ROCKWOOL® SoundPro

Comprehensive guide to acoustics, regulations and ROCKWOOL solutions.

ROCKWOOL®

Contents

Glossary

A summary of some of the key terms you will encounter in this guide.

A-weighting

A series of corrections applied to measured dB sound levels so that they more closely mirror the response of the human ear. Sound levels are increased where the ear is most sensitive, at around 1 - 6 kHz, and decreased at other frequencies where the ear is less sensitive. A-weighted figures are noted as dB(A).

Absorption coefficient

A metric for measuring and comparing the performance of sound absorbers. It's the ratio of the sound energy incident on a surface, to the sound energy absorbed by that surface. An absorption coefficient of 1 means that all incident sound energy was absorbed.

Airborne sound

Sound that travels through the air, e.g. from speech or a television.

Area weight

A measure often used in acoustics to specify materials such as plasterboard, sheathing board or acoustic membrane, the area weight is the mass per unit area, measured in kilograms per square metre. It can be calculated by multiplying a material's density by its thickness. Materials with higher area weights usually provide better sound insulation.

Ctr

A negative corrective term that reduces the single-figure weighted sound reduction level of a building element, according to its ability to block sound at low frequencies. The worse an element blocks low frequency sound, the bigger Ctr is. Originally developed to place greater emphasis on the rumble of traffic noise (hence the subscript 'tr'), this term is often specified in situations where low frequency sound may cause annoyance.

Decibel, dB

The 'loudness' of a sound is defined by its intensity (see 'Intensity' below). Our ears are capable of detecting intensities from as low as $1x10^{-12}$ W/m², up to a maximum tolerable level of around 1 W/m². Furthermore, our brains interpret intensity logarithmically, i.e. a ten-fold increase in intensity will be perceived as only a doubling of the volume. To better relate intensity to the way in which we experience sound, and manage this huge range, the decibel scale is used:

$dB = 10 \log (I / I_0)$

- I is the measured intensity;
- I0 is the intensity at the threshold of human hearing, $1x10^{-12}$ W/m²

Under the decibel scale our ears can detect sound from 0 dB up to a tolerable 120 dB. A doubling of the perceived volume corresponds to an increase of 10 dB.

Direct transmission

As opposed to flanking transmission, this relates to the path sound takes directly through a separating element.

$D_{nT,w}$

The weighted standardised level difference between two rooms. As opposed to Rw, this is a site measurement that includes flanking transmission.

Flanking transmission

Any path sound is able to take between two rooms, other than directly through the separating element - e.g. via wall cavities, ceiling voids, or the inner leaf of an external wall that runs past a separating wall.

Floating floor

A construction where the finished floor surface is isolated from the structure of the building by a continuous resilient layer, such as ROCKWOOL Acoustic Rockfloor. This absorbs vibration and thereby reduces the transfer of impact noise.

Frequency

The frequency of a sound wave is the number of oscillations per second, measured in Hertz (Hz). Frequency is more commonly thought of as 'pitch' - treble (high frequency) and bass (low frequency).

IANL

Internal ambient noise level.

Impact noise

Impact sound is where sound is transferred through the structure of the building by physical contact, e.g. the noise from footsteps on a floor reradiating in the room below via the floor/ceiling construction, or the noise of rain falling on a roof.

Intensity

This is the sound power per unit area, measured in Watts per square metre (W/m^2).

$L'_{nT,w}$

This is the weighted standardised impact sound pressure level. A single-number quantity to characterise the impact sound insulation of floors. In a nutshell, a 'tapping' noise machine is put onto a floor, and hits the floor while the noise level in the room below is measured.

L_{Aeq}

Real-world sound sources tend to vary with time, like how a road will typically be noisier during rush hour than at 2am, or a washing machine will be noisiest during its spin cycle. LAeq makes it easier to compare varying sound sources or acoustic environments, by taking the total amount of sound energy measured over a defined period, and 'averaging' it out - as if the noise was at a constant level the entire time. This is called the 'equivalent continuous sound pressure level', or LAeq.

NR

NR, or 'noise rating', refers to a series of curves that define maximum permissible dB ratings in each frequency band.

Rain noise

As defined by ISO 140-18 heavy rain.

Reverberation time

Measured in seconds, this is the time taken for the sound in a room to decay by 60 dB. A high reverberation time corresponds to a lot of echo.

R_w

The weighted sound reduction index, in dB. This figure is measured in a specialist laboratory, where sound is only able to transfer from one room to another directly, i.e. no flanking transmission. This allows for easy comparison of construction elements.

Weighted

Sound varies by frequency. As such it can be difficult to compare the performance of different constructions. to compare different spectra. This is where the 'weighting' system comes in to give a single comparable figure. A reference curve is matched to the actual spectrum.

Introducing ROCKWOOL SoundPro

Welcome to ROCKWOOL SoundPro – your comprehensive guide to specifying acoustic solutions for the residential and education sector.

This guide has been developed to provide a detailed technical resource which supports the understanding and specification of ROCKWOOL acoustic solutions from a single source.

Saving time and simplifying regulations, guidance and test data, ROCKWOOL SoundPro will guide you through key technical criteria and relevant performance data – helping to inform compliant designs.


CUMBOLD
ROAD
SCHOOLS
ATTWOOD

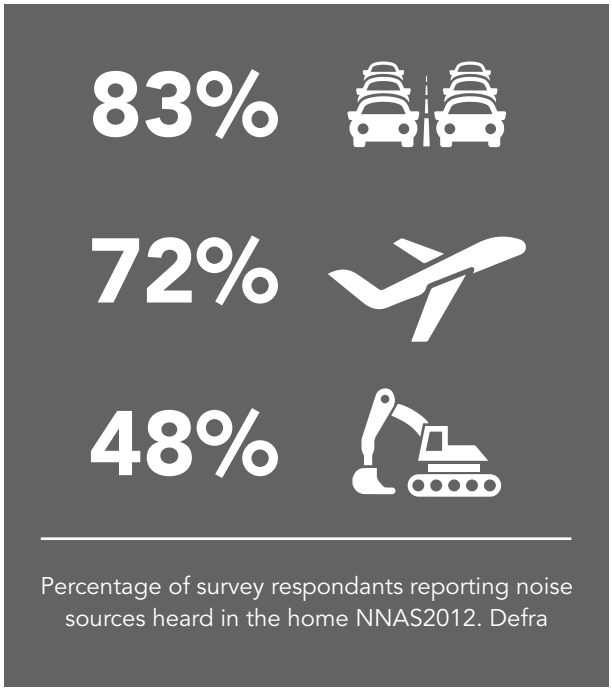
The problem with noise

A recent CIEH noise survey found that over 80% of people in the UK reported being exposed to noise pollution in their homes, with 47% reporting that their home life is "spoiled to some extent" by environmental noise.

But more than simply an annoyance, noise pollution is now recognised as an environmental public health problem that affects millions of people across the UK.

As well as impacting educational attainment and worker productivity, the sleep disturbance and stress caused by noise pollution has been linked to a range of serious health problems.

Moreover, with an ever-increasing demand for housing, and space at a premium, properties are being built in closer proximity – both to each other and to significant sources of noise - giving rise to potential disturbance from road traffic, railway lines, air traffic, industrial activity and construction.



Percentage of survey respondants reporting noise sources heard in the home NNAS2012. Defra

Health and wellbeing

The World Health Organisation (WHO)[1] found that at least one million healthy life years are lost every year in Western Europe as a result of exposure to environmental noise, making it the second largest environmental cause of ill health after air pollution.

Studies show that the sleep disturbance and stress caused by noise pollution have been linked to hypertension, cardiovascular disease, diabetes, strokes, dementia and Alzheimer's disease.

In addition, the economic, social and health costs of noise pollution are estimated to cost the British economy around £20 billion per year.

Source: Burden of Disease from Environmental Noise: Quantification of Healthy Life Years Lost in Europe", World Health Organisation, 2011

Educational attainment

The WHO recommends a noise level of less than 35dB(A) in classrooms to support optimal teaching and learning conditions. This sound level is significantly lower than in many urban areas today.

Studies have shown that in a noisy classroom, children can miss 25% of the words spoken by teachers .

A two-month reading delay was observed in British and Dutch primary school children due to an increase in transport noise of 5dB*, and in a German study, children experienced hyperactivity, inattention, and emotional problems because of elevated noise levels.

Source: European Union, 2015, "THEMATIC ISSUE: Noise impacts on health Environment Science for Environment Policy"

The importance of good acoustic design

The ability of a building to shield occupants from noise is of great importance – and the key to good performance lies at the design stage, because rectifying poor sound insulation post-construction can be difficult, disruptive, prohibitively expensive and limited in efficacy.

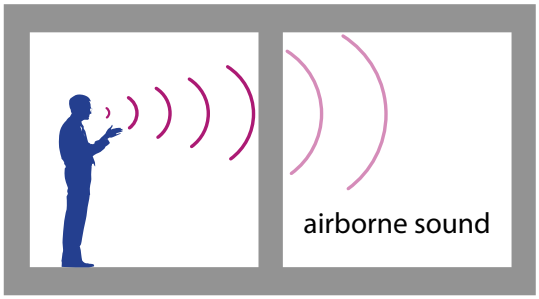
Noise and sound

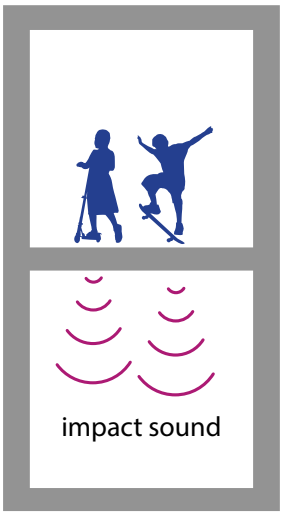
Noise is typically defined as unwanted sound.

Physically, sound is a series of vibrations carried through a medium such as air. Such sources of noise are referred to as 'airborne', e.g. sounds from a television, people talking, or a barking dog.

These vibrations can also move through solids, meaning that sound can travel via the structure of a building.

When physical impacts cause vibration in a separating element or the building envelope, thereby causing noise — such as footfall on a floor, or rain on a roof — this is referred to as 'impact noise'.





Controlling noise transfer

Reducing airborne and impact noise transfer through a wall, floor or roof is about making it difficult for these vibrations to travel from one side to another – which is achieved through a combination of mass, absorption, isolation and air tightness.

Mass

Mass is provided by heavy, dense materials such as masonry, concrete, cement board and plasterboard, as well as purpose-designed mass-loaded membranes such as ROCKWOOL Acoustic Membrane.

The heavier a material is, the more difficult it is for incident sound to set it in motion, which means less incident sound is reradiated on the receiving side.

High density ROCKWOOL stone wool insulation products like HARDROCK Multi-Fix (DD) and Ablative Coated Batt can add significant acoustic mass to a construction.

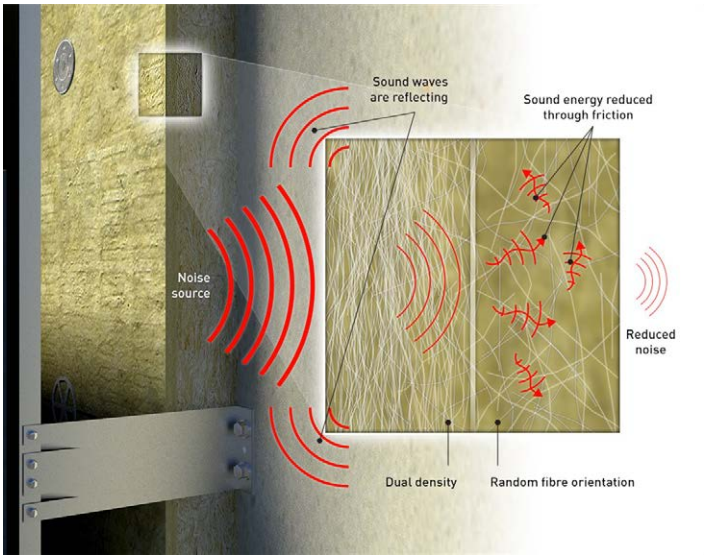
Absorption

Acoustic absorption is provided by materials such as ROCKWOOL insulation, which contains millions of microscopic air pockets trapped between randomly-oriented stone wool strands.

As sound waves try to pass through stone wool, they make the air molecules trapped within these pockets move back and forth. This causes friction with the strands which reduces and dissipates sound energy.

Acoustic absorbers are highly effective at reducing noise transfer when sandwiched between two mass layers, such as within a plasterboard partition.

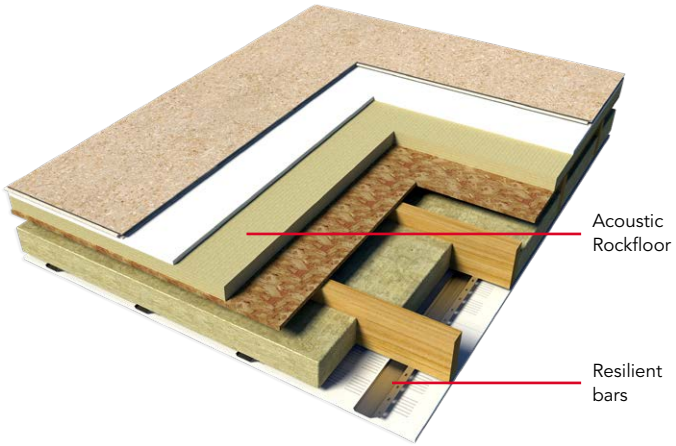
Absorbers can also be formed into acoustic baffles and panels, or used behind a perforated metal sheet or roof deck (ROCKWOOL Acoustic Infills), to increase the level of acoustic absorption within a room. This reduces the build-up of reverberant sound which makes the space less 'echoey'.



Isolation

The greater the physical separation between two mass layers, the greater their ability to reduce noise transfer. This can be achieved through increasing cavity width or installing resilient bars.

Additionally, products like ROCKWOOL Rockfloor are able to isolate a finished floor surface from the structure, thereby reducing the transfer of impact noise and vibration.



Air tightness

In some ways, controlling noise transfer can be thought of as controlling water. Just as a hole in a bucket lets water escape, even a small gap in a separating element can impair its ability to block noise, especially at high frequencies.

As best practice, all edges and joints should be sealed with an acoustic mastic such as FirePro® Acoustic Intumescent Sealant.

Residential

Building regulations are a devolved matter, meaning that each nation has its own set of requirements and associated guidance.

Broadly speaking, residential acoustic regulations aim to limit the transfer of airborne and impact noise, with separate guidance and performance standards covering new-build dwellings and those formed by "change of use".

The regulations applying to each nation are covered in the following pages.

Contents

Education

Each nation has broadly the same guidance around regulating schools, which comes from Building Bulletin 93 (BB93).

Broadly speaking, residential acoustic regulations aim to limit the transfer of airborne and impact noise, with separate guidance and performance standards covering new-build dwellings and those formed by “change of use”.

The regulations are covered in the following pages.

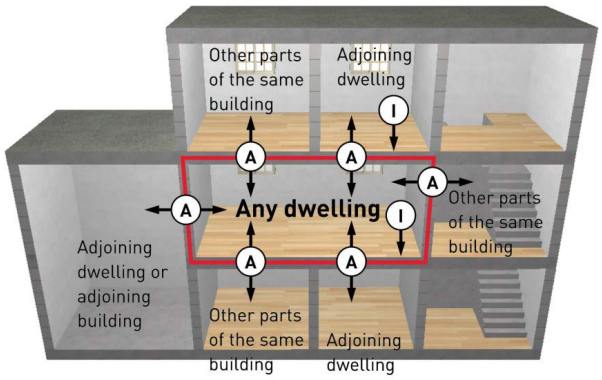
Contents

Approved Document E

This section provides guidance to complying with Part E of the Building Regulations in England and Wales. The required performance levels can be met using the typical constructions shown.

Protection against sound from other parts of the building and adjoining buildings

The diagram below summarises the areas of a building to which the regulations apply, ensuring that dwelling houses, flats and 'rooms for residential purposes' achieve reasonable levels of sound insulation from adjoining buildings or differently occupied parts of the same building.



(A) = Airborne sound insulation
(I) = Impact sound insulation

The minimum required performance standards are outlined in the table below. The terms $D_{nT,w}$ and $L'_{nT,w}$ relate to site measurements and so include flanking transmission; additionally the corrective term Ctr demands higher performance at lower frequencies.

Performance Standards				
Separating construction	Airborne sound insulation $D_{nT,w} + C_{tr}$ dB		Impact sound insulation $L'_{nT,w}$ dB	
	New build	Change of use	New build	Change of use
Walls	45 (43*)	45	-	-
Floors & stairs	45	43	62	64

Protection against sound within a dwelling house

Internal walls between a bedroom (or a room containing a water closet) and other rooms, as well as internal floors, should be designed and constructed to provide a reasonable resistance to sound.

The minimum required performance standards are given in terms of laboratory values - pre-completion site testing is not required.

Performance Standards	
Element	Airborne sound insulation, R_w dB
Walls	40 (min.)
Floors	40 (min.)

Note that this requirement does not apply to:

a. Internal walls that contain a door

b. Internal walls that separate an en-suite from the associated bedroom

c. Existing walls and floors in a material change of use

Compliance

The regulations outline several construction types which, if constructed correctly, should achieve the required performance standards. In addition, solutions offered by Robust Details can eliminate the requirement for post-completion onsite acoustic testing.

This guide summarises ROCKWOOL products and solutions that will comply with this guidance.

Please note that this document is a summary that focuses on insulation requirements, and is designed to be read in conjunction with Approved Document E.

Contents

Separating Walls

1. ROCKWOOL Tested Solutions*

Twin steel frame wall, fully insulated:

- Independent 50mm steel frames at 600mm centres spaced 50mm apart
- **ROCKWOOL Steel Frame Slab 50mm** within in each frame and filling the cavity between the frames; total 150mm insulation
- Each lining to be two layers of 15mm acoustic plasterboard
- Total wall thickness 210mm
- R_w 64 dB; estimated **51 dB DnT,w + C_{tr}***
- Pre-completion site testing required

Twin steel frame wall, partially insulated:

- Independent 50mm steel frames at 600mm centres spaced 50mm apart
- **ROCKWOOL Steel Frame Slab 50mm** filling the cavity between the frames
- Each lining to be two layers of 15mm acoustic plasterboard
- Total wall thickness 210mm
- R_w 63 dB; estimated **49 dB DnT,w + C_{tr}***
- Pre-completion site testing required

Single steel frame wall:

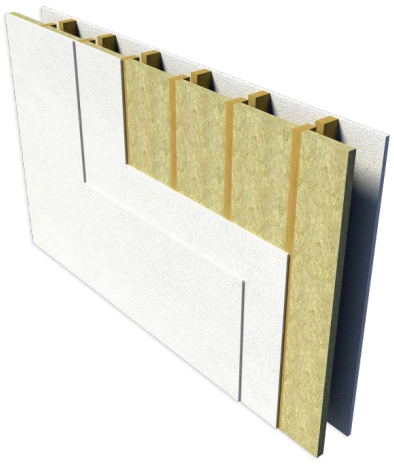
- 70mm steel frame at 600mm centres
- **ROCKWOOL Steel Frame Slab 70mm** within the frame
- Each lining to be two layers of 15mm acoustic plasterboard, mounted on resilient bars at 300mm centres
- Total wall thickness 160mm
- R_w 63 dB; estimated **47 dB DnT,w + C_{tr}***
- Pre-completion site testing required

**[FOOT NOTE ABOUT DnT,w]*

2. Guidance from Approved Document E

Timber frame wall with absorbent material:

- Independent timber frames
- Minimum 200mm between inside lining faces
- **ROCKWOOL Steel Frame Slab 50mm** in one frame
- Each lining to be two or more layers of plasterboard, each sheet of minimum 10 kg/m² (e.g. 2 x 12.5mm acoustic plasterboard or 2 x 15mm standard)
- Plywood sheathing may be used as necessary for structural reasons
- Pre-completion site testing required



3. Robust Details

i) E-WT-1 Timber frame cavity wall without sheathing:

- Independent timber frames
- Minimum 240mm between inside lining faces Minimum 50mm gap between frames
- **ROCKWOOL Steel Frame Slab 60mm** in both frames
- Each lining to be two layers of gypsum-based board, total nominal mass per unit area 22 kg/m² (e.g. 2 x 15mm acoustic plasterboard)

ii) E-WT-2 Timber frame cavity wall with sheathing:

- Independent timber frames
- Minimum 240mm between inside lining faces
- Minimum 50mm gap between frames
- **ROCKWOOL Steel Frame Slab 60mm** in both frames
- Each lining to be two layers of gypsum-based board, total nominal mass per unit area 22 kg/m² (e.g. 2 x 15mm acoustic plasterboard)
- Minimum 9mm sheathing board

iii) E-WS-1 Twin metal frames

- Independent steel frames
- Minimum 200mm between inside lining faces
- Minimum 50mm gap between frames
- **ROCKWOOL Steel Frame Slab 50mm** iin between frames
- Each lining to be two layers of gypsum-based board, total nominal mass per unit area 22 kg/m^2 (e.g. 2 x 15mm acoustic plasterboard)

Typical Wall Junctions

1. External wall

i) Timber frame with masonry outer:

- The external cavity should be stopped with **Party Wall Cavity Barrier (PWCB)** to minimise sound transmission along the cavity, unless the cavity is fully filled with **ROCKWOOL Full Fill Cavity Batts**
- The gap between the two frames should be filled with **ROCKWOOL TCB**
- ROCKWOOL PWCB also achieves a 60-minute fire rating

2. Ceiling and roof

ii) Timber frame:

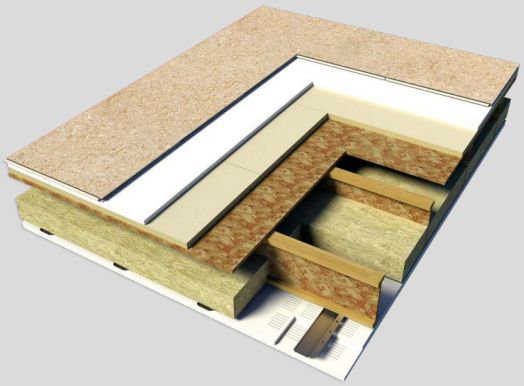
- The wall should continue to the underside of roof
- The junction between the separating wall and the roof should be filled with **ROCKWOOL FLEXI®**
- Fire line maintained by filling void above underlay using **ROCKWOOL RWA45**

Separating Floors

1. ROCKWOOL Tested Solution

Timber platform floor:

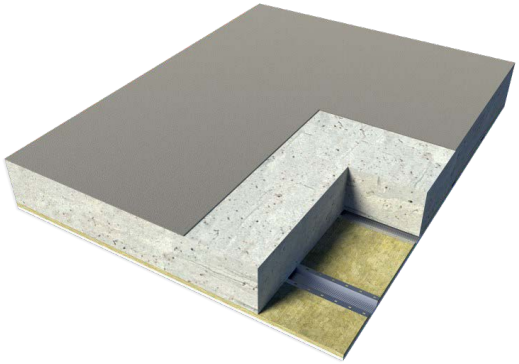
- Plasterboard 13 kg/m² , e.g. 15mm acoustic
- **ROCKWOOL ROCKFLOOR® 30mm**
- 15mm OSB
- **ROCKWOOL Timber Frame Slab 100mm** between 195 x 45mm timber joists at 450mm centres
- Resilient bars at 400mm centres
- Two layers of 15mm acoustic plasterboard, min. area weight 26 kg/m²
- Pre-completion site testing required



2. Guidance from Approved Document E

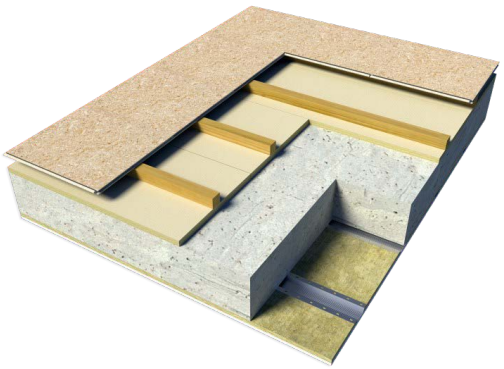
i) Soft floor covering on concrete slab/hollow planks/solid planks with ceiling:

- Soft floor covering to be either:
  - a resilient material, or material with a resilient base, with an overall uncompressed thickness of at least 4.5mm, or;
  - one with a tested weighted reduction in impact sound pressure level (ΔL_w) of at least 17 dB
- Total floor area weight min. 365 kg/m²
- Ceiling to be type A, B or C (type C shown)
- Pre-completion site testing required



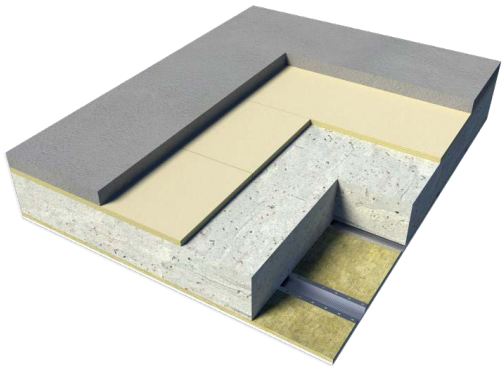
ii-a) Raft floating floor on concrete slab/hollow planks/solid planks with ceiling:

- T&G timber boarding min. 12 kg/m² , fixed to 45x45mm battens laid loose on resilient layer
- Resilient layer of ROCKWOOL RWA45 25mm
- Floor area weight min. 365 kg/m²
- Ceiling to be type A, B or C (type C shown)
- Pre-completion site testing required



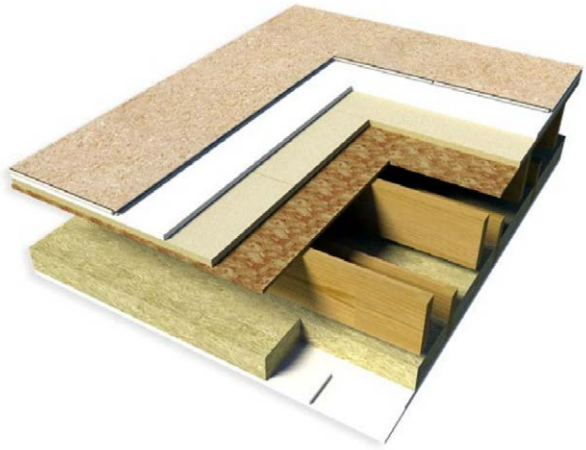
ii-b) Screed floating floor on concrete slab/hollow planks/solid planks with ceiling:

- Sand cement screed 65mm, or proprietary screed min. area weight 80 kg/m^2
- Resilient layer of ROCKWOOL ROCKFLOOR® 25mm
- Floor area weight min. 365 kg/m^2 (including screed)
- One of ceiling types A, B or C (type C shown)
- Pre-completion site testing required



iii) Platform floor on timber frame with independent ceiling:

- Two layers of board material, bonded/fixed together, minimum total area weight 25 kg/m^2, e.g.:
  - 18mm T&G chipboard on 19mm plank plasterboard;
  - Two layers of 12mm cement particle board
- **ROCKWOOL ROCKFLOOR® 25mm**
- Min. 20 kg/m 2 deck on timber floor joists
- **ROCKWOOL FLEXI® 100mm** between independent ceiling joists
- Ceiling type A only, with independent joists min. 100mm below underside of floor
- Pre-completion site testing required



Separating floor ceiling types

For use with separating floors shown overleaf.

Type A - Independent joists:

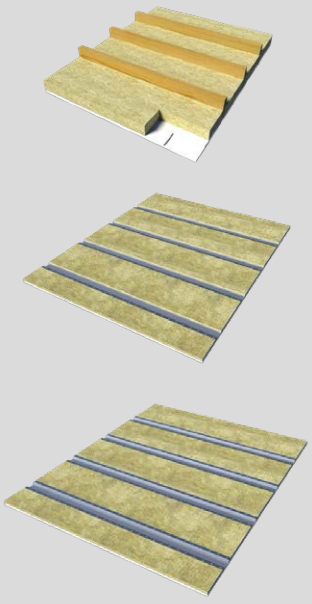
- ROCKWOOL Flexi 100mm between joists
- Two layers of plasterboard, staggered joints, min. 20 kg/m^2 (e.g. 2 x 12.5mm acoustic plasterboard)

Type B - Plasterboard on resilient bars:

- Resilient bars (fixed to perpendicular timber battens if using with concrete floor)
- ROCKWOOL FLEXI® to fill void
- One layer of plasterboard, min. 10 kg/m^2 (e.g. 12.5mm acoustic plasterboard)

Type C - Plasterboard on resilient bars:

- Resilient channels
- ROCKWOOL FLEXI® to fill void
- One layer of plasterboard, min. 10 kg/m^2 (e.g. 12.5mm acoustic plasterboard)

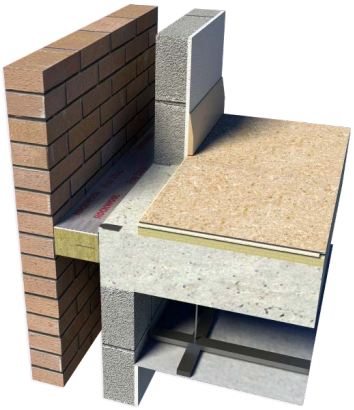


Typical Floor Junctions

Guidance from Approved Document E

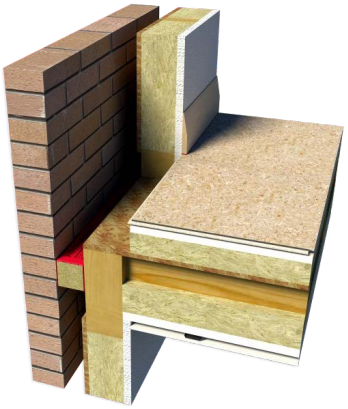
i) External wall with concrete floor:

- The external cavity should be stopped with **ROCKWOOL SP 60 Firestop** to minimise sound transmission along the cavity.
- Joints are to be taped top and bottom with aluminium foil tape
- This product can provide up to a 60-minute fire rating



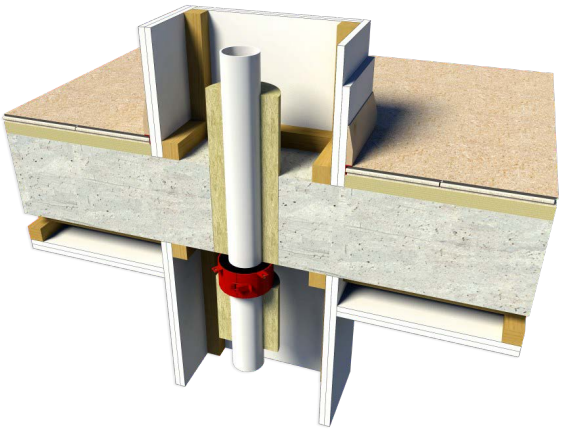
ii) External wall with timber floor:

- The external cavity should be stopped with **ROCKWOOL TCB** to minimise sound transmission along the cavity
- This product can also provide up to a 60-minute fire rating.



iii) Penetration through floor:

- Services that penetrate a habitable room should be enclosed for their full height
- Enclosure should be made from two layers of 12.5mm standard plasterboard
- Wrap pipe with **ROCKWOOL Roll** or alternatively line the enclosure with R**OCKWOOL RWA45 25mm**
- Penetrations should be fire protected to satisfy fire regulations
- Please contact ROCKWOOL Technical Solutions for advice



Internal walls

ROCKWOOL Tested Solutions

i) Timber frame, 63mm:

- 3mm timber studs at 600mm centres
- **ROCKWOOL FLEXI® 50mm** between studs
- Each lining to be one layer of 12.5mm standard plasterboard
- Total wall thickness 88mm
- **R_w 42 dB**
- No pre-completion site testing required

ii) Timber frame, 75mm:

- 75mm timber studs at 600mm centres
- **ROCKWOOL FLEXI® 50mm** between studs
- Each lining to be one layer of 12.5mm acoustic plasterboard
- Total wall thickness 100mm
- **R_w 40 dB**
- No pre-completion site testing required

iii) Steel frame, 50mm:

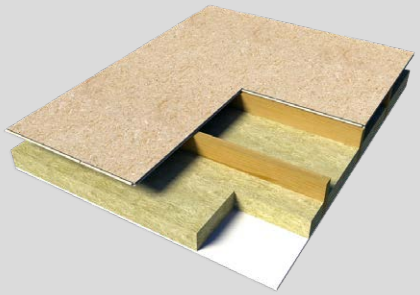
- 50mm steel frame at 600mm centres
- **ROCKWOOL FLEXI® 50mm** between studs
- Each lining to be one layer of 12.5mm standard plasterboard
- Total wall thickness 75mm
- **R_w 42 dB**
- No pre-completion site testing required

Internal floors

ROCKWOOL Tested Solutions

Timber joists, 100mm:

- 18mm T&G chipboard
- **ROCKWOOL FLEXI® 50mm** between 100mm joists at 400mm centres
- Underside lined with 12.5mm standard plasterboard
- **R_w 40 dB**
- No pre-completion site testing required

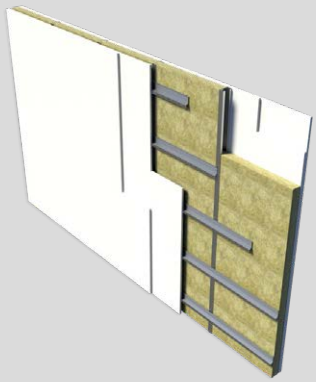


Separating Walls

1. ROCKWOOL Tested Solutions*

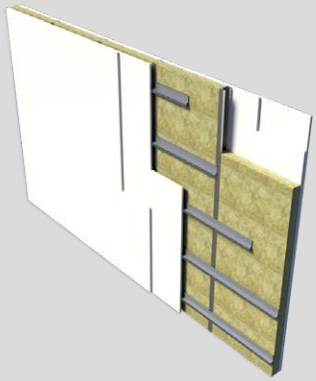
i) Single steel frame wall:

- 70mm steel frame at 600mm centres
- **ROCKWOOL Steel Frame Slab 70mm** within the frame
- Each lining to be two layers of 15mm acoustic plasterboard, mounted on resilient bars at 300mm centres
- Total wall thickness 160mm
- R_w 63 dB; estimated **47 dB $D_{nT,w}$ + C_{tr}***
- Pre-completion site testing required



ii) Single steel frame wall:

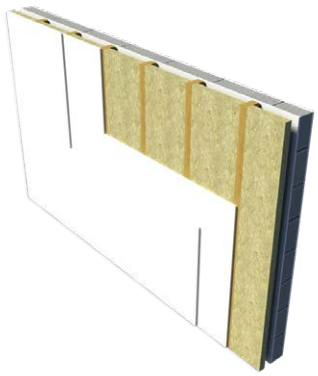
- 50mm steel frame at 600mm centres
- **ROCKWOOL Steel Frame Slab 50mm** within the frame
- Each lining to be two layers of 15mm acoustic plasterboard, mounted on resilient bars at 300mm centres
- Total wall thickness 140mm
- R_w 61 dB; estimated **44 dB $D_{nT,w}$ + C_{tr}***
- Pre-completion site testing required



2. Guidance from Approved Document E

Independent panel to existing masonry wall

- Existing masonry: if at least 100mm and plastered both sides, apply one side only. Otherwise apply both sides:
- Two layers of board min. 20 kg/m² , e.g. 2 x 12.5mm acoustic plasterboard
- Supporting timber or metal framework set min. 10mm away from face of existing masonry
- **ROCKWOOL FLEXI® 50mm** within frame



**[FOOT NOTE ABOUT DnT,w]*

Separating floors

Guidance from Approved Document E

i) Independent ceiling to existing timber floor:

- Existing ceiling upgraded to 20 kg/m²
- **ROCKWOOL FLEXI® 100mm** between new independent ceiling joists
- Two layers of plasterboard, staggered joints, min. 20 kg/m², e.g. 2 x 15mm standard plasterboard
- Pre-completion side testing required

ii) Platform floor with absorbent material

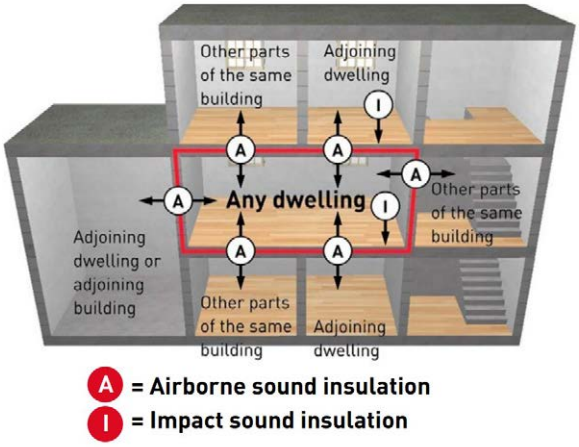
- Floating layer to be two layers of board min. 25 kg/m², bonded/fixed together with staggered joints - e.g. 18mm chipboard on 19mm plank
- Resilient layer of **ROCKWOOL RW4 25mm** (perimeter composite battens may be required for extra support)
- **ROCKWOOL FLEXI® 100mm** between existing joists
- Existing ceiling upgraded to 20 kg/m²

Technical Handbook Section 5: Noise

This section provides guidance to complying with Technical Handbook Section 5: Noise. The required performance levels can be met using the typical constructions shown.

Application of Section 5: Noise

The diagram below summarises the areas of a building to which Section 5 applies, ensuring that dwelling houses, flats and 'rooms for residential purposes' achieve reasonable levels of sound insulation from adjoining buildings or differently occupied parts of the same building.



Noise Separation (Standard 5.1)

The minimum required performance standards are outlined in the table below. The terms $D_{nT,w}$ and $L'_{nT,w}$ relate to site measurements and so include flanking transmission.

Design Performance	New build and conversions (not including traditional buildings)
Minimum airborne sound insulation	56 dB $^{D_{nT,w}}$
Minimum impact sound transmission	56 dB $^{L'_{nT,w}}$

Compliance

The Scottish Government has given several construction types which, if constructed correctly, should achieve the required performance levels. This guide outlines ROCKWOOL products that will comply with this guidance, as well as alternative tested solutions.

Please note that this document is a summary focussing on insulation requirements. Full guidance can be found in Technical Handbook Section 5: Noise.

Contents

Separating Walls

1. ROCKWOOL Tested Solutions*

Twin steel frame wall, fully insulated:

- Independent 50mm steel frames at 600mm centres spaced 50mm apart
- **ROCKWOOL Steel Frame Slab 50mm** within in each frame and filling the cavity between the frames; total 150mm insulation
- Each lining to be two layers of 15mm acoustic plasterboard
- Resilient bars to one side
- Total wall thickness 210mm
- R_w 65 dB; estimated **58 dB DnT,w + C_{tr}***
- Pre-completion site testing required

Twin steel frame wall, partially insulated:

- Independent 50mm steel frames at 600mm centres spaced 50mm apart
- **ROCKWOOL Steel Frame Slab 50mm** filling the cavity between the frames
- Each lining to be two layers of 15mm acoustic plasterboard
- Total wall thickness 210mm
- R_w 63 dB; estimated **56 dB DnT,w + C_{tr}***
- Pre-completion site testing required

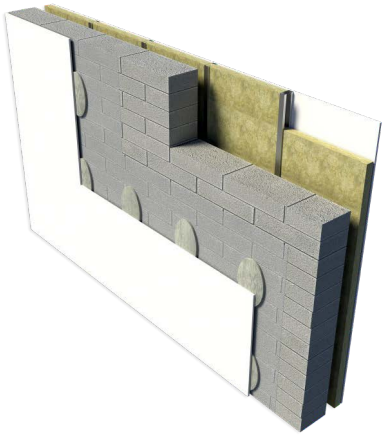
Single steel frame wall:

- 70mm steel frame at 600mm centres
- **ROCKWOOL Steel Frame Slab 70mm** within the frame
- Each lining to be two layers of 15mm acoustic plasterboard, mounted on resilient bars at 300mm centres
- Total wall thickness 160mm
- R_w 63 dB; estimated **56 dB DnT,w + C_{tr}***
- Pre-completion site testing required

2. Guidance from Technical Handbook Section 5

Dense block solid wall:

- Gypsum board minimum 12 kg/m², e.g. 15mm acoustic plasterboard, on plaster dabs
- Sand cement render minimum 13mm with scratch finish
- 215mm dense aggregate concrete block (min. 1,850 kg/m³) laid flat
- Clear cavity, minimum 30mm
- Minimum 70mm metal studs deep filled with minimum 50mm ROCKWOOL Flexi®
- Gypsum board (min. 12 kg/m²)



Timber frame twin-stud wall (non-sheathed):

- Independent timber frames
- Gypsum board lining, two layers, total 22 kg/m² (e.g. 2 x 12.5mm acoustic plasterboard) to each side
- Minimum 240mm between inner face of linings
- Each stud filled with **ROCKWOOL Steel Frame Slab 60mm**

Timber frame twin-stud wall (sheathed):

- Independent timber frames
- Gypsum board lining, two layers, total 22 kg/m² (e.g. 2 x 12.5mm acoustic plasterboard) to each side
- Minimum 250mm between inner face of linings
- Minimum 50mm between sheathing
- Each stud filled with **ROCKWOOL Steel Frame Slab 60mm**

iii) E-WS-1 Twin metal frames

- Gypsum board lining, two layers, total 22 kg/m^2 (e.g. 2 x 12.5mm acoustic plasterboard to each side)
- Minimum 200mm between inner faces of wall linings
- Minimum 70mm studs with minimum 60mm cavity between each set of studs
- **ROCKWOOL Steel Frame Slab 60mm** between each set of studs

Typical Wall Junctions

1. External wall

i) Timber frame with masonry outer:

- The external cavity should be stopped with **Party Wall Cavity Barrier (PWCB)** to minimise sound transmission along the cavity, unless the cavity is fully filled with **ROCKWOOL Full Fill Cavity Batts**
- The gap between the two frames should be filled with **ROCKWOOL TCB**
- ROCKWOOL PWCB also achieves a 60-minute fire rating

2. Ceiling and roof

ii) Timber frame:

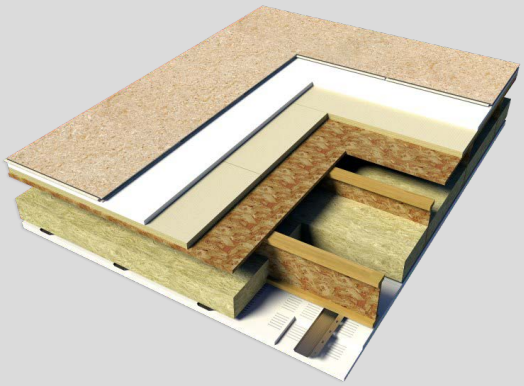
- The wall should continue to the underside of roof
- The junction between the separating wall and the roof should be filled with **ROCKWOOL FLEXI®**
- Fire line maintained by filling void above underlay using **ROCKWOOL RWA45**

Separating Floors

1. ROCKWOOL Tested Solution

Timber platform floor:

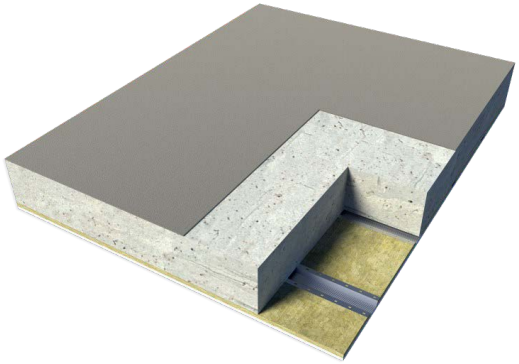
- 18mm T&G chipboard
- Plasterboard 13 kg/m², e.g. 15mm acoustic
- **ROCKWOOL ROCKFLOOR® 30mm**
- 15mm OSB
- **ROCKWOOL Timber Frame Slab 100mm** between 195 x 45mm timber joists at 450mm centres
- Resilient bars at 400mm centres
- Two layers of 15mm acoustic plasterboard, min. area weight 26 kg/m²
- Pre-completion site testing required



2. Guidance from Approved Document E

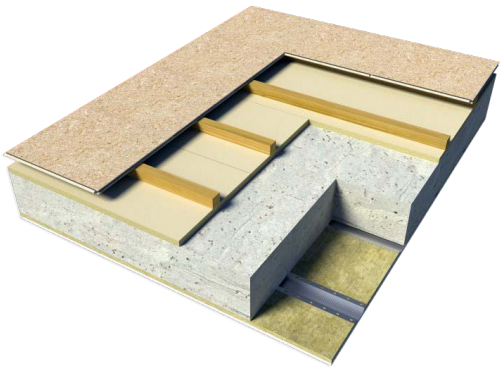
i) Soft floor covering on concrete slab/hollow planks/solid planks with ceiling:

- Soft floor covering to be either:
  - a resilient material, or material with a resilient base, with an overall uncompressed thickness of at least 4.5mm, or;
  - one with a tested weighted reduction in impact sound pressure level (ΔL_w) of at least 17 dB
- Total floor area weight min. 365 kg/m²
- Ceiling to be type A, B or C (type C shown)
- Pre-completion site testing required



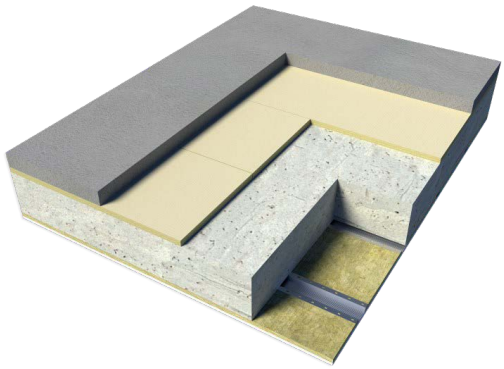
ii-a) Raft floating floor on concrete slab/hollow planks/solid planks with ceiling:

- T&G timber boarding min. 12 kg/m² , fixed to 45x45mm battens laid loose on resilient layer
- Resilient layer of ROCKWOOL RWA45 25mm
- Floor area weight min. 365 kg/m²
- Ceiling to be type A, B or C (type C shown)
- Pre-completion site testing required



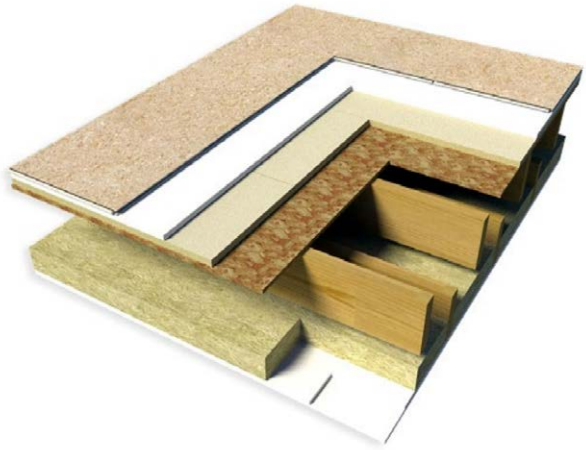
ii-b) Screed floating floor on concrete slab/hollow planks/solid planks with ceiling:

- Sand cement screed 65mm, or proprietary screed min. area weight 80 kg/m^2
- Resilient layer of ROCKWOOL ROCKFLOOR® 25mm
- Floor area weight min. 365 kg/m^2 (including screed)
- One of ceiling types A, B or C (type C shown)
- Pre-completion site testing required



iii) Platform floor on timber frame with independent ceiling:

- Two layers of board material, bonded/fixed together, minimum total area weight 25 kg/m^2, e.g.:
  - 18mm T&G chipboard on 19mm plank plasterboard;
  - Two layers of 12mm cement particle board
- **ROCKWOOL ROCKFLOOR® 25mm**
- Min. 20 kg/m 2 deck on timber floor joists
- **ROCKWOOL FLEXI® 100mm** between independent ceiling joists
- Ceiling type A only, with independent joists min. 100mm below underside of floor
- Pre-completion site testing required



Separating floor ceiling types

For use with separating floors shown overleaf.

Type A - Independent joists:

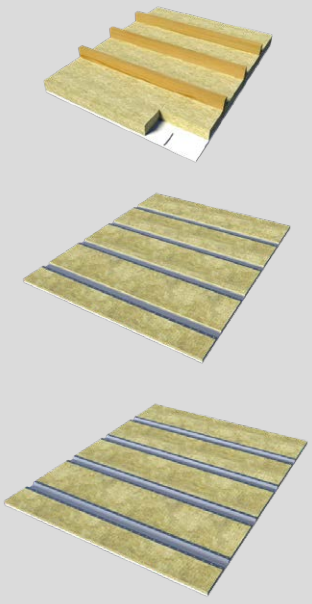
- ROCKWOOL Flexi 100mm between joists
- Two layers of plasterboard, staggered joints, min. 20 kg/m^2 (e.g. 2 x 12.5mm acoustic plasterboard)

Type B - Plasterboard on resilient bars:

- Resilient bars (fixed to perpendicular timber battens if using with concrete floor)
- ROCKWOOL FLEXI® to fill void
- One layer of plasterboard, min. 10 kg/m^2 (e.g. 12.5mm acoustic plasterboard)

Type C - Plasterboard on resilient bars:

- Resilient channels
- ROCKWOOL FLEXI® to fill void
- One layer of plasterboard, min. 10 kg/m^2 (e.g. 12.5mm acoustic plasterboard)

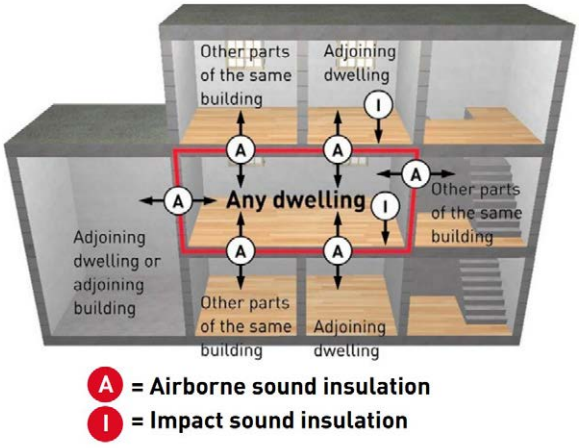


Technical Guidance Document G

This section provides guidance to complying with Technical Handbook Section 5: Noise. The required performance levels can be met using the typical constructions shown.

Application of Section 5: Noise

The diagram below summarises the areas of a building to which Section 5 applies, ensuring that dwelling houses, flats and 'rooms for residential purposes' achieve reasonable levels of sound insulation from adjoining buildings or differently occupied parts of the same building.



Noise Separation (Standard 5.1)

The minimum required performance standards are outlined in the table below. The terms $D_{nT,w}$ and $L'_{nT,w}$ relate to site measurements and so include flanking transmission.

Design Performance	New build and conversions (not including traditional buildings)
Minimum airborne sound insulation	56 dB $D_{nT,w}$
Minimum impact sound transmission	56 dB $L'_{nT,w}$

Noise reduction between rooms (Standard 5.2)

The minimum required performance standards are outlined in the table below.

Design Performance	Minimum airborne insulation level
Internal walls	40 dB R_w
Intermediate floors	43 dB R_w

Compliance

The Irish Government has given several construction types which, if constructed correctly, should achieve the required performance levels. This guide outlines ROCKWOOL products that will comply with this guidance, as well as alternative tested solutions.

Please note that this document is a summary focussing on insulation requirements. Full guidance can be found in Technical Handbook Section 5: Noise.

Contents

Separating Walls

1. ROCKWOOL Tested Solutions* (footnote about DnT,w)

Twin steel frame wall, fully insulated:

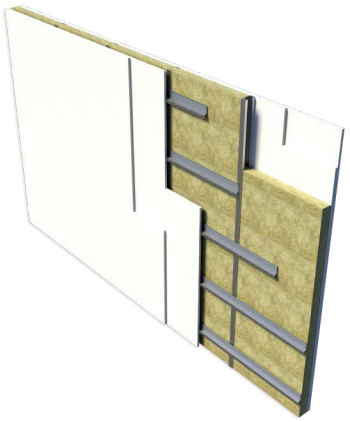
- Independent 50mm steel frames at 600mm centres spaced 50mm apart
- **ROCKWOOL Steel Frame Slab 50mm** within in each frame and filling the cavity between the frames; total 150mm insulation
- Each lining to be two layers of 15mm acoustic plasterboard
- Total wall thickness 210mm
- R_w 64 dB; estimated **51 dB DnT,w + C_{tr}***
- Pre-completion site testing required

Twin steel frame wall, partially insulated:

- Independent 50mm steel frames at 600mm centres spaced 50mm apart
- **ROCKWOOL Steel Frame Slab 50mm** 50mm filling the cavity between the frames
- Each lining to be two layers of 15mm acoustic plasterboard
- Total wall thickness 210mm
- R_w 63 dB; estimated **49 dB DnT,w + C_{tr}***
- Pre-completion site testing required

Single steel frame wall:

- 70mm steel frame at 600mm centres
- **ROCKWOOL Steel Frame Slab 70mm** within the frame
- ROCKWOOL Steel Frame Slab 70mm within the frame
- Each lining to be two layers of 15mm acoustic plasterboard, mounted on resilient bars at 300mm centres
- Total wall thickness 160mm
- R_w 63 dB; estimated **47 dB DnT,w + C_{tr}***
- Pre-completion site testing required



Building Bulletin 93 (BB93)

BB93 provides advice for all those involved in the specification, design and construction of schools. It aims to ensure the acoustics of school buildings provide an internal environment conducive to effective teaching and learning. It is designed to be read in conjunction with Acoustics of Schools: A Design Guide, published by the Association of Noise Consultants (ANC) and the Institute of Acoustics (IoA).

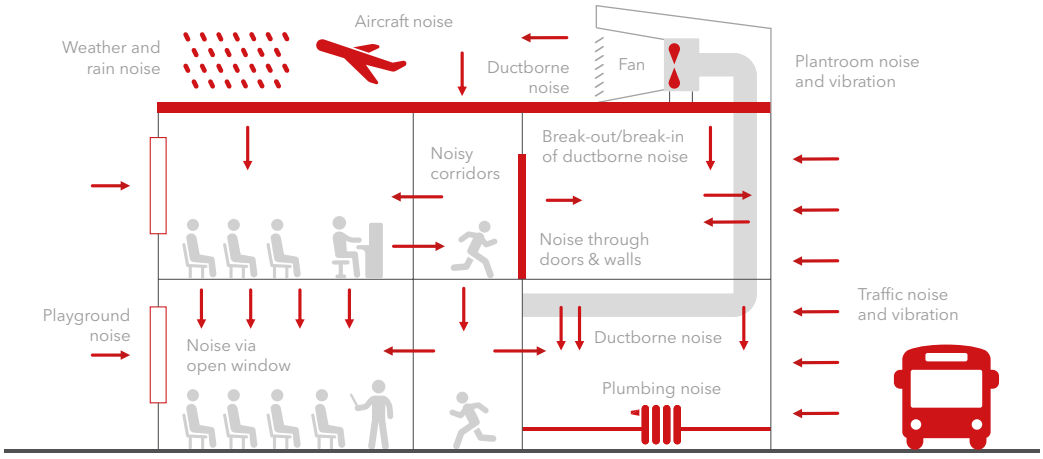
All school buildings should meet the requirements of BB93 in order to demonstrate compliance with Part E of the Building Regulations.

Note that while Part E of the Building Regulations does not apply to institutes for further education, many of the acoustic specifications are desirable and can be used as a guide to the design of these buildings. Note however that Part E does apply to sixth-form colleges/units that were established as, are attached to, or form part of, a school.

Compliance with BB93 can also be used as a means for attaining specific BREEAM credits, when verified by site testing in accordance with ANC Good Practice Guide - Acoustic Testing of Schools.

Performance Standards

The figure below shows typical sources of noise which can affect noise levels inside a school.



All spaces meet standards for indoor ambient noise level, airborne sound insulation, impact sound insulation, and reverberation time.

Indoor ambient noise levels

For each type of room, BB93 specifies a maximum Indoor Ambient Noise Level (IANL). This figure will be impacted by noise from sources such as rail, road and air traffic, industrial and commercial premises, and building services. As such, it is necessary to employ the services of an acoustic consultant who will advise the necessary performance of the building envelope, taking into account the project-specific acoustic environment.

Rain noise performance, however, is specified based on 'heavy' rain as defined by BS EN ISO 140-18 - and should not exceed 25 dB above the specified IANL. As such an acoustic specification can be calculated using ROCKWOOL test data. Please contact ROCKWOOL Technical Solutions for more information.

Airborne sound insulation between spaces

For each type of room, BB93 defines an 'activity noise' and a 'noise tolerance':

Type of room	Room classlflcatlon for the purpose of airborne sound Insulation in Tables 3a and 3b	
	Activity noise (Source room)	Noise tolerance (Receiving room)
Nursery school rooms **Primary school:** classroom, dass base, general teaching area, small group room **Secondary school:** classroom, general teaching area, seminar room, tutorial room, language laboratory	Average	Medium
Open plan: **(See also section 1.8)** **Teaching area** **Resource/breakout area**	Average	Medium
Primary music room	High	Medium
Secondary music classroom[1] **Small and large practice/group room[1]** **Performance/recital room[1]**	Very high	Low
Ensemble room[1] **Recording studio[1]**	Very high	Low
Control room - for recording[1]	High	Low
Control room - not for recording	Average	Medium
Lecture room	Average	Medium
Teaching space intended specifically for students with special hearing and communication needs[2]	Average	Low
SEN Calming room	High	Low

Type of room	Room classlflcatlon for the purpose of airborne sound Insulation in Tables 3a and 3b	
	Activity noise (Source room)	Noise tolerance (Receiving room)
Study room (individual study, withdrawal, remedial work, teacher preparation)	Low	Medium
Libraries:		
Quiet study area	Low	Medium
Resource area	Average	Medium
Science laboratory	Average	Medium
Design and technology:		
Resistant materials, CADCAM area	High	High
Electronics/control, textiles. food, graphics, design/resource area, ICT room, art	Average	Medium
Drama studio, assembly hall, multi-purpose hall (drama, PE, audio/visual presentations, assembly, occasional music)	High	Low
Atrium, circulation spaoe not intended for teaching and learning	Average	Medium
Sports hall **Dance studio** **Gymnasium/Activity studio**	High	Medium
Swimming pool	High	High
Meeting room, Interviewing/ counselling room, video conference room	Low	Medium
Dining room	High	High
Administration and ancillary spaces:		
Kitchen	High	High
Office, medical room, staff room	Low	Medium
Corridor, stairwell, coats and locker area	Average	High
Changing area	High	High
Toilet	Average	High

Education

The level of acoustic separation required between two spaces is therefore defined by the tables below. For suggested ROCKWOOL solutions, look up the required performance in Table 1 of Annex A.

New build

Minimum $D_{nT,w}$ (dB)		Activity noise in source room (see Table 1)			
		Low	Average	High	Very High
Noise tolerance in receiving room (see Table 1)	**High**	Not applicable	35	45	50
	Medium	40	45	50	55
	Low	45	50	55	55

Refurbishment

Minimum $D_{nT,w}$ (dB)		Activity noise in source room (see Table 1)			
		Low	Average	High	Very High
Noise tolerance in receiving room (see Table 1)	**High**	Not applicable	30	35	45
	Medium	30	40	45	45
	Low	35	40	50	50

The table below shows the maximum weighted standardised impact sound pressure level, $L'_{nT,w}$ for receiving rooms of different types and uses.

Type of room (receiving room)	Maximum Impact sound pressure level $L'_{nr,w}$ dB	
	New build	Refurbishment
Teaching space intended specifically for students with special hearing or communication needs (See Section 0.4)	55	60
Music: *Secondary music room* *Small and large practice/group room* *Ensemble room* *Perfomance/recital room* *Recording studio* *Control room - for recording* *Control room - not for recording*	55	60
Nursery school room **Primary school:** *dassroom, music classroom, class base, general teaching area, small group room* **Secondary school:** *classroom, general teaching area, seminar room, tutorial room, language laboratory* *Open plan leaching and resource area* *Library* *Lecture room* *Science laboratory* *Drama studio* *Design and technology - resistant materials, CadCam area, electronics/control, textiles, food, graphics, design/resource area, ICT room.* *art room,* *Assembly hall, multi-purpose hall (drama, PE, audio/visual presentations, assembly, occasional music)* *Sports hall* *Gymnasium/Activity studio* *Dance studio* *Meeting room, interviewing/counselling room, video conference room* *SEN calming room*	60	65

Type of room (receiving room)	Maximum Impact sound pressure level $L'_{nr,w}$ dB	
	New build	Refurbishment
Atrium, circulation not teaching and learning **Swimming pool** **Dining room** **Administration and ancillary spaces:** *Kitchen* *Office, staff room, medical room* *Corridor, stairwell* *Coats and locker area and changing area* *Toilet*	65	65

Reverberation

Controlling reverberation is vital for speech intelligibility, ensuring that teachers can be heard clearly. It also ensures that noise does not build to unpleasant levels in large spaces such as dining rooms and halls.

In teaching and study spaces, this will typically be achieved with an acoustically absorbent ceiling such as Rockfon Scholar. In larger areas, such as sports halls, a compliant level of absorption can be achieved with an exposed perforated roof deck filled with ROCKWOOL Acoustic Infills backed by Hardrock Multi-Fix (DD) insulation.

Acoustic Infills are tested to achieve a Class C absorption rating.

Type of room	T_{mf} Sceonds	
Teaching space intended specifically for students special hearing or communication needs (See Section 0.4)	T≤ 0.4 averaged from 125 Hz to 4kHz octave band centre frequencies and T≤ 0.6 s in every octave band in this range.[2]	≤0.4.[2]
Library	≤ 1.0	≤ 1.2
Drama Studio	≤ 1.0	≤ 1.2
Atrium, foyer, entrance hall, circulation space not used for teaching and learning	≤ 1.5	≤ 2.0
Assembly hall, multi-purpose hall (drama, PE, audio/visual presentation, assembly, occasional music)	0.8 - 1.2 [1]	0.8 - 1.5 [1]
Indoor sports hall, swimming pool	≤ (1.5 - 2.0) dependant on size of space. See section 1.6.2	≤ 2.0
Gymnasium/activity studio	≤ 1.5	≤ 2.0
Dance studio	≤ 1.2	≤ 1.5
Meeting room, Interviewing/counselling room, video conference room	≤ 0.8	≤ 0.8
Dining room	≤ 1.0	≤ 1.5
Administration and ancillary spaces Kitchen Office, medical room, staff room Corridor, stairwell Coats and locker area, changing area Toilet	 ≤ 1.5 ≤ 1.0 See section 1.7 ≤ 1.5 ≤ 1.5	 ≤ 2.0 ≤ 1.2 See section 1.7 ≤ 2.0 ≤ 2.0

Sports halls

Floor area	Maximum T_{mf} Sceonds
<280 m²	1.5
280-530 m²	2.0 - ((530-floor area)/500)
>530 m²	2.0

ROCKWOOL - the complete solution

The complexities of navigating a route to Building Regulation compliance are greatly simplified by specifying ROCKWOOL as an all-encompassing insulation solution – best defined by the strengths of stone.

Fire-resilience

ROCKWOOL insulation is extremely resilient to fire and can withstand temperatures in excess of 1000°C. It works to contain fire and prevent its spread.

At the same time, it does not contribute to the emission of significant quantities of toxic smoke.

Thermal properties

ROCKWOOL products derive their thermal properties from tiny pockets of air trapped within the physical structure of the stone wool. These air pockets allow the insulation to keep hot air out in hot climates and to retain warm air in cold climates. This can dramatically reduce heating, cooling, and ventilation costs, and reduce a building's carbon footprint.

Durability

ROCKWOOL insulation has a built-in robustness that is totally unique.It keeps its shape and toughness in all conditions; this means that compression, impacts and changes in temperature or humidity do not affect it.

Its dimensional stability means its performance is unchanged, decade after decade, ensuring maintenance savings throughout a building's lifetime.

Source: FIW (German test and research institute), Durability Project Mineral Wool, 2016

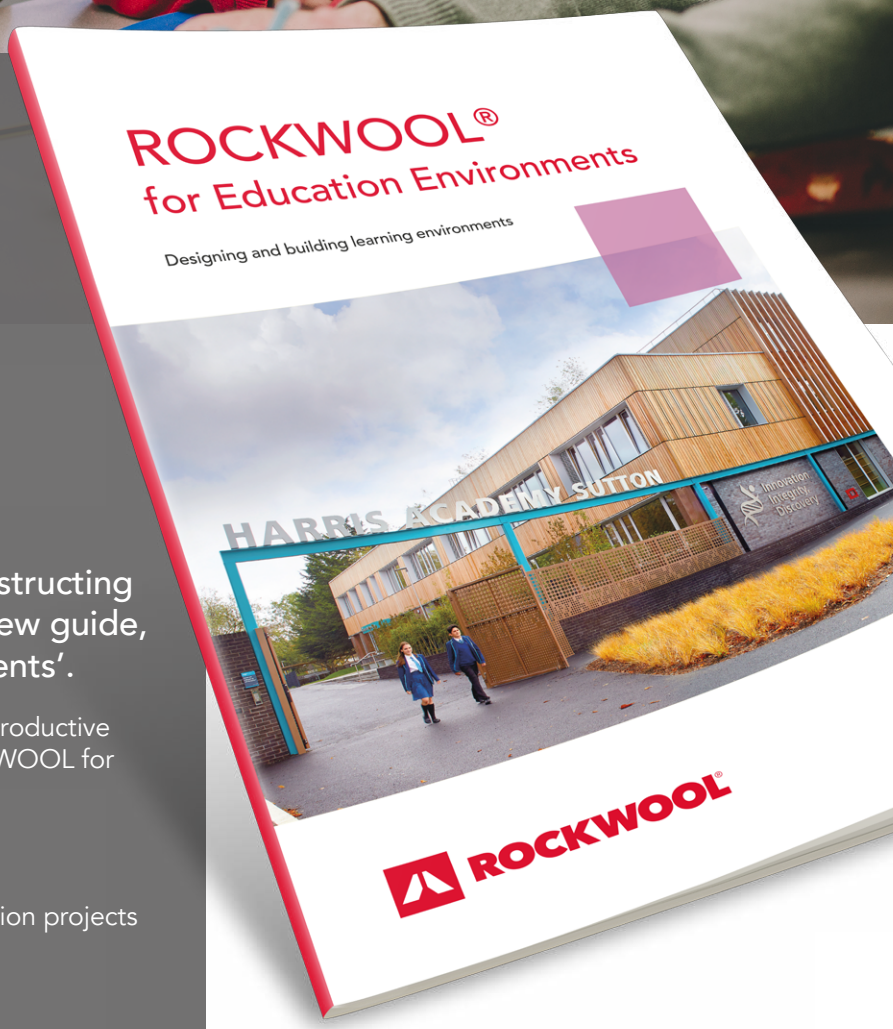
Acoustic capabilities

ROCKWOOL products can be manufactured in a range of densities and we have a library of acoustic test data with proven noise reduction.

Circularity

ROCKWOOL products can be easily removed when a building is renovated, or demolished and recycled back into new products. In fact, stone wool can be recycled again and again into new stone wool.

Download the ROCKWOOL education sector guide



Get a head start on designing and constructing ideal learning environments with our new guide, 'ROCKWOOL for Education Environments'.

The guide will assist you in creating stunning and productive spaces for learners and teaching staff alike. 'ROCKWOOL for Education Environments' includes:

- Building regulations advice for education projects
- Application-specific advice for insulation
- Acoustic, thermal and fire performance guidance
- Relevant case studies
- More information on key ROCKWOOL resources and CPDs

Download 'ROCKWOOL for Education Environments':

rockwool.com/uk/education

ROCKWOOL®

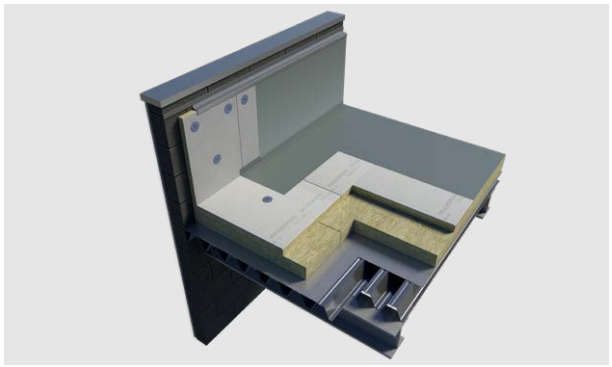
rockwool.com/uk

Solutions for every application

ROCKWOOL stone wool insulation delivers acoustic, fire and thermal performance for a wide range of internal and external building applications.

As a solution driven specification, ROCKWOOL insulation delivers regulation compliance and buildings that perform for the long term - from a single source.

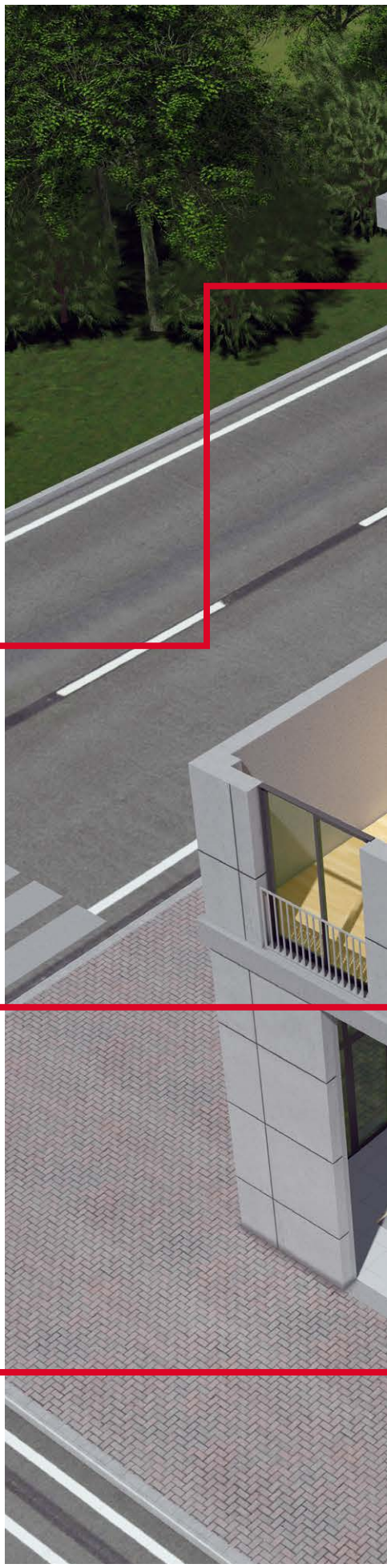
To learn more about the specific solutions for each application area, navigate to the relevant sections.

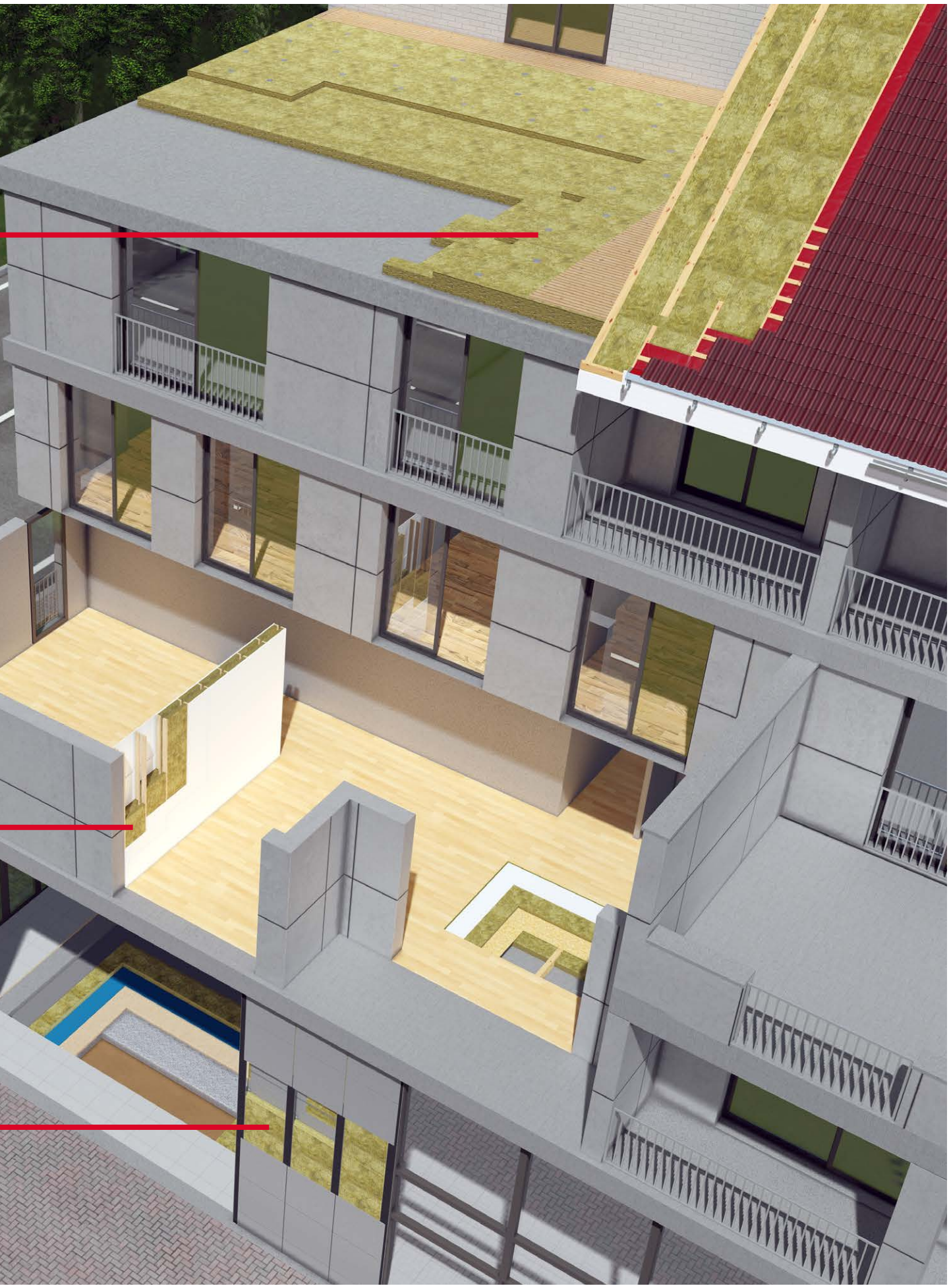


Flat roof solutions [>]

Internal wall and floor solutions [>]

Facade & external wall solutions [>]





Facade & external wall solutions

Design beautiful buildings with performance to last.

With ROCKWOOL façade and external wall solutions, balancing performance with aesthetics has never been easier.

ROCKWOOL stone wool insulation is non-combustible and resilient to high temperatures, capable of withstanding in excess of 1000°C. A durable specification, when used in through-wall and façade build-ups, ROCKWOOL ensures compliance with the latest fire safety standards while enabling flexibility over building fabric design.

The acoustic properties of ROCKWOOL reduce the transmission of unwanted sound through external walls into a building, helping to create comfortable interior spaces even in areas where high levels of environmental noise are present.

Easy to cut to shape, ROCKWOOL façade and external wall solutions simplify installation, supporting increased efficiency and reducing margin for error on-site.

Acoustic performance data

The table below provides a summary of the sound reduction performances achieved using a combination of ROCKWOOL insulation with SFS frame and the cladding zone.

RAINSCREEN DUO SLAB® (mm)	ROCKWOOL Insulation within SFS Frame (mm)	Layers of 15mm Acoustic Plasterboard	8mm Rockclad (Rockpanel)	
			R_W	$R_W + C_{tr}$
50	90	2	57	50
	90	1	57*	47*
100	90	2	59	52
	90	1	59*	51*
180	90	2	62	54
	90	1	62*	53*
			ACM (Booth Muirie)	
			R_W	$R_W + C_{tr}$
50	90	2	58	47
	90	1	58	45
100	90	2	58	49
	90	1	58*	48*
180	90	2	60	52
	90	1	60*	52*

*Assessed against the data held within test report held within test report C/23666/T01

Flat roof solutions

Specify performance where it's needed.

Supporting specifiers in delivering developments that address modern construction demands, ROCKWOOL enables flexibility in design by providing access to a wide range of solutions that facilitate flat roof zoning.

Where building design incorporates green roofs, roof terraces and roof gardens in line with the living roof agenda, the ROCKWOOL HARDROCK® range presents a solution for every application.

For rooftop plant and machinery, ROCKWOOL flat roof solutions offer a choice of acoustic performance and dual-density products that will reduce transmission of sound into the building below.

With rain noise known to significantly increase indoor noise levels – up to 70dBA in some cases – reducing noise transfer from the roof and into buildings is a key design consideration. Building Regulation submissions should demonstrate that lightweight roofs and roof glazing have been designed to control reverberant rain noise, while BREAAM for Schools provides credits for not exceeding the allowable indoor ambient noise level by more than 25dB.

High density ROCKWOOL roof boards provide an excellent barrier to the drumming effects of rain noise. Tests show that when used within a flat roof system, ROCKWOOL roof boards support a significant reduction in rain noise intensity.

As the fifth façade in the building fabric, fire safety is a key consideration in flat roof design. The non-combustible nature of ROCKWOOL delivers the highest levels of fire performance, which also facilitates the completion of hot works during construction and maintenance.

Complete ROCKWOOL Acoustic Systems

With airborne sound reduction levels ranging from 40-50dB complete ROCKWOOL flat roof acoustic systems provide an array of high performance options suited to any project.

The following tables provide performance data for both airborne sound reduction and rain noise intensity in line with thermal performances ranging from 0.25 - 0.14 W/m²K.

Airborne sound reduction - ROCKWOOL System: HARDROCK® Multi-Fix (DD)

		Layers of 15mm Acoustic Plasterboard		
Base layer (mm)	Upper layer (mm)	1.2mm single ply	2 layer bitumen	U-value (W/m²K)
150	-	41	43	0.25
170	-	44	46	0.22
185	-	45	46	0.20
150	60	46	47	0.18
150	85	47	48	0.16
150	105	48	48	0.15
150	115	48	49	0.14

The above table shows predicted values which have been calculated using the data provided in test report: DPA Cauberg - Huygen 20151078 - 03.

Rain noise intensity - ROCKWOOL System: HARDROCK® Multi-Fix (DD)

		Predicted Rain Noise Intensity (L_{IA}-dB)	
Base layer (mm)	Upper layer (mm)	1.2mm single ply	2 layer bitumen
150	-	55.4	54.2
170	-	54.6	53.6
185	-	54.1	53.2
150	60	53.2	52.3
150	85	52.5	51.7
150	105	52.0	51.3
150	115	51.8	51.1

The above table shows predicted values which have been calculated using the data provided in test report: BRE 241438 L707 - 008.

The acoustic data shown in above tables is based on a warm flat roof construction which includes the following components:

- 0.7mm Steel Deck
- Vapour Control Layer

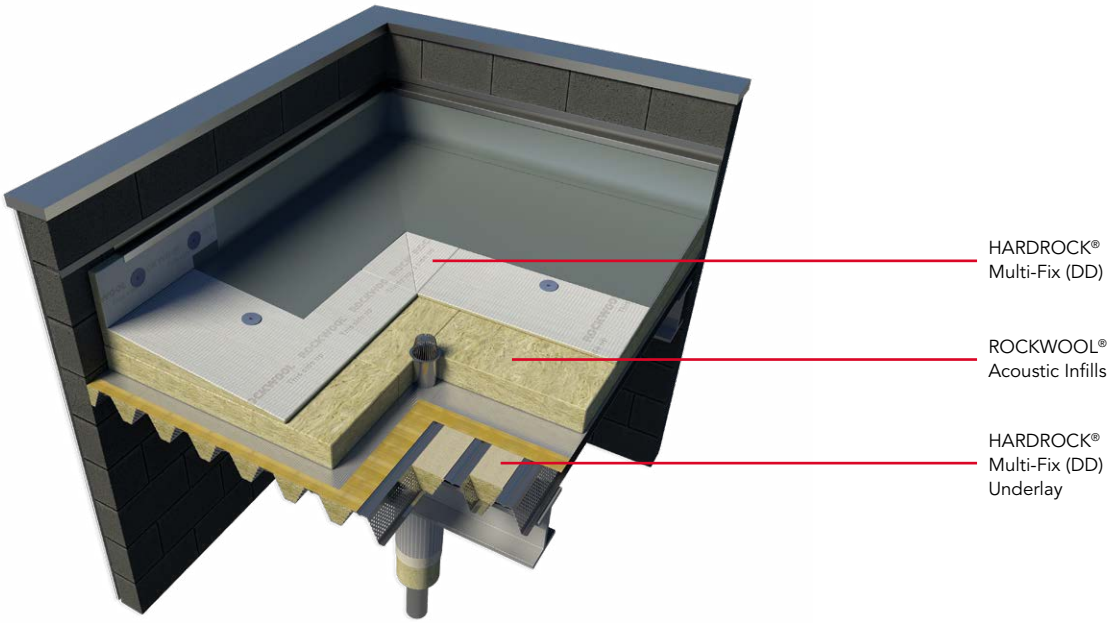
Sound absorption - ROCKWOOL System: ROCKWOOL® Acoustic Infill

Sound Absorption Coefficient Frequency (Hz)						Weighted Sound Absorption Coefficient (αw)	Noise Reduction Coefficient (NRC)	Absorption Classification Class
125	250	500	1K	2K	4K			
0.55	0.95	1.00	0.90	0.60	0.45	0.60(LM)	0.9	C

The values shown are actual test results as shown in Test Report: C/06/5L/3434/2.

The acoustic data shown is the result of testing that was carried out on a warm flat roof system which included the following components:

- 0.7mm Tata D60 Perforated Deck (13% open area)
- ROCKWOOL® Acoustic Infill
- 0.22mm Vapour Control Layer
- 210mm ROCKWOOL Hardrock
- 1.5mm Single-Ply Membrane



Internal walls

Reduce noise and protect people with a single specification.

Applying ROCKWOOL stone wool insulation to the core of internal partitions and floors supports in improving noise reduction by significantly increasing sound absorption, meaning that even the noisiest areas sound quieter.

As non-combustible insulation, specifying ROCKWOOL internal wall and floor solutions offers increased peace of mind by helping to reduce the spread of fire – protecting people and property.

Extremely easy to handle and install on-site, ROCKWOOL internal wall and floor solutions help to protect the integrity of design by minimising risk of installation error on-site.

This table summarises our comprehensive suite of partition and separating wall tests incorporating ROCKWOOL Flexi, covering a range of steel and timber frame constructions:

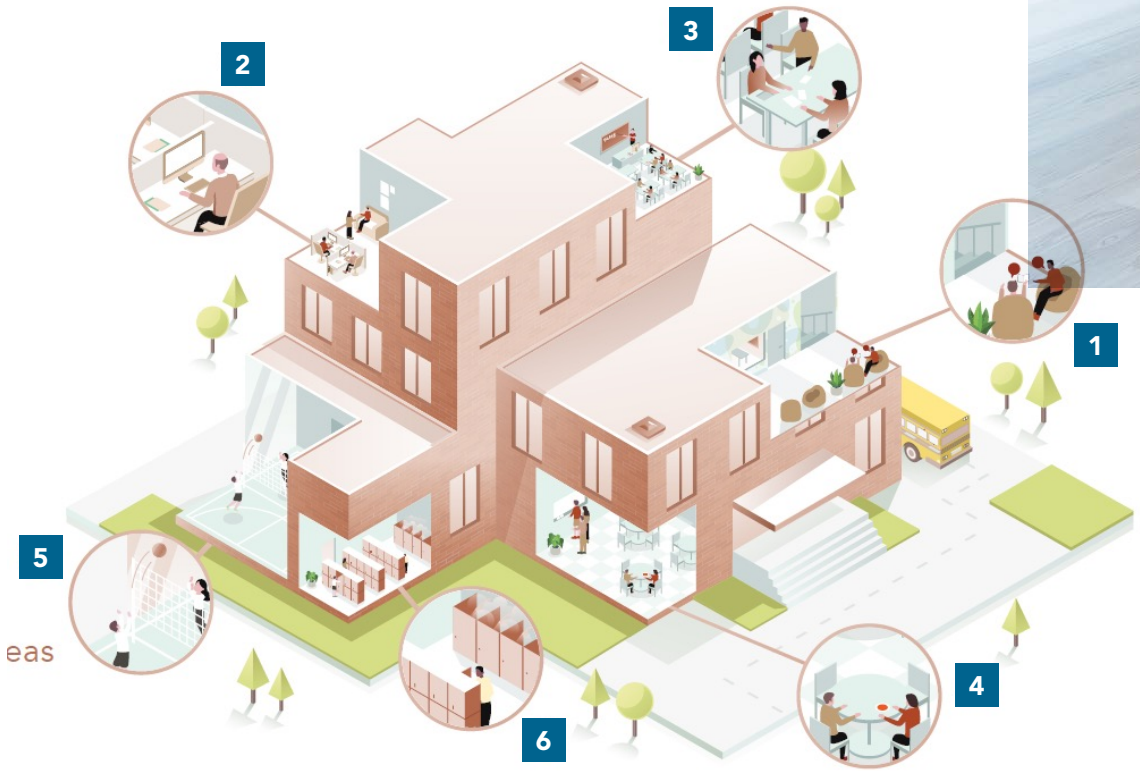
Performance (dB)					Frame(s)				Plasterboard (each side)			Resilient bars		ROCKWOOL FLEXI® Insulation (mm)			Total wall
R_w	C	C_{tr}	$D_{nt,w}$ (Estimated)	$D_{nt,w}+C_{tr}$ (Estimated)	Type	Single / Twin	Depth (mm)	Centres (mm)	Type	Thickness (mm)	Layers	Sides	Centres (mm)	In frame(s)	Between	Total	
42	-9	-2	35	32	Timber	Single	63	600	Standard	12.5	1	-	-	50	-	50	88
42	-5	-12	35	22	Steel	Single	50	600	Standard	12.5	1	-	-	50	-	50	75
43	-2	-7	36	28	Timber	Single	63	600	Acoustic	12.5	1	-	-	50	-	50	88
43	-2	-7	36	28	Timber	Single	63	600	Acoustic	15	1	-	-	50	-	50	93
45	-3	-6	38	31	Timber	Single	75	600	Acoustic	15	1	-	-	70	-	70	105
45	-6	-13	38	24	Steel	Single	50	600	Acoustic	12.5	1	-	-	50	-	50	75
46	-3	-9	39	29	Timber	Single	75	600	Acoustic	12.5	1	-	-	-	-	0	100
46	-5	-13	39	25	Steel	Single	50	600	Acoustic	15	1	-	-	50	-	50	80
50	-1	-5	43	37	Timber	Single	63	600	Acoustic	15	2	-	-	50	-	50	123
51	-2	-6	44	37	Timber	Single	75	600	Acoustic	15	2	-	-	70	-	70	135
51	-5	-13	44	30	Steel	Single	70	600	Acoustic	15	1	-	-	70	50	120	100
56	-4	-12	49	36	Steel	Single	50	600	Acoustic	15	2	-	-	50	-	50	110
58	-4	-11	51	39	Timber	Single	63	600	Acoustic	15	2	1	300	50	-	50	138
59	-3	-10	52	41	Timber	Single	75	600	Acoustic	15	2	1	300	70	-	70	150
60	-4	-10	53	42	Steel	Single	70	600	Acoustic	15	2	-	-	70	50	120	130
61	-4	-11	54	42	Steel	Single	50	600	Acoustic	15	2	1	300	50	-	50	125
61	-3	-10	54	43	Steel	Single	50	600	Acoustic	15	2	2	300	50	-	50	140
63	-1	-7	56	48	Steel	Twin	50	600	Acoustic	15	2	-	-	-	50	50	210
63	-3	-9	56	46	Steel	Single	70	600	Acoustic	15	2	2	300	70	50	120	160
63	-4	-10	56	45	Steel	Single	70	600	Acoustic	15	2	1	300	70	50	120	145
63	-2	-7	56	48	Steel	Twin	70	600	Acoustic	15	2	-	-	-	50	50	250
64	-2	-7	57	49	Steel	Twin	50	600	Acoustic	15	2	1	600	-	50	50	225
64	-2	-7	57	49	Steel	Twin	50	600	Acoustic	15	2	2	300	-	50	50	240
64	-2	-6	57	50	Steel	Twin	50	600	Acoustic	15	2	-	-	50	50	150	210
64	-2	-8	57	48	Steel	Twin	70	600	Acoustic	15	2	1	300	-	50	50	265
65	-2	-7	58	50	Steel	Twin	50	600	Acoustic	15	2	2	300	50	50	150	240
65	-2	-6	58	51	Steel	Twin	50	600	Acoustic	15	2	1	600	50	50	150	225
65	-1	-5	58	52	Steel	Twin	70	600	Acoustic	15	2	-	-	70	50	190	250
66	-2	-6	59	52	Steel	Twin	70	600	Acoustic	15	2	1	300	70	50	190	265

Rockfon®

Rockfon is part of the ROCKWOOL Group and we are the world's leading acoustic company – and our mission is to keep things quiet.

We create products that are built for modularity, making it easy to reconfigure a space to look as good as it sounds.

Our broad range of acoustic solutions give you the freedom to design, whether you are looking to regulate noise in the classroom or need impact-resistant acoustic solutions in gymnasiums. We've got you covered for all of the different spaces of a school:



1. Communal and breakout areas
2. Offices and administration
3. Classrooms
4. Cafeteria and kitchens
5. Gymnasiums
6. Changing and showering rooms

Rockfon® Boxer™

Rockfon® Boxer™ is a highly impact-resistant stone wool tile perfect for corridors or classrooms. It provides excellent sound absorption for noisy and reverberant areas.

Rockfon Blanka® dB

Rockfon Blanka® dB is a light in weight, sound insulating tile that combines enhanced room to room sound insulation as well as a high level of sound absorption (Class A).

To learn more about Rockfon solutions, visit: rockfon.co.uk

Case study

Streamlight Tower

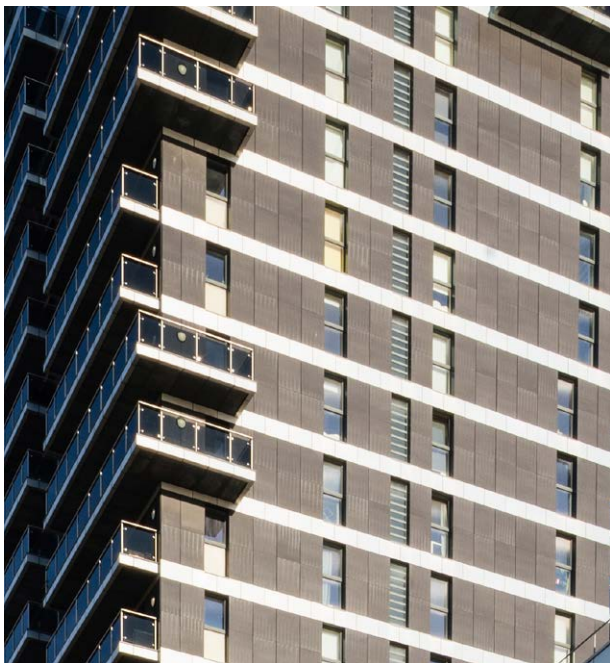
London

[>]

Client:
Streamlight Tower

Architect:
Swan Housing

Main contractor:
Higgins Partnerships



Case study

Cobham Free School

Surrey

Client:
Cobham Free School

Architect:
Stride Treglown

Main contractor:
Willmott Dixon Construction

Roofing contractor:
Southern Industrial Roofing

The CPD programme

We've used our knowledge and technical expertise to create informative and enjoyable CPDs. Each CPD has been designed to explain the unique benefits of stone wool insulation, its suitability for the built environment and the design freedom that can be achieved.

The essential CPD programme for construction professionals includes:

Acoustic standards in schools

This CPD addresses the noise and poor acoustic issues in schools affecting the learning environment.

[>]

Building envelope

This session looks at the use of non-combustible beyond the façade, highlighting key areas where non-combustible insulation can easily be incorporated.

[>]

Retrofitting rainscreen insulation and cladding

In this CPD, learn more about the role of non-combustible insulation in improving thermal and acoustic performance in existing buildings.

[>]

On-Demand CPDs

With an ever growing list of on-demand modules available, you can now learn at a place and time that suits you. Browse our new on-demand CPD library and register for a CPD today!

[>]

To arrange a CPD session or to learn more about the topics covered, please visit www.rockwool.com/uk/cpd

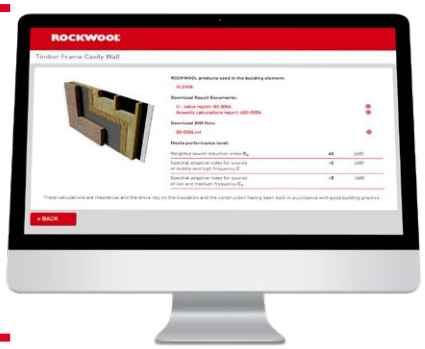
Technical tools and resources

To assist you in the best possible way, we offer a range of free tools ranging from online software for calculating energy and heat loss to a materials calculator and much more.

Whether you are still at the beginning of your project or need technical support throughout, we are here to help along the way.

Acoustic Calculator [>]

The ROCKWOOL Acoustic Calculator has been developed to provide reliable acoustic predictions for multiple building applications.

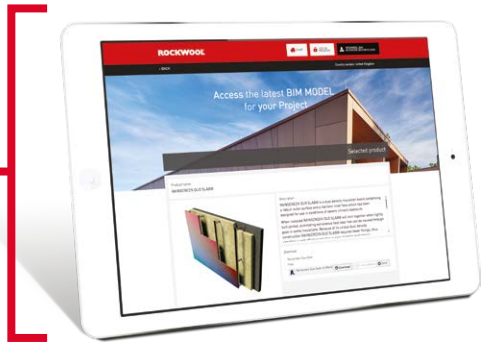


Flat Roof Zoning Tool [>]

The ROCKWOOL Zoning Tool has been developed to ensure the efficient use of insulation products across a flat roof. Simply draw the roof borders, then zone the roof into different areas depending on the application.

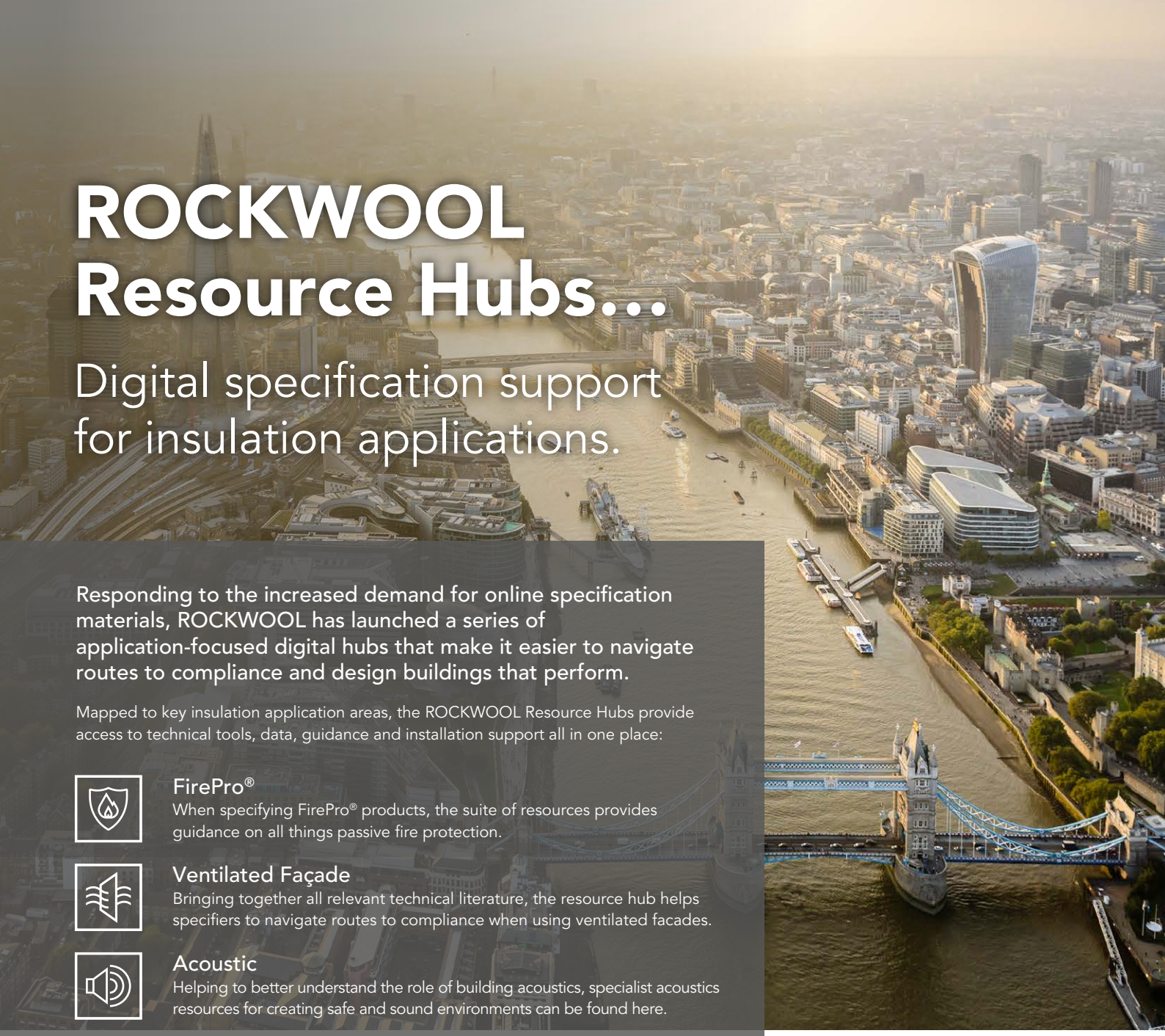
BIM Solution Finder [>]

ROCKWOOL is proud to provide the BIM Solution Finder that will allow you to have the confidence in downloading the most recent BIM objects and the most up to date data for your projects.



For product and technical support, please email technical.solutions@rockwