expansion gap between the flooring boards and the perimeter walls should be provided at the rate of 2 mm per metre run or a minimum of 10 mm, whichever is greater.

11.2 Where there are long, uninterrupted lengths of floor (eg corridors), proprietary expansion joints should be installed at intervals on the basis of a 2 mm gap per metre run of board.

11.3 A protective layer should be laid immediately after boards are installed to protect the surface and prevent damage by any subsequent trades.

11.4 Where there is a likelihood of regular water spillage (eg in kitchens, bathrooms and utility rooms), protection should be considered, eg by the use of flexible vinyl sheet flooring with welded joints and cove skirtings.

11.5 Monarfloor Adhesive is applied to the tongue-and-groove joints of the boards before butting them together.

11.6 When fitting skirting over the system, it must be isolated using the flanking band located around the perimeter junctions.

Technical Investigations

12 Tests

As part of the assessment resulting in the issue of a previous Certificate, tests were carried out to determine:

- timber floor construction
- concrete floor construction
- deflection under concentrated load
- effect of humidity
- dimensional accuracy
- creep under distributed load.

13 Investigations

13.1 The manufacturing process was assessed, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

13.2 A user survey was conducted to evaluate performance in use.

13.3 An assessment was made of the system's durability in relation to the life of the building.

13.4 An assessment was made of data relating to practicability of installation.

Bibliography

BS 6399-1 : 1996 (superseded by BS EN 1991-1-1:2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*)

BS EN 312 : 2010 *Particleboards — Specifications*

BS EN 1991-1-1 : 2002 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*

BS EN ISO 140-4 : 1998 *Acoustics — Measurement of sound insulation in buildings and of building elements — Field measurements of airborne sound insulation between rooms*

BS EN ISO 140-7 : 1998 *Acoustics — Measurement of sound insulation in buildings and of building elements — Field measurements of impact sound insulation of floors*

BS EN ISO 717-1 : 1997 *Acoustics — Rating of sound insulation in buildings and of building elements — Airborne sound insulation*

BS EN ISO 717-2 : 1997 *Acoustics — Rating of sound insulation in buildings and of building elements — Impact sound insulation*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

15.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

15.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

15.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

15.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.