

Uniclass L9:N372	EPIC Y45
C/SfB	Y (P2)

A NEW GENERATION OF ACOUSTIC SOLUTIONS



E-Cousti Solutions Guide

3rd Edition



E-Cousti Solutions – Leading the way in Acoustic Innovation

Award winning concept in sound control

E-Cousti was initially launched with a range of products based around the innovative E-Cousti Membrane, but this unique brand did not stop there.

Continued investment and development

Subsequently, the emphasis has been on continued investment, extensive research and development into new ways of economically meeting and exceeding the requirements set out in Approved Document E of the 2003 Building Regulations.

Wide range of solutions

E-Cousti is now established as a market leader within its field and offers a wide range of competitively priced, acoustic solutions for both new build and refurbishment projects for walls, partitions, floors and other structural applications.

High performance

E-Cousti solutions have been rigorously tested at independent laboratories such as the BRE and SRL to ensure they have the necessary performance levels.

Environment

E-Cousti strive to design and develop products that re-use secondary raw materials, are based on renewable resources, are themselves recyclable, and where they are not, can be safely disposed of without harm to the environment.

Approved Document E Requirements (ADE) (England & Wales)

Under Approved Document E, all residential properties must provide a good level of acoustic insulation between dwellings. The table summarises the required decibel standards of performance for compliance.

Element of Construction Internal walls that include a door are exempt from this requirement.	Airborne sound insulation (site test result) minimum value $D_{nT,w} + C_w$, dB	Impact sound insulation (site test result) maximum value $L'_{nT,w}$, dB	Airborne sound insulation (lab test result) minimum value R_w , dB
Separating walls between dwellings	45 Min		
Separating walls between rooms used for residential purposes	43 Min		
Separating walls between rooms created by a change of use	43 Min		
Separating floors between dwellings and rooms used for residential purposes	45 Min	62 Max	
Separating floors between rooms created by a change of use	43 Min	64 Max	
An internal wall or floor between a bathroom/W.C. and a habitable room. Also between bedrooms and between bedrooms and any other room in the dwelling			40 Min

Section 5 Requirements (Scotland)

The key differences between Approved Document E and Section 5 are summarised in the following table. Section 5 requires adequate resistance to sound for both walls and floors separating a dwelling from other parts of the same building in different occupations and from other adjoining buildings, so they are deemed to satisfy.

Airborne Sound

Minimum values of weighted standardised level difference ($D_{nT,w}$) as defined in BS EN ISO 717-1:1997

	Mean Value (dB)	Individual Value (dB)
Walls	53	49
Floors	52	48

Impact Sound

Maximum values of weighted standardised level sound pressure level ($L'_{nT,w}$) as defined in BS EN ISO 717-2:1997

	Mean Value (dB)	Individual Value (dB)
Floors	61	65

Methods of Compliance

There are currently two methods available to show compliance to Approved Document E. These are Robust Details and Pre-Completion Testing.

Both methods have complex considerations. Briefly ...

Robust Details – The appropriate detail is selected from the Robust Details handbook. Contact Robust Details Ltd at www.robustdetails.com or 0870 240 8210 for details of the scheme.

Pre-Completion Testing – An appropriate system is installed which must then be tested by an accredited testing service to show compliance.

Technical Expertise

A team of specialist acoustic personnel is available to assist developers, architects and designers with specifications and bespoke acoustic solutions. Acoustic testing equipment is also available for use on-site to give an initial indication of a solution's performance.

Endorsements/Standard Specification Software

E-Cousti solutions have an RIBA approved CPD endorsement and feature in NBS Plus, part of the NBS industry standard specification software used by architects, engineers, building surveyors and other construction industry professionals. E-Cousti solutions also appear on the Fastrack CAD and Specify-It websites.



E-Cousti Solutions Guide – Contents/Selector

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Important notes relating to solution selection:

Each building environment is unique and there are many variables that can impact on the acoustic performance, such as workmanship, services, existing structure and other external factors. Specifiers should be mindful of these issues when selecting an acoustic construction type. Small defects in the build can also significantly affect the overall acoustic performance.

For maximum performance it is essential that technical installation instructions are adhered to. Contact your local stockist for full details or visit: www.e-cousti.co.uk

E-Cousti Product Range

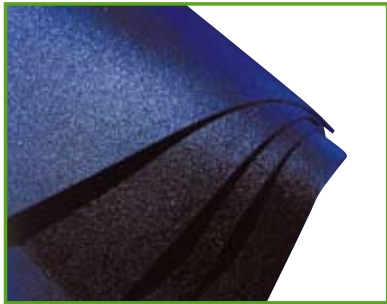
Easy to handle

Fit for purpose

Low footprint

Quick to install

High performance



E-Cousti Membrane

- Original product was developed using a nano vacuum technology to attenuate sound.
- A patented technology only 1.2mm thick based on synthetic rubber.
- Supplied in rolls of various sizes.
- Patent number: EPC (UK) 1173503



E-Cousti Ecobase

- A 5mm closed cell, cross linked, foam polyethylene layer with a density of 33kg/m³.
- High compressive strength and water resistance.
- Can be lapped over at wall junctions, forming an integral flanking strip.
- Supplied in rolls of 5mm x 30m x 1.85m.



E-Coustifloor

- Comprises 6mm laminate of E-Cousti Membrane and 5mm closed cell foam.
- Can be lapped over at wall junctions, forming an integral flanking strip.
- Supplied in rolls of 6mm x 7.5m x 1.5m.



E-Cousti Ecoboard

- Comprises 18/22mm P5 tongued and grooved chipboard laminated to 5mm closed cell, cross linked polyethylene foam.
- High compressive strength and moisture resistance.
- Supplied in 23/28mm x 2400mm x 600mm boards.



E-Cousti Direct

- Comprises a layer of 22mm P5 tongued and grooved chipboard laminated to a layer of 5mm closed cell polyethylene foam bonded to a 1mm layer of E-Cousti Membrane.
- Supplied in 28mm x 2400mm x 600mm boards.

E-Cousti Product Range

Innovative

Cost effective

Easy to use

Versatile

Lightweight

Flexible



E-Cousti Joist Cap

- Acoustic joist treatment, comprising a polyethylene foam designed to friction fit onto joists.
- Supplied individually at 12mm x 50mm x 2m.
- Patent application number 0614487.7

E-Coustiquilt

- The E-Cousti Membrane is sandwiched between two layers of 25mm mineral wool for maximum effectiveness.
- Overall thickness of 52mm and is supplied in rolls of 5m lengths and 1200/600/400mm widths.

E-Coustiwrap

- The E-Cousti Membrane is sandwiched between two layers of 25mm mineral wool with a reinforced aluminium foil facing on one side.
- Suitable for the thermal and acoustic insulation of air ducting, pipes and enclosures.
- Supplied individually in various sizes.

E-Cousti Ecostrip

- Comprises a cross linked, closed cell polyethylene foam.
- Installed at the floor and wall perimeter.
- Provides an optimum seal to eliminate sound transmission.
- Supplied in rolls of 5mm x 100mm x 20m.

E-Cousti Fix & Seal

- A specially formulated intumescent and acoustic sealant to be used with all E-Cousti solutions.
- Supplied in tubes of 900ml.

E-Cousti Internal Walls/Partitions



E-Cousti Internal Walls/Partitions

An internal wall is defined as a wall between a bedroom or room containing a W.C. and other rooms.

There is no Approved Document E requirement for an internal wall that contains a door. The internal walls requirement for Approved Document E is 40 R_wdB. Internal walls are not subject to pre-completion testing.

E-Cousti Internal Wall Solution

E-Cousti Sound Reduction Performance	
R_wdB	51
Part E Acoustic Requirement	
R_wdB	40

Components and Fixing Data:

- 1 x 15mm Acoustic Plasterboard (nominal density 12.5kg/m³/screwed to)
- 70mm Metal C Studs (at 600mm centres)
- 52mm E-Coustiquilt (suspended in cavity between studs)
- 1 x 15mm Acoustic Plasterboard (nominal density 12.5kg/m³/screwed to studs)
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction

Technical Data:

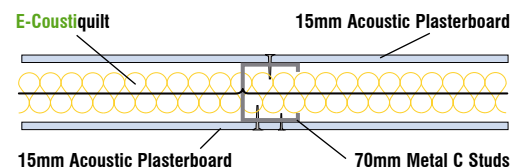
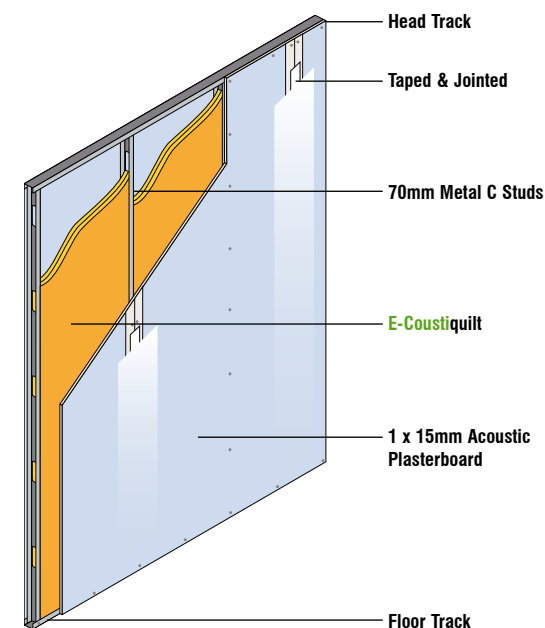
Application	Internal Wall/Partition
Mass per Unit Area	31 kg/m ²
Footprint Width	100mm
Fire Protection	30 minutes
Certification	Sound Reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1:1997
Test Report No.	L03-152 (Available on request)

Benefits

- High performance ensures maximum comfort and privacy for occupants.
- E-Cousti Membrane prevents material “slumping” in the cavity and enhances service life and integrity.

Typical applications

- Any internal non-loadbearing wall situation new build or refurbishment.
- Ideal for luxury homes and apartments where high performance is expected.
- Particularly suitable between adjoining bedrooms and bathrooms.



E-Cousti Separating Walls



E-Cousti Separating Walls



A separating wall is defined as a wall separating one dwelling from another.

Approved Document E requires all separating walls to provide a minimum level of airborne sound reduction between dwellings and rooms used for residential purposes.

Wherever walls are formed to separate houses, apartments, hotel rooms or communal areas, a separating wall treatment will be required.

Part E Acoustic Requirement

New build	Refurbishment
$D_{nT,w} + C_{tr}$ dB	$D_{nT,w} + C_{tr}$ dB
45	43

See page 27 for explanation of terms with reference to laboratory/on-site testing.

Separating walls are subject to Pre-Completion Testing to demonstrate compliance to Approved Document E.

Ctr Adjusting Factor

Low frequency sound from televisions and hi-fi's is often present between adjoining properties in a separating wall application.

Therefore a correction factor is taken into account known as '+ Ctr'. This ensures low frequency noise is reflected in test data and must be considered when selecting a separating wall treatment.

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E-Cousti Single Stud Solution

E-Cousti Sound Reduction Performance

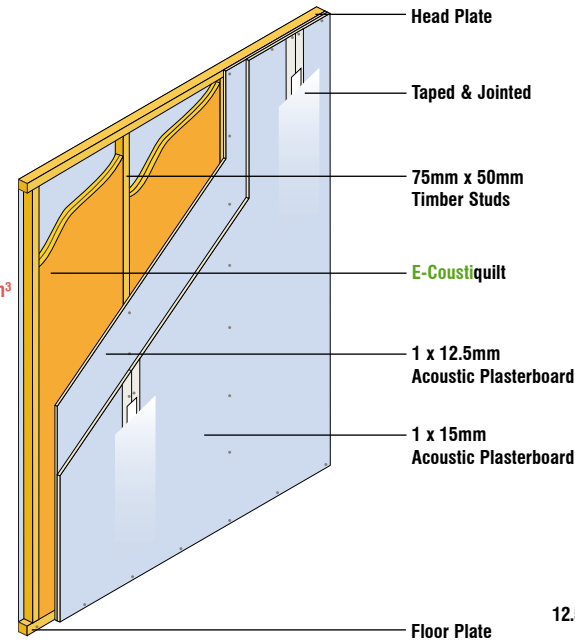
R_wdB	R_wdB + C_{tr}
55	48

Part E Acoustic Requirement

New build	Refurbishment
D_{nT,w} + C_{tr} dB	D_{nT,w} + C_{tr} dB
45	43

Components and Fixing Data:

- 1 x 15mm Acoustic Plasterboard (nominal density 12.5kg/m³ and)
- 1 x 12.5mm Acoustic Plasterboard (nominal density 10.5kg/m³ screwed to)
- 75mm x 50mm Timber Studs (at 600mm centres)
- 52mm E-Coustiquilt (suspended in cavity between studs)
- 1 x 12.5mm Acoustic Plasterboard (nominal density 10.5kg/m³ and)
- 1 x 15mm Acoustic Plasterboard (nominal density 12.5kg/m³ screwed to studs)
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction



Benefits

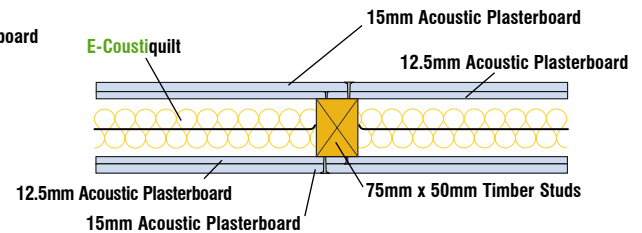
- Award winning E-Cousti Membrane allows use of traditional materials to achieve outstanding performance.
- Only 130mm footprint with a quick construction process.

Typical applications

- Ideally suited to material change of use projects when converting to apartments.

Technical Data:

Application	Separating Wall
Mass per Unit Area	55 kg/m ²
Footprint Width	130mm
Fire Protection	60 minutes
Certification	Sound Reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1: 1997
Test Report No.	L03-155 (Available on request)



E-Cousti Double Stud Solution

E-Cousti Sound Reduction Performance

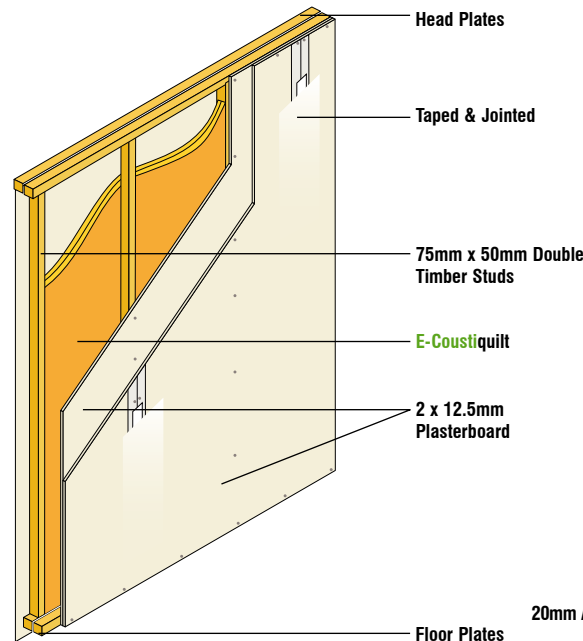
R_wdB	R_wdB + C_{tr}
62	52

Part E Acoustic Requirement

New build	Refurbishment
D_{nT,w} + C_{tr} dB	D_{nT,w} + C_{tr} dB
45	43

Components and Fixing Data:

- 2 x 12.5mm Plasterboard (nominal density 8kg/m³ screwed to)
- 75 x 50mm Timber Studs (at 600mm centres)
- 52mm E-Coustiquilt (between studs)
- 20mm Air Gap between Studs
- 75 x 50mm Timber Studs (at 600mm centres)
- 2 x 12.5mm Plasterboard (nominal density 8kg/m³)
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction

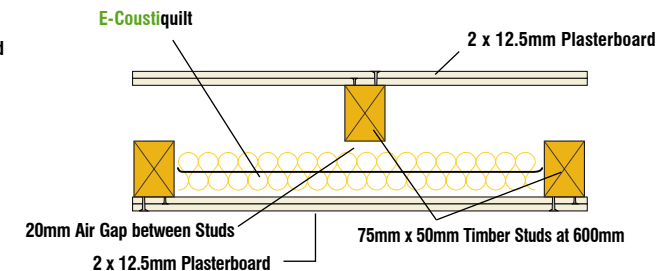


Benefits

- Superb performance using traditional construction methods and materials.
- Excellent levels of comfort and integrity exceeding Approved Document E requirements.
- E-Cousti Membrane will not slump over time within the cavity enhancing service life.

Typical applications

- Separating walls for apartments, hotels, student accommodation, care homes etc where timber is the preferred material.



Technical Data:

Application	Separating Wall
Mass per Unit Area	46.4 kg/m ²
Footprint Width	220mm
Fire Protection	60 minutes
Certification	Sound Reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1: 1997
Test Report No.	L03-176 (Available on request)

E-Cousti Twin Frame Solution

E-Cousti Sound Reduction Performance

R_wdB	R_wdB + C_{tr}
66	59
Part E Acoustic Requirement	
New build	Refurbishment
D_{nT,w} + C_{tr} dB	D_{nT,w} + C_{tr} dB
45	43

Components and Fixing Data:

- 2 x 15mm Acoustic Plasterboard (nominal density 12.5kgm³ per board screwed to)
- 60mm Metal I Studs (at 600mm centres)
- 52mm E-Coustiquilt (between studs)
- 20mm Air Gap between Studs
- 60mm Metal I Studs (at 600mm centres)
- 2 x 15mm Acoustic Plasterboard (nominal density 12.6kgm³ per board)
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction

Technical Data:

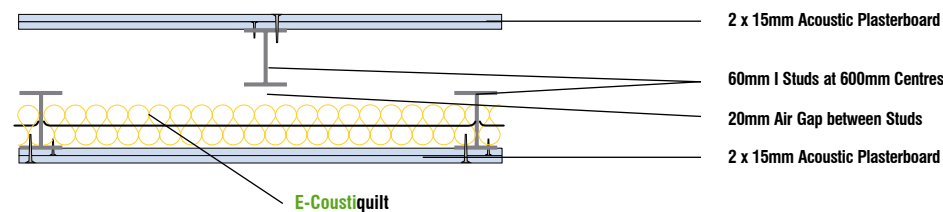
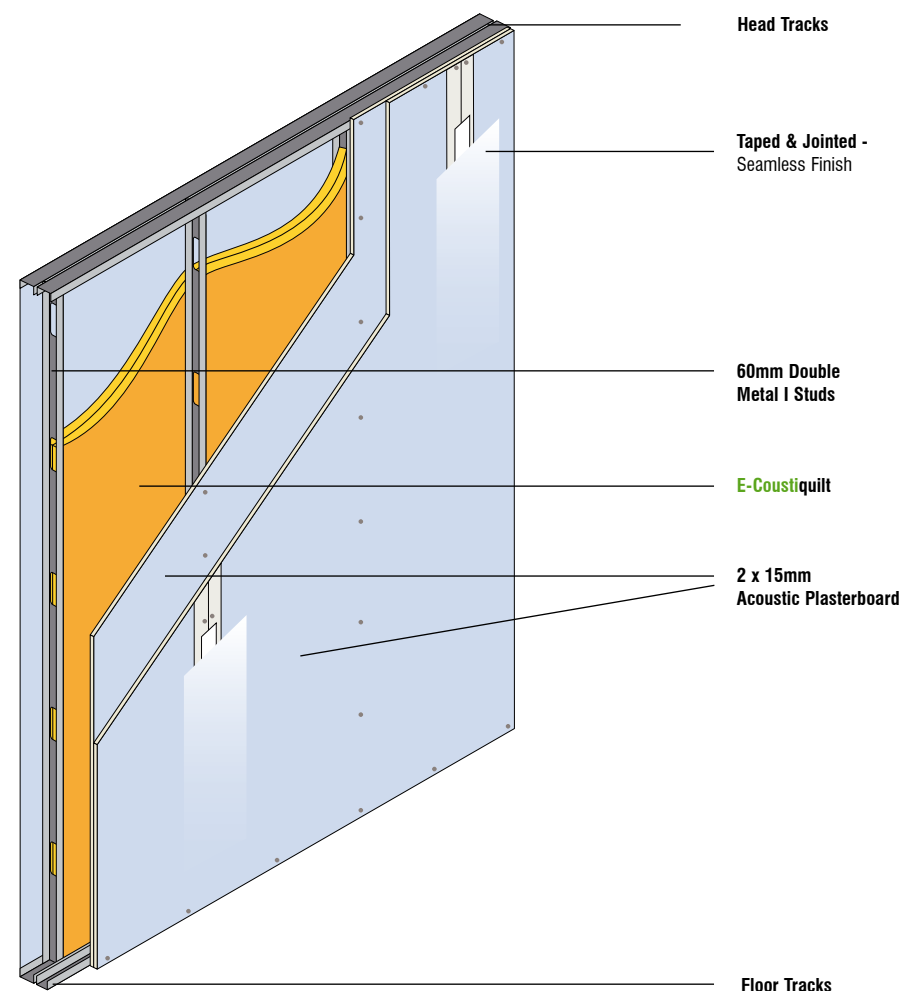
Application	Separating Wall
Mass per Unit Area	61.6 kg/m ²
Footprint Width	200mm
Fire Protection	60 minutes
Certification	Sound Reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1: 1997
Test Report No.	L03-172 (Available on request)

Benefits

- Excellent performance to width ratio offering high levels of integrity above Approved Document E and still only 200mm wide.
- Staggered stud design saves on labour and materials.
- Only 3 primary components plus fixings making construction straightforward.

Typical applications

- Suitable for apartments, hotels, student accommodation, care homes etc.
- Particularly useful for luxury apartments or areas requiring high privacy.



E-Cousti Independent Wall Lining Solution

E-Cousti Sound Reduction Performance

R_wdB 58	R_wdB + C_{tr} 50
Part E Acoustic Requirement	
New build D_{nT,w} + C_{tr} dB 45	Refurbishment D_{nT,w} + C_{tr} dB 43

Components and Fixing Data:

- 100mm Lightweight Block Wall (painted on one side)
- 20mm Air Gap
- 48mm Metal I Studs (at 600mm centres)
- 52mm E-Coustiquilt (between studs)
- 1 x 12.5mm Plasterboard (nominal density 8kg/m³ screwed to studs, do not fix through to existing structure only to sole and head plates)
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction

Benefits

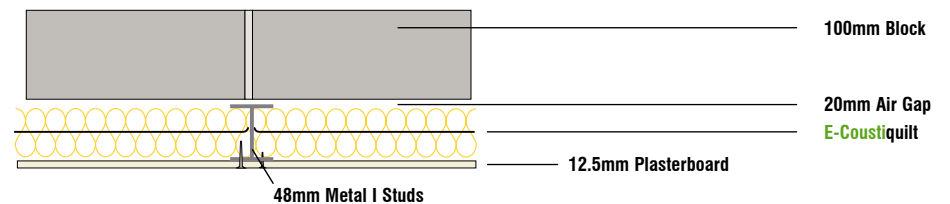
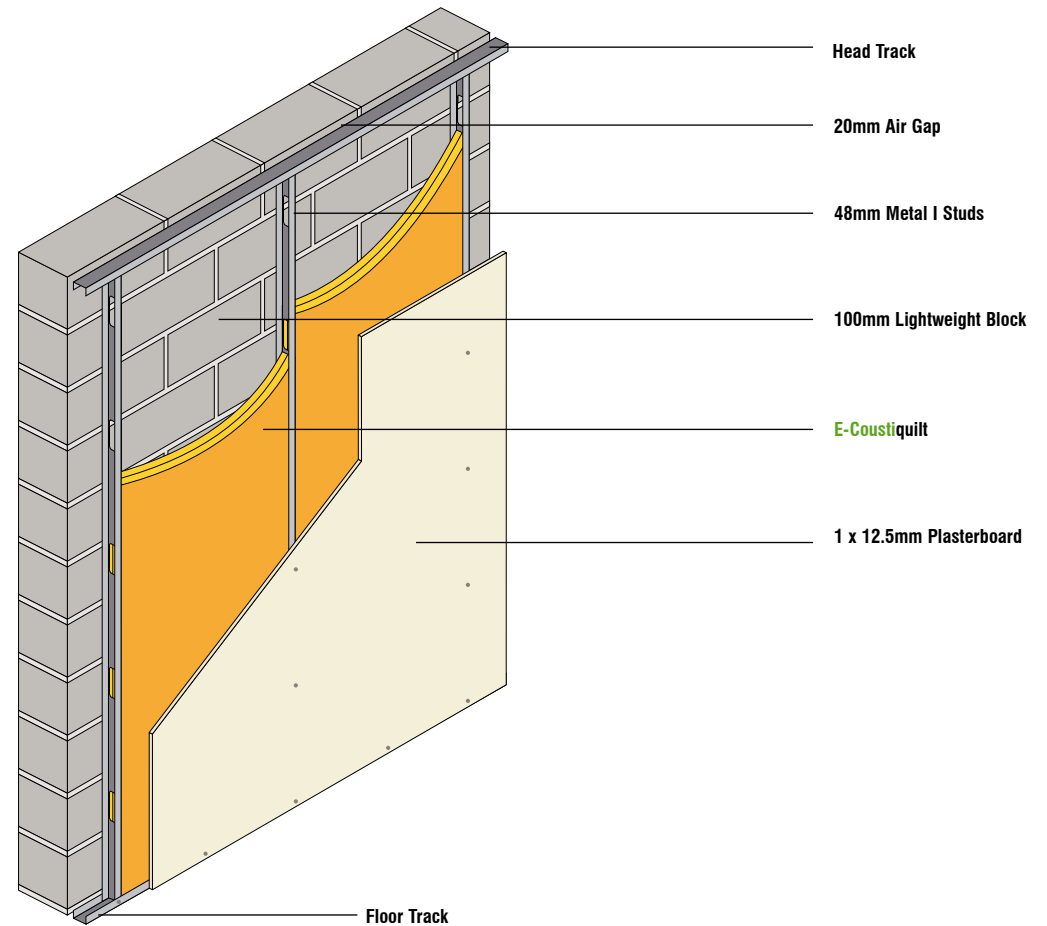
- Narrow footprint compared to masonry cavity wall construction - only 82.5mm.
- Brings the benefits of masonry and drywall construction together with savings on labour and greater security.
- Can compensate for minor inaccuracies in mortar joints without the need for wet trades or parge coats.
- Tested with lightweight blockwork to provide “worst case scenario” data, performance may improve with dense blocks or solid brick construction.

Typical applications

- Suitable for non-loadbearing separating wall applications, for new build or to upgrade existing masonry walls with confidence.
- Offers a very effective remedial solution where sound flanking down cavity walls has resulted in failure on site.
- Can assist with meeting external walls thermal requirements by allowing the use of lighter blockwork and offering an added U-value performance.

Technical Data:

Application	Separating Wall
Mass per Unit Area	76.1 kg/m ²
Footprint Width	82.5mm
Fire Protection	N/A
Certification	Sound Reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1:1997
Test Report No.	L03-159



E-Cousti Single Frame Solution

E-Cousti Sound Reduction Performance

R_w dB 61	R_w dB + C_{tr} 51
Part E Acoustic Requirement	
New build $D_{nT,w} + C_{tr}$ dB 45	Refurbishment $D_{nT,w} + C_{tr}$ dB 43

Components and Fixing Data:

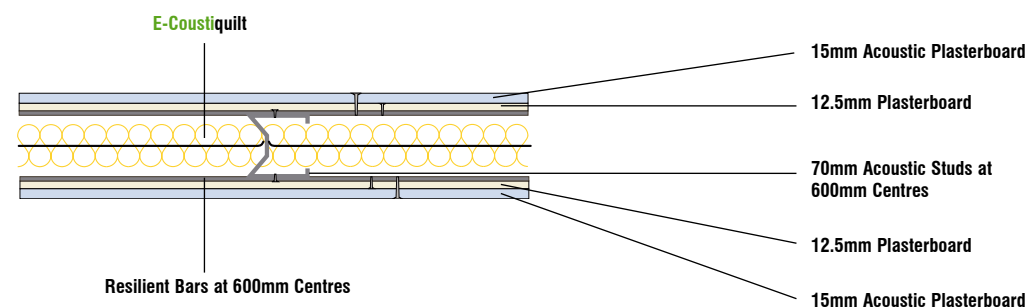
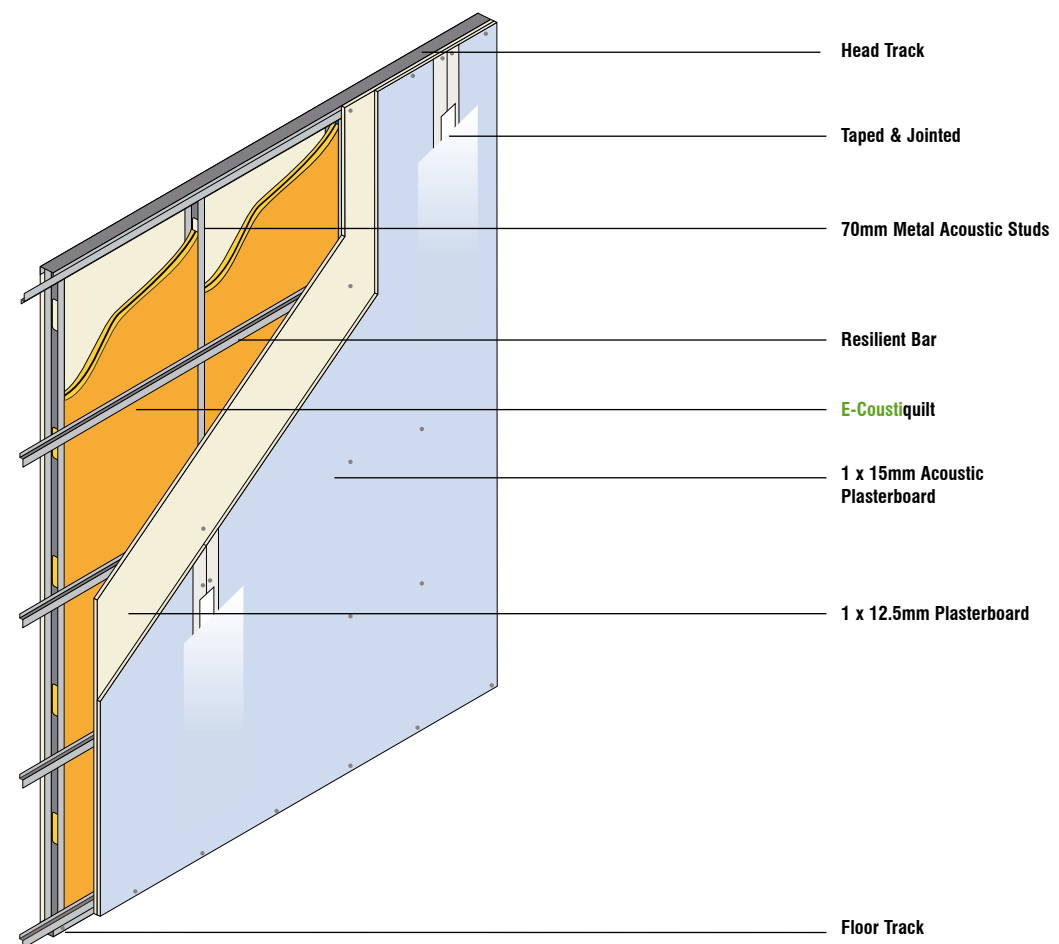
- **15mm Acoustic Plasterboard** (nominal density 12.5kg/m³ and)
- **12.5mm Plasterboard** (nominal density 8kg/m³ screwed to)
- **Resilient Bars** (at 600mm centres screwed to)
- **70mm Acoustic Studs** (at 600mm centres)
- **52mm E-Coustiquilt** (between studs)
- **Resilient Bars** (at 600mm centres screwed to)
- **12.5mm Plasterboard** (nominal density 8kg/m³ screwed to resilient bars)
- **15mm Acoustic Plasterboard** (nominal density 12.5kg/m³ screwed through to resilient bars)
- **E-Cousti Fix & Seal** must be used to ensure the acoustic integrity of the construction

Benefits

- Only 159mm wide opening up more usable space without compromising on performance.
- Single frame construction expedites the build process and reduces labour.
- Excellent performance offers peace of mind and enhanced comfort and privacy.
- Cost effective robust system.
- Ideal where strong performance is required and floor space is tight, or simply when looking for peace of mind when Pre-Completion Testing.

Typical applications

- Suitable for new build and refurbishment applications for apartments, hotels, student accommodation, care homes, etc.



Technical Data:

Application	Separating Wall
Mass per Unit Area	51.8 kg/m ²
Footprint Width	159mm
Fire Protection	60 minutes
Certification	Sound Reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1:1997
Test Report No.	L03-178 (Available on request)

E-Cousti Separating Floors



E-Cousti Separating Floors



A separating floor is defined as any floor that divides one dwelling or residential room from another. These could be apartments, hotel rooms, student accommodation, and dwellings over communal areas etc.

Part E Acoustic Requirement Airborne Sound	
New build $D_{nT,w} + C_{tr}$ dB 45	Refurbishment $D_{nT,w} + C_{tr}$ 43

Part E Acoustic Requirement Impact Sound	
New build $L'_{nT,w}$ dB 62	Refurbishment $L'_{nT,w}$ dB 64

See page 27 for explanation of terms with reference to laboratory/on-site testing.

Approved Document E sets two challenges with regard to separating floors.

Airborne Sound Reduction

Separating floors must provide a minimum level of airborne sound reduction in the amount of noise televisions, speech and telephones etc may create.

C_{tr} Adjusting Factor

Low frequency sound from televisions and hi-fi's is often present between adjoining properties in a separating floor application.

Therefore a correction factor is taken into account known as '+ C_{tr}'. This ensures low frequency noise is reflected in test data and must be considered when selecting a separating floor treatment.

Impact Sound Reduction

Separating floors must provide impact sound insulation at source to reduce the amount of noise created by footsteps, furniture or heavy objects moving or hitting the floor. This time a maximum level of sound is permitted within Approved Document E.

Unless using a solution that is compliant and registered with Robust Details Ltd, all separating floors are subject to Pre-Completion Testing to comply with Approved Document E.

To assist when analysing test data:

- For airborne sound the higher the figure the better the performance.
- For impact sound the lower the figure the better the performance.

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E-Cousti Independent Ceiling Solution

E-Cousti Sound Reduction Performance

Airborne		Impact
R_w dB	R_w dB + C_{tr}	L'_{nw} dB
63	54	56

Part E Acoustic Requirement: New Build

Airborne 45 $D_{nT,w} + C_{tr}$ dB
Impact 62 $L'_{nT,w}$ dB

Part E Acoustic Requirement: Refurbishment

Airborne 43 $D_{nT,w} + C_{tr}$ dB
Impact 64 $L'_{nT,w}$ dB

Components and Fixing Data:

- 1 x 18mm Tongued and Grooved Chipboard (screwed to)
- Timber Joists (240mm x 48mm at 400mm centres. Joist size to suit application)
- 52mm E-Coustiquilt (beneath joists)
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction

Independent Ceiling:

- Timber Joists (100mm x 48mm on hangers at 400mm centres)
- 2 x 15mm Acoustic Plasterboard (nominal density 12.5kg/m³ per board)

Technical Data:

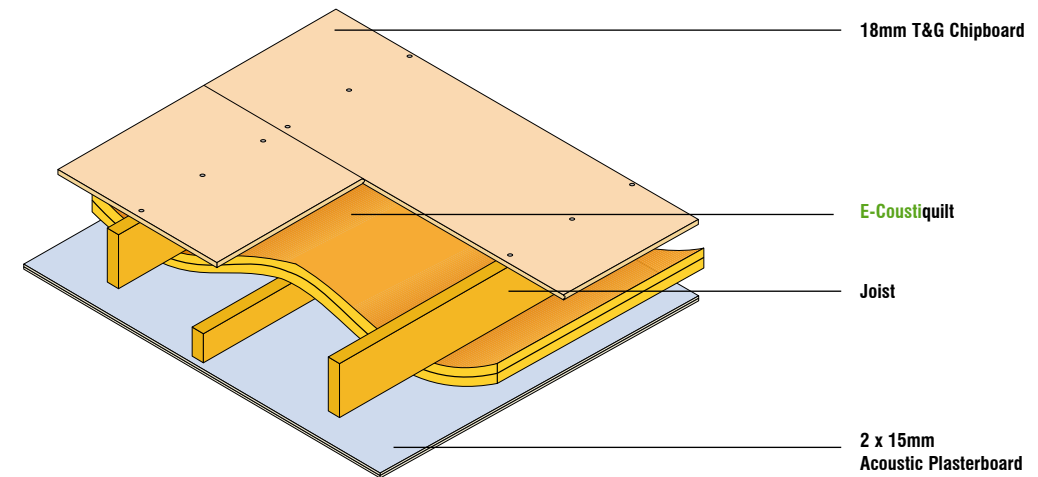
Application	Separating Timber Floor
Mass per Unit Area	59.4 kg/m ²
Depth	343mm
Fire Protection	60 minutes
Certification	Sound Reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1:1997
Test Report Nos.	Airborne L03-252 (Available on request)
	Impact L03-253 (Available on request)

Benefits

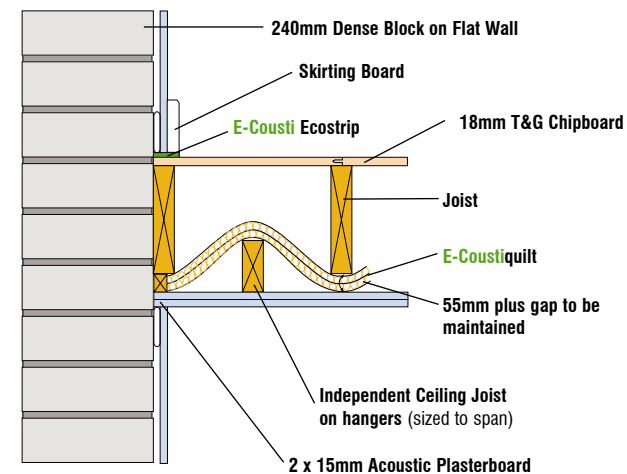
- E-Coustiquilt combines the absorption performance of mineral wool with the unique isolation characteristics of the E-Cousti Membrane.
- Can be installed working from just one side of the floor.
- Minimal disruption if space above is already occupied on existing buildings.

Typical applications

- New build or refurbishment apartments, hotels, student accommodation, care homes etc.
- Ideal on existing buildings where only one side of floor can be accessed or existing floors finishes are to be retained.



End Details



E-Cousti Sound Reduction Performance

Airborne R_w dB	Airborne R_w dB + C_{tr}	Impact L'_{nw} dB
63	54	54

Part E Acoustic Requirement: New Build

Airborne 45 $D_{nT,w} + C_{tr}$ dB
Impact 62 $L'_{nT,w}$ dB

Part E Acoustic Requirement: Refurbishment

Airborne 43 $D_{nT,w} + C_{tr}$ dB
Impact 64 $L'_{nT,w}$ dB

Components and Fixing Data:

- 1 x 18mm Tongued and Grooved Chipboard (glued to)
- 19mm Gypsum Plank (nominal density 15kg/m³ laid on)
- 6mm E-Coustifloor (laid on)
- 18mm OSB Boards (screwed to)
- 235mm x 50mm Timber Joists (on hangers at 450mm centres) (suitable for traditional and I beam joists)
- 100mm Mineral Wool (between joists) 10kg/m³)
- Resilient Bars (at 400mm centres screwed to joists)
- 2 x 15mm Acoustic Plasterboards (nominal density 12.5kg/m³ per board screwed to resilient bars)
- E-Cousti Fix & Seal must be used to ensure the integrity of the construction

Technical Data:

Application	Separating Timber Floor
Mass per Unit Area	81 kg/m ³
Depth	346mm
Fire Protection	60 minutes
Certification	Sound reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1: 1997
Test Report Nos.	Airborne L205-064 (Available on request)
	Impact L205-065 (Available on request)

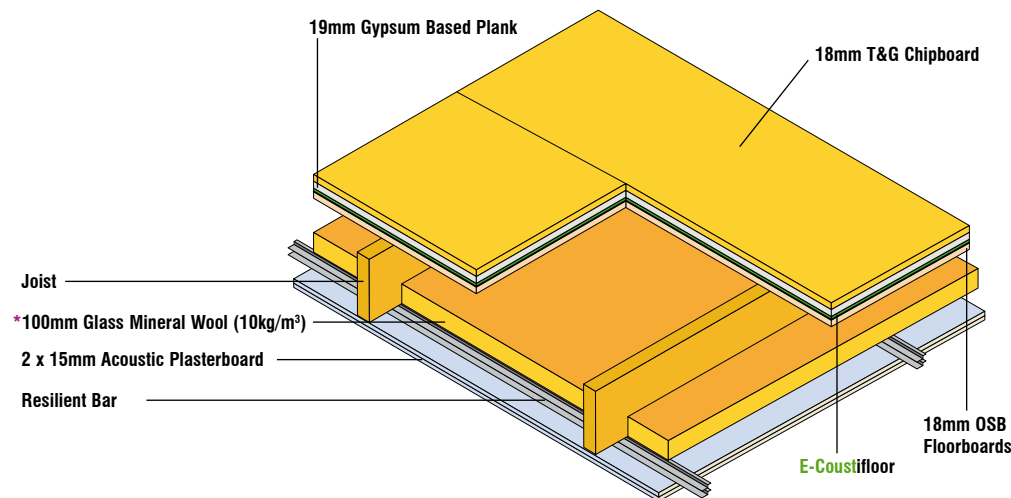
Benefits

- The excellent performance afforded by E-Cousti Membrane within the system.
- Robust construction provides peace of mind and offers a good margin of safety above minimum requirements.
- E-Coustifloor creates integral perimeter flanking detail and maintains integrity whilst reducing labour.
- Closed cell resilient layer allows internal non-loadbearing partitions to be built directly off the floating floor saving labour, wastage and maintaining acoustic integrity.
- Only 10 kg/m³ mineral fibre required due to E-Cousti Membrane performance.
- Shallow footprint reduces brick coursing compared to some timber floor solutions.

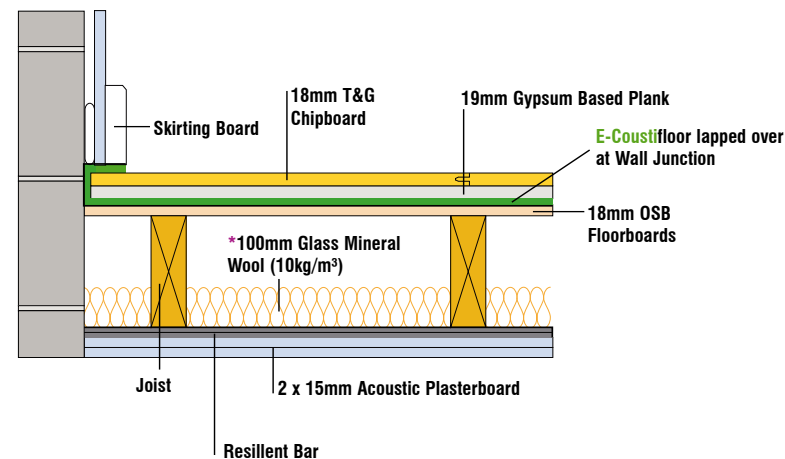
Typical applications

- Separating floor for apartments, hotels, student accommodation, care homes etc for both new build and refurbishment applications.
- Ideal whenever a simple, robust, high performance solution is required to meet Approved Document E on timber floors with confidence.

*Replacing the 100mm Glass Mineral Wool (10kg/m³) with a 45kg/m³ Mineral Wool may enhance performance.



End Details



E-Cousti Platform ^{ECOBOARD} Solution

E-Cousti Sound Reduction Performance

Airborne		Impact
R_w dB	R_w dB + C_{tr}	L'_{nw} dB
59	49	59

Part E Acoustic Requirement: New Build

Airborne	$45 D_{nT,w} + C_{tr}$ dB
Impact	$62 L'_{nT,w}$ dB

Part E Acoustic Requirement: Refurbishment

Airborne	$43 D_{nT,w} + C_{tr}$ dB
Impact	$64 L'_{nT,w}$ dB

Components and Fixing Data:

- 23mm E-Cousti Ecoboard (laid on)
- 18mm OSB Boards (screwed to)
- 235mm x 50mm Timber Joists (on hangers at 450mm centres) (suitable for traditional and I beam joists)
- 100mm Mineral Wool (nominal density 45kg/m³ between joists)
- Resilient Bars (at 400mm centres screwed to joists)
- 2 x 15mm Acoustic Plasterboards (nominal density 12.5kg/m³ per board)
- E-Cousti Fix & Seal and E-Cousti Ecostrip must be used to ensure the integrity of the construction

Technical Data:

Application	Separating Timber Floor
Mass per Unit Area	70 kg/m ³
Depth	323mm
Fire Protection	60 minutes
Certification	Sound reduction index to BS EN ISO 140-3: 1995
	Rating according to BS EN ISO 717-1: 1997
Test Report Nos.	Airborne L205-062 (Available on request)
	Impact L205-063 (Available on request)

Benefits

- Ecoboard offers a simple composite overlay solution for new and existing floors.
- Extremely quick and easy to install.
- Closed cell resilient layer allows internal non-loadbearing partitions to be built directly off the floating floor saving labour, wastage and maintaining acoustic integrity.
- Ecoboard is only 23mm thick making it easy to marry up to existing stairs on refurbishment projects.
- Shallow footprint reduces brick coursing compared to some timber floor solutions.
- Option of 19mm plank within the system offers even greater peace of mind and may improve performance by 3-5 dB.

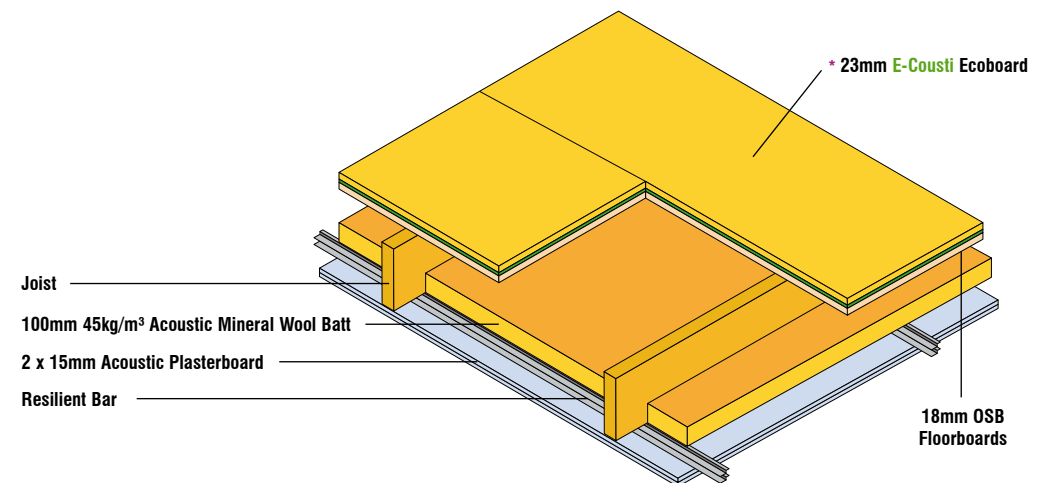
Typical applications

- Any new build or refurbishment timber separating floor application such as apartments, hotels, student accommodation, care homes etc.
- Perfect when existing stair heights and doorways etc need consideration.
- Excellent alternative system for those wishing to Pre-Completion Test with confidence.

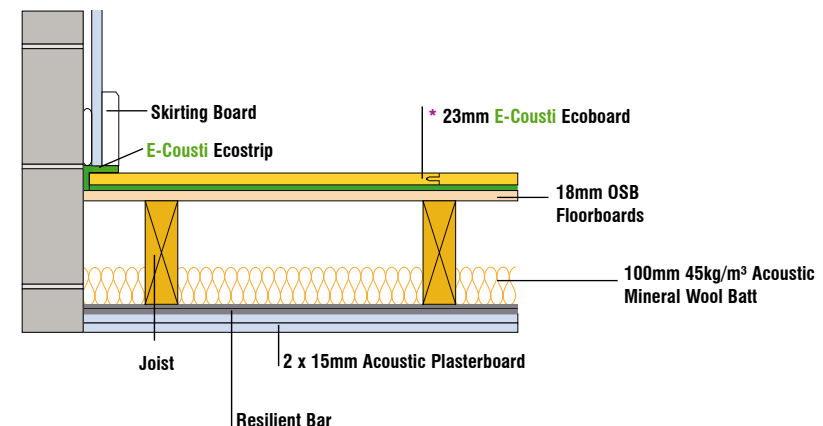
*Further improvements can be made by placing 19mm Gypsum based plank over the floorboards before installing the E-Cousti Ecoboard.

Airborne: 54 R_w dB + C_{tr} (62 R_w dB)
Impact: 54 L_{nw} dB

Test Nos. L205 - 060 Airborne
L205 - 061 Impact



End Details



E-Cousti Joist Cap Solution

E-Cousti Sound Reduction Performance		
Airborne R_w dB	$R_w + C_{tr}$ dB	Impact L'_{nw} dB
63	51	55
Part E Acoustic Requirement: New Build		
Airborne 45 $D_{nT,w} + C_{tr}$ dB		Impact 62 $L'_{nT,w}$ dB
Part E Acoustic Requirement: Refurbishment		
Airborne 45 $D_{nT,w} + C_{tr}$ dB		Impact 64 $L'_{nT,w}$ dB

Components and Fixing Data:

- 1 x 18mm P5 Tongued and Grooved Chipboard (glued to)
- Joist Cap (friction fitted)
- 220mm Timber Joists at 400mm centres (can be used on traditional joists and I-Beam joists)
- 100mm 45kg/m³ Mineral Wool (between joists)
- Resilient Bars (at 400mm centres)
- 2 x 15mm Acoustic Plasterboards (nominal density 12.5kg/m³ per board)
- Perimeter sealed with E-Cousti Ecostrip
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction

Technical Data:

Application	Separating Floor
Mass per Unit Area	53kg/m ²
Depth	283mm
Fire Protection	60 minutes
Certification	Sound Reduction index according to BS EN ISO 140-3: 1995 Rating according to BS EN 140-6: 1998
Test Report Nos.	Airborne L207-005 (Available on request) Impact L207-006 (Available on request)

Benefits

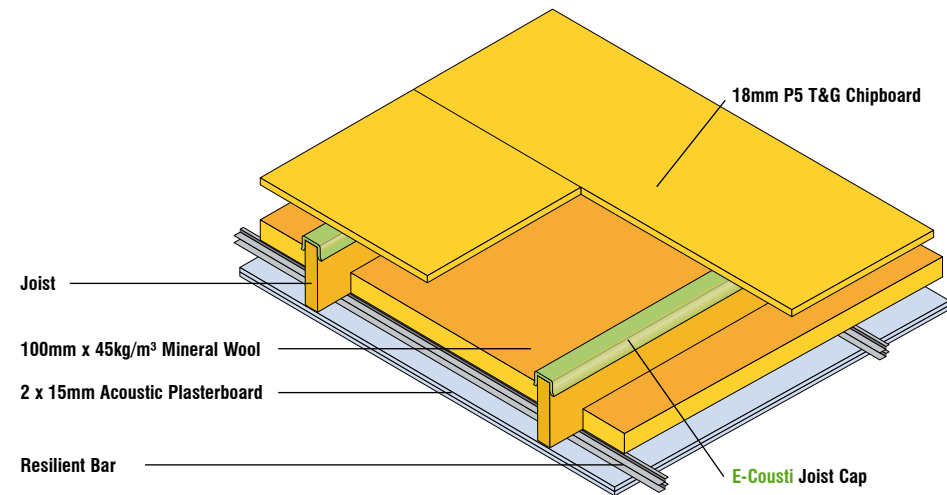
- No sub deck required prior to installation reducing floor height and saving labour.
- Provides excellent performance in excess of Approved Document E requirements.
- Very lightweight and easy to handle with simple installation process.
- Shallow footprint reduces brick coursing compared to some timber floor solutions.
- The option of 19mm plank within the system offers even greater peace of mind.

Typical applications

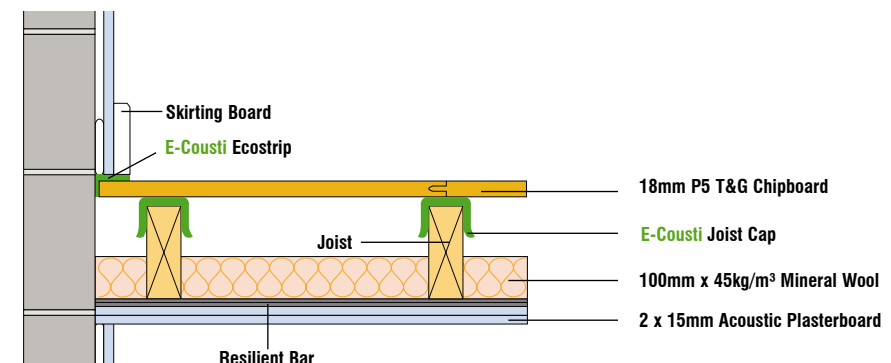
- Separating floor for apartments, hotels, student accommodation, care homes etc for both new build and refurbishment applications.
- Ideal if floor heights are an issue, or on existing buildings where floor boards need to be replaced.

*Further improvements can be made by placing 19mm Gypsum based plank over the Joist Cap before installing the chipboard.

During on-site testing a 1dB improvement in airborne sound and impact sound was noted.



End Details



E-Cousti Direct Solution

E-Cousti Sound Reduction Performance

Airborne		Impact
R_w dB	$R_w + C_{tr}$ dB	L'_{nw} dB
63	53	55

Part E Acoustic Requirement: New Build

Airborne 45	$D_{nT,w} + C_{tr}$ dB
Impact 62	$L'_{nT,w}$ dB

Part E Acoustic Requirement: Refurbishment

Airborne 45	$D_{nT,w} + C_{tr}$ dB
Impact 64	$L'_{nT,w}$ dB

Components and Fixing Data:

- 28mm E-Cousti Direct (laid on)
- Timber Joists (225mm x 50mm) (on hangers at 450mm centres) (can be used on traditional or I-Beam joists)
- 100mm 45kg/m³ Mineral Wool (between joists)
- Resilient Bars at 400mm centres (screwed to joists)
- 2 x 15mm Acoustic Plasterboards (nominal density 12.5kg/m³ per board)
- Perimeter sealed with E-Cousti Ecostrip
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction

Technical Data:

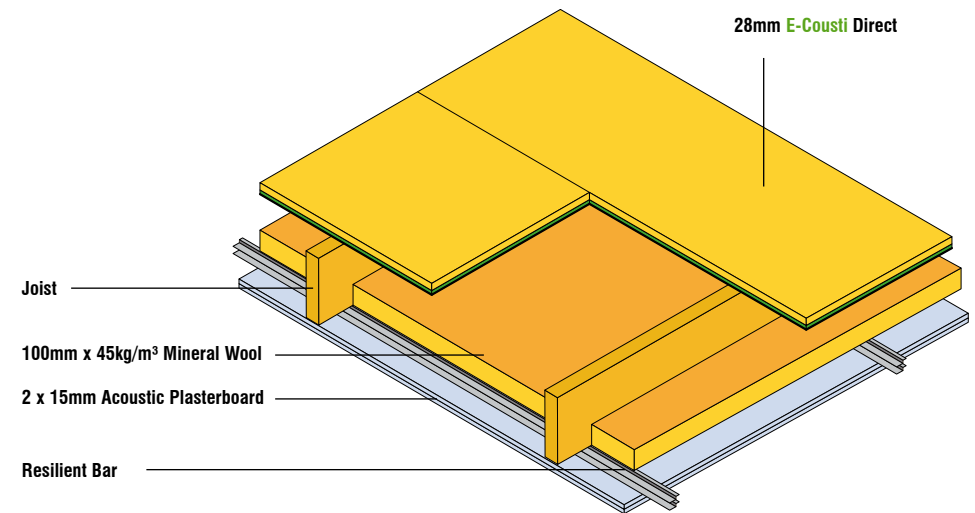
Application	Separating Floor
Mass per Unit Area	62kg/m ²
Depth	311mm
Fire Protection	60 minutes
Certification	Sound Reduction index according to BS EN ISO 140-3: 1995 Rating according to BS EN 140-6: 1998
Test Report Nos.	Airborne L207-027 (Available on request) Impact L207-028 (Available on request)

Benefits

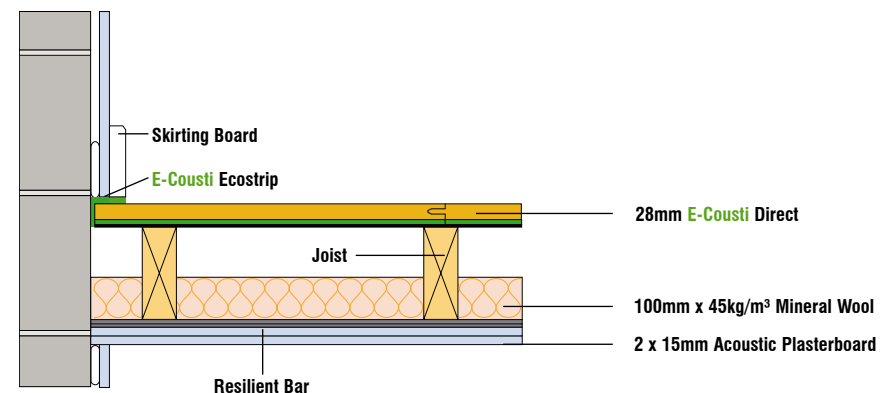
- E-Cousti Direct is laid straight onto the joists, no sub deck required.
- Airborne and impact improvement from one high performance composite panel.
- Maximises floor to ceiling heights and reduces labour and material wastage.
- Easy installation process uses only one primary floating floor component.

Typical applications

- Separating floor for apartments, hotels, student accommodation, care homes for both new build and refurbishment applications.
- Ideal if floor heights are an issue, or on existing buildings where floor boards need to be replaced.



End Details



E-Cousti Under Screed ^{ECOBASE} Solution

E-Cousti Sound Reduction Performance

Thickness **5mm**
Dynamic Stiffness **14 MN/m³**

Part E Acoustic Requirement

Maximum Dynamic Stiffness
15 MN/m³
Minimum Thickness
5 mm

Components and Fixing Data:

- **65mm Sand and Cement Screed or Proprietary Screed** mass/unit area min **80kg/m²** (laid on)
- **E-Cousti Ecobase Under Screed** (lapped over at wall junction laid on)
- **Concrete floor** (min. mass **300kg/m²** including any bonding screed)
- **E-Cousti Fix & Seal** must be used to ensure the acoustic integrity of the construction

Benefits

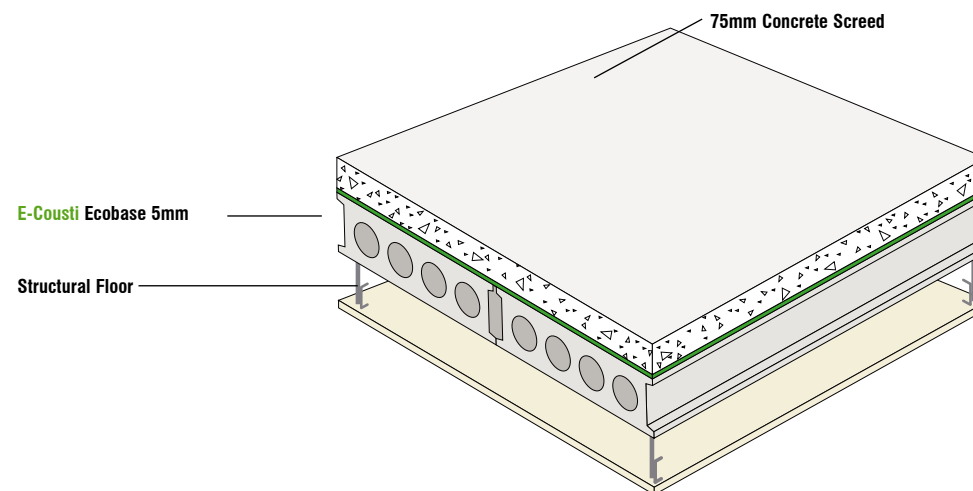
- Closed cell resilient under screed layer requires no damp proof membrane.
- Super lightweight material makes for easy storage and handling.
- 55.5m² roll size minimises joints and creates integral flanking detail.
- Suitable for both sand cement and proprietary screeds.

Typical applications

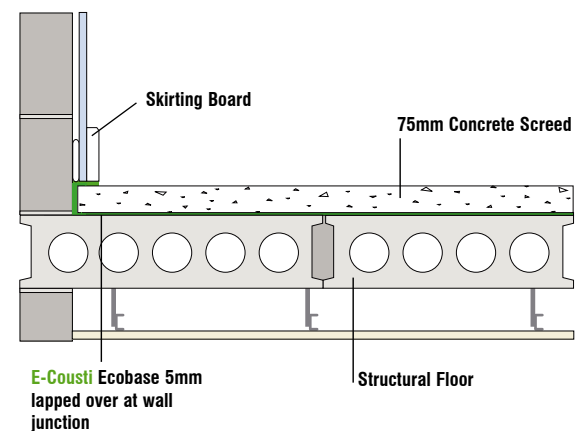
- Suitable as an under screed resilient layer for most concrete floors including hollow core plank and block & beam.
- May be used on new build or existing concrete floors where a screed will be laid.

Technical Data:

Application	Resilient Layer Under Screed
Mass per Unit Area	33 kg/m ³
Depth	5mm
Fire Protection	60 minutes (min)
Certification	Laboratory Measurement of Impact Sound BS EN ISO 140-6: 1998
	Rating according to BS EN ISO 717-2: 1997
Test No.	3989 (Available on request)



End Details



E-Cousti Concrete Overlay ^{E-COUSTIFLOOR} Solution

E-Cousti Sound Reduction Performance

Impact
rd Δ L_w19dB

Robust Detail Requirement

Minimum
rd Δ L_w17dB

Components and Fixing Data:

- 22mm Moisture Resistant Tongued and Grooved Chipboard (laid on)
- 6mm E-Coustifloor (laid on)
- Concrete floor conforming to E-FC-1, E-FC-2 or E-FS-1 (above)
- Ceiling conforming to Robust Detail requirements
- E-Cousti Fix & Seal must be used to ensure the acoustic integrity of the construction

NB: Please refer to the Robust Details handbook for suitable floor and ceiling treatments and to ensure junction details comply with guidelines.

Technical Data:

Application	Robust Detail Concrete Floors E-FC-1, E-FC-2 and E-FS-1
Mass per Unit Area	17 kg/m ²
Depth	28mm (above screed)
Fire Protection	60 minutes
Certification	Laboratory measurement of impact sound BS EN ISO 140-6: 1998
Test Report Nos.	3899 (Available on request)

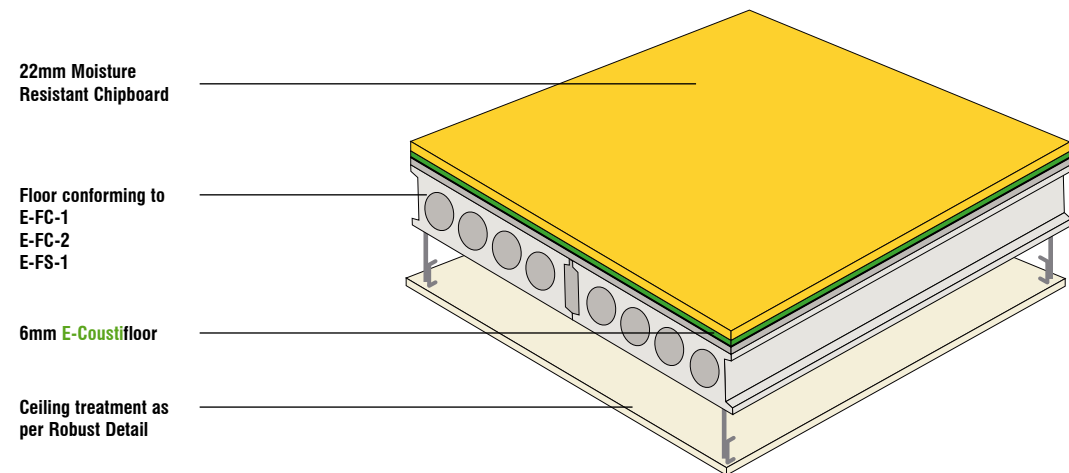
Benefits

- E-Cousti Membrane ensures optimum performance and offers airborne and impact performance.
- Only 28mm overall floor build up above screed with integral flanking detail.
- Excellent compressive strength allowing internal non-loadbearing partitions to be built directly off the floating floor.
- No damp proof membrane required prior to installation due to moisture resistant resilient layer.

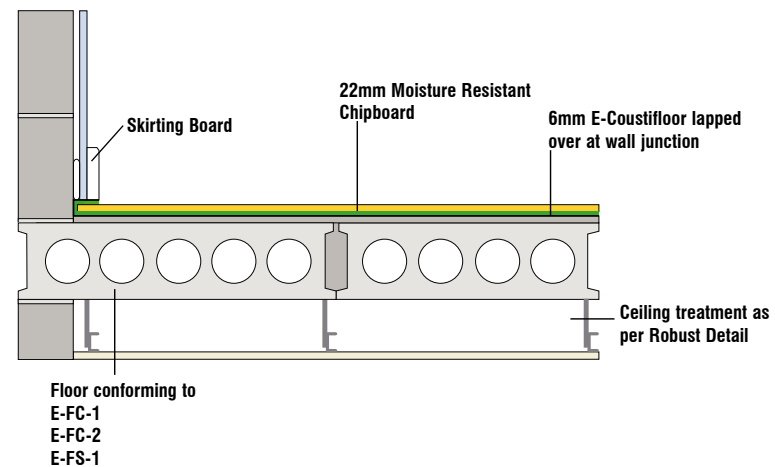
Typical applications

- Fully compliant with Robust Details FFT4 requirements on suitable sub floors.
- Also suitable for refurbishment situations where a high performance floor is required to comply with Approved Document E.

ROBUST DETAIL COMPLIANT



End Details



E-Cousti Sound Reduction Performance

Impact
rd ΔL_w 18dB

Robust Detail Requirement

Minimum
rd ΔL_w 17dB

Components and Fixing Data:

- 23mm E-Cousti Ecoboard (laid on)
- Levelling screed (glued joints laid on)
- Concrete floor conforming to E-FC-1, E-FC-2 or E-FS-1 (above)
- Ceiling conforming to Robust Detail requirements
- E-Cousti Fix & Seal and E-Cousti Ecostrip must be used to ensure the acoustic integrity of the construction

NB: Please refer to the Robust Details handbook for suitable floor and ceiling treatments and to ensure junction details comply with guidelines.

Benefits

- Only 23mm thick, Ecoboard allows easy interface with thresholds and stairways.
- Simple to install and inspect during the build process eliminating quality issues.
- Closed cell resilient layer allows internal non-loadbearing partitions to be built directly off the floating floor saving labour, wastage and maintaining acoustic integrity.
- Requires no damp proof membrane prior to installation due to moisture resistant resilient layer.
- Cost effective and reliable

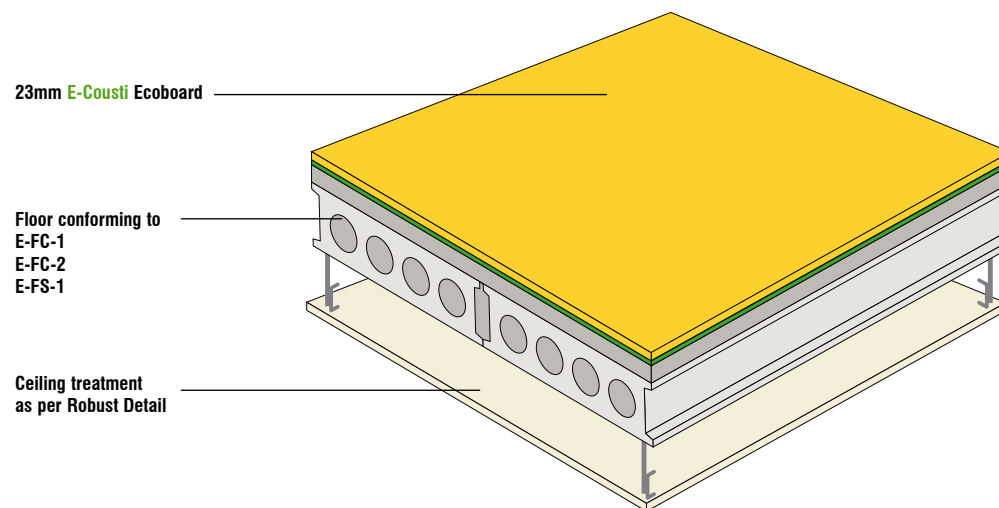
Typical applications

- Fully compliant with Robust Details FFT5 requirements on suitable sub floors.
- Also suitable for existing concrete floors on refurbishment projects where a simple high performance floating floor treatment is required to comply with Approved Document E.

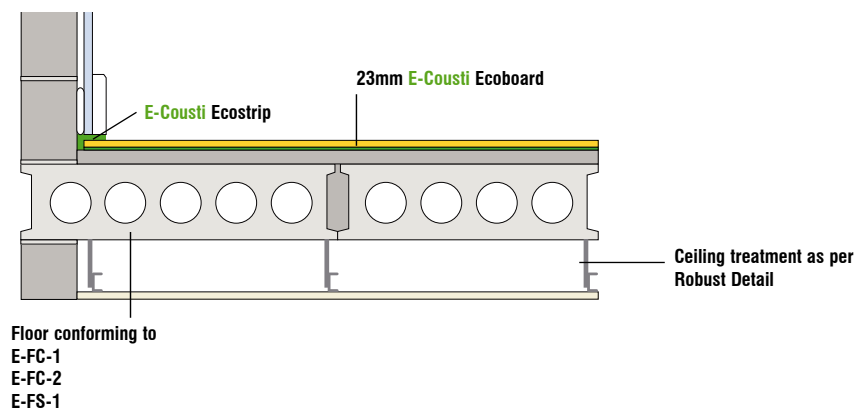
Technical Data:

Application	Robust Detail Concrete Floors E-FC-1, E-FC-2 and E-FS-1
Mass per Unit Area	13.165kg/m ²
Depth	23mm (above screed)
Fire Protection	60 minutes
Certification	Laboratory Measurement of Impact Sound BS EN ISO 140-6: 1998
	Rating according to BS EN ISO 717-2: 1997
Test Report Nos.	3896 (Available on request)

ROBUST DETAIL COMPLIANT



End Details



E-Cousti Bespoke Solutions

E-Cousti Solutions can be adapted to suit a variety of bespoke applications.

The existing lath and plaster ceiling upgrade solution illustrated on this page is just one example of the versatility of E-Cousti products used in a bespoke situation. There are many others. For further information, contact the technical specialist at your local stockist.

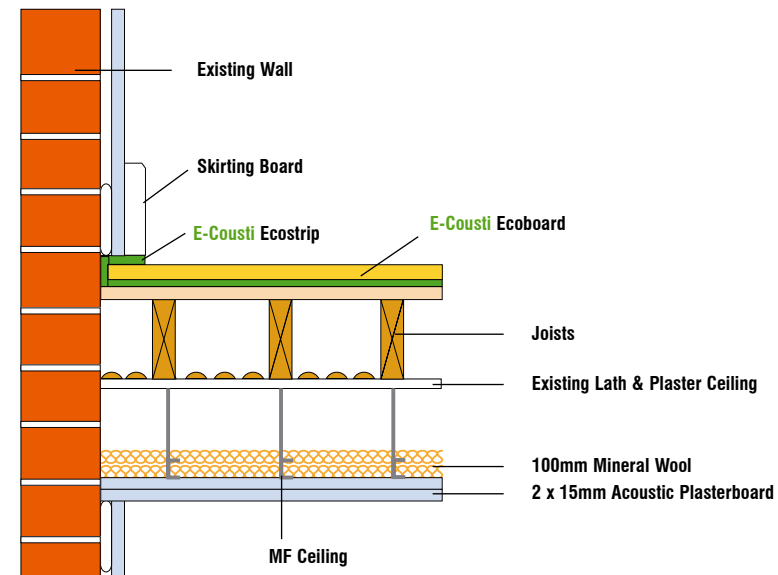
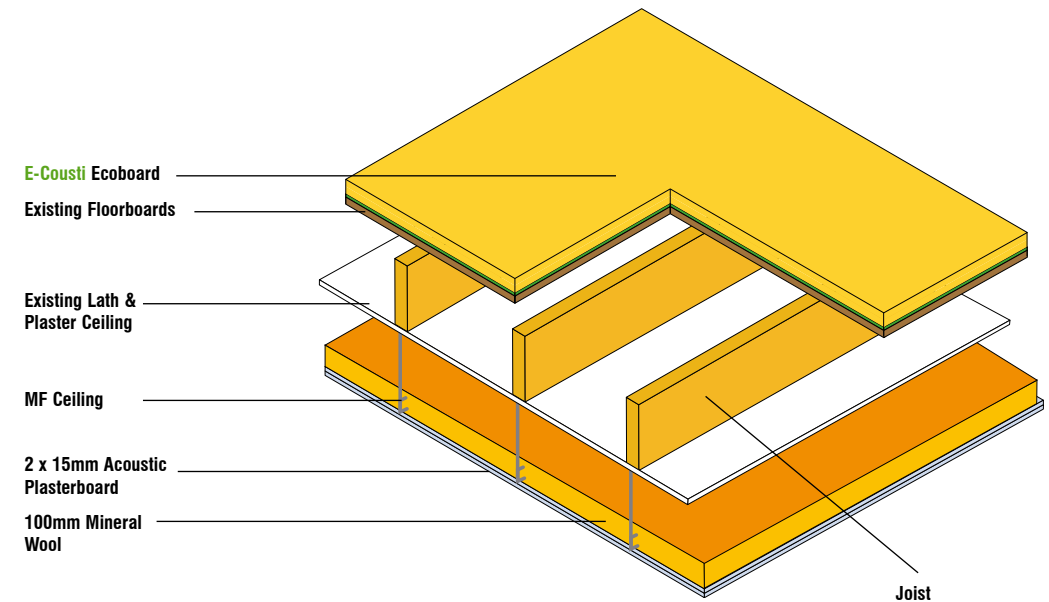
Benefits

- Considerate specifications that remain sympathetic to the building and cause minimal disruption.
- Project specific details that take account of your individual circumstances on site.
- Designed by specialists with a wealth of acoustic experience in the field.

Typical applications

- New and existing buildings requiring a high level of acoustic performance to comply with Approved Document E.
- Work involving existing plaster and lath ceilings, listed buildings, apartments above retail or commercial premises, function rooms and performance venues, industrial applications etc.

Improvements of Existing Lath and Plaster Ceilings



Additional information

TEST METHOD AND APPLICABLE STANDARDS

Testing of airborne and impact sound insulation was carried out in accordance with BS EN ISO 140: Part 3 (1995) and BS EN ISO 140: Part 6 (1998). Single number quantities were calculated in accordance with BS EN ISO 717: Part 1 (1997) and BS EN ISO 717: Part 2 (1997).

The BRE Acoustics Centre holds UKAS accreditation for the measurement of sound insulation in the field and the laboratory. The measurements were conducted using the procedures accredited by UKAS.

E-COUSTI MEMBRANE AWARDS PROFILE

European Merit Award Winner for Research & Technology.1999-2001

European Award for Support for Products Under Research.2002-2003

DTI Most Innovative SME Award.2000.

Arena Network Most Promising Environment Products Award 2005

WORKMANSHIP

To ensure that a soundproof structure is performing to its maximum level great care must be taken in its construction. Attention to detail is absolutely essential. It must be built as if it needed to be waterproofed - as sound, like water, light or air - will find the smallest crack and expose it as a weak part in the structure.

Any hole or gap will significantly impair the construction's performance. A single 25mm hole in an otherwise acoustically sound partition can reduce performance by up to a massive 15 dB.

Although a 25mm hole should be visible a crack 1mm x 1m will not always be obvious, and if this is not treated correctly with an acoustic sealant it will be detrimental to the structure.

Remember an acoustic construction is only as good as its weakest link.

ENVIRONMENT

We strive to design and develop E-Cousti products that re-use secondary raw materials, are based on renewable resources, are themselves recyclable, and where they are not, can be safely disposed of without harm to the environment.

The E-Cousti Membrane has a substantial content of recycled post consumer waste and post production waste is also fully recyclable.

E-Cousti Ecoboards contain as much as 98% post consumer and post producer waste. E-Cousti foams are designed to remain intact over the life of the building, are chemically inert and do not rot or breakdown to produce harmful by-products.

FLANKING TRANSMISSION

If sound can't go through the wall it will go up and over or around the side. This is called FLANKING TRANSMISSION and it occurs when sound travels along elements shared by adjacent structures.

Seek advice from our team of technical specialists on how to combat flanking transmission.

There are a number of common acoustic weaknesses in dwellings that can be caused by flanking paths:

- Lightweight blocks - often used for thermal insulation on the inner leaf of the building envelope cavity walls, these should be suitably lined using the independent wall lining solution illustrated on page 12.
- Cavities created by wall linings - often found in existing buildings that have previously been refurbished.
- Suspended ceilings - where a partition finishes short of the soffit, the void is often a hidden flanking path, causing airborne sound to travel over into the adjacent room.
- Separating walls - sound can travel under a separating wall built on a concrete raft foundation.
- Separating floors - internal walls can provide a connection to conduct sound from one floor level to another.
- Chimney flues and fireplaces - sound travels through to other floors of the building.

- Girders installed to support floors - sound travels at a high speed through metal/steel.
- Waste pipes and other kitchen and bathroom conduits - where appliances are connected to the wall or floor.

If flanking constructions are not correctly specified or constructed, flanking transmission can exceed direct transmission and damage the overall capabilities of the construction.

The best way to deal with this issue is to use flanking strips at the top and bottom of every wall and around the edges of floors as well as the use of an acoustic sealant wherever possible.

DOWNLIGHTERS

Where a metal frame ceiling is used with E-Coustiquilt laid over the top, it is recommended that only fire protected and acoustic rated products are fitted. Always fit as per the manufacturer's instructions, but in addition where E-Coustiquilt (or any other mineral fibre product) is fitted in the ceiling system, ensure there is sufficient airflow around the downlighter.

This is achieved by cutting away a hole in the E-Coustiquilt of 60mm greater diameter than the downlighter diameter. In order to accurately locate the holes, measure up the position of the hole using the grid of the metal frame as the reference point to establish the co-ordinates for each hole.

There should be a minimum of 30mm clearance between the downlighter and the quilt in all directions. When using recommended acoustic rated downlighters there will be no reduction in the acoustic performance of the system. However, downlighters do create an obvious flanking path if not correctly fitted with adequate care.

USEFUL INSTALLATION HINTS

- 1 Stagger the joints if double layering of plasterboard is required.
- 2 Always ensure boarding goes all the way down to the floor and all the way up to the top even if skirting or a cornice covers it. For optimum performance use sealant on the joints.
- 3 Don't place light or plug sockets back to back otherwise the sound will go straight through the structure. Use intumescent putty seal around the sockets to maintain integrity.
- 4 Pay particular attention to the end detail of wall and floor junctions.

Explanation of terms

When an amendment to the Building Regulations is introduced so too is a whole new list of terms and abbreviations. In an attempt to decipher some of the terms and abbreviations that you will come across in literature relating to acoustics and Part E, we present a useful 'Jargon Buster'.

Building Element	Walls, floors and roofs etc.
Ctr	The correction to a sound insulation quantity to take into account low frequency noise.
Decibel (dB)	The most commonly used unit to measure sound.
$D_{nT,w}$	The measurement used to measure the airborne sound insulation between two rooms (on site).
$D_{nT,w} + C_{tr}$	See above, but with the low frequency correction factor included.
Flanking Transmission	Sound transmitted between two rooms using an indirect path i.e. the top or bottom of a separating wall (see further details below).
Frequency	The number of pressure variations per second that gives a sound its distinctive tone.
Hertz (Hz)	The unit of the frequency of the sound.
Impact Sound	Sound resulting from direct impact on a building element.
Internal Floor	Any floor that is not a separating floor.
Internal Wall	Any wall that does not have a separation function.
$L'_{nT,w}$	The measurement used to measure the impact sound insulation of floors (on site). L_{nw} = laboratory testing
ΔL_w	Denotes the measured improvement of impact sound insulation resulting from the installation of a floor covering or floating floor.
Pre-Completion Testing (PCT)	A requirement introduced under Building Regulations (England and Wales) Part E Requirement E1 (2003) for sample testing of separating elements in order to show compliance with the regulations.
Robust Detail (rd)	A form of construction published in the Robust Details Part E Handbook that has been approved by Robust Details Ltd for use as an alternative means of compliance with Building Regulations (England and Wales) Part E Requirement E1, including the possible exemption from PCT – when plots are registered with Robust Details Ltd, for completely new build attached dwellings.
Rw	The measurement used to rate the sound insulation of a material or building element in a Laboratory.
Separating Floor	Floor that separates flats or rooms for residential purposes.
Separating Wall	Wall that separates adjoining dwellings, houses, flats or rooms.
Sound Reduction Index (SRI)	A quantity measured in a laboratory that characterises the sound insulation properties of a material or building element in a stated frequency band.

DISCLAIMER

The E-Cousti product range and solutions provided in this brochure have been tested to BS EN ISO 140 series and BS EN ISO 717 series to meet the requirements of Approved Document E. Actual acoustic values achieved are a result of rigorous independent laboratory testing to the highest standards. However, variances in performance on site may result, due to workmanship or other external factors that cannot be fully modelled within laboratory conditions.

With this in mind it is important to note there is no product, system, manufacturer or supplier that can offer any guarantee of performance, hence the requirement for Pre-Completion Testing.

Therefore it is advisable to choose a solution that exceeds the acoustic requirement to limit the potential impact of site variances that may occur, or seek advice on your individual situation. All testing shown in this guide was undertaken of either the B.R.E or S.R.L which are both UKAS accredited bodies.



ABERDEEN

01224 825825

BEDFORD

01234 761100

BIRMINGHAM

0121 665 3050

BLAIRGOWRIE

01250 873611

BRISTOL

0117 931 3400

CARDIFF

029 2066 2900

EUROCENTRAL

01698 833755

LEEDS

0113 385 7700

LIVERPOOL

0151 547 7680

LONDON EAST

020 8477 9500

LONDON WEST

020 8839 4321

LOUGHBOROUGH

01509 231891

MANCHESTER

0161 876 4776

NEWCASTLE

0191 226 3110

NORWICH

01603 765660

PLYMOUTH

01752 675400

SHEFFIELD

0114 241 3000

SOUTHAMPTON

023 8074 0074

TONBRIDGE

01732 370500



LONDON

020 8556 4411

020 8556 4439

SOUTHAMPTON

023 8063 8796



SOUTHAMPTON

01489 788909



WITNEY, OXON

01993 700993



PETERBOROUGH

01733 202299



BRIGHTON

01273 878700

WORTHING

01903 218115

EPSOM

01372 730070



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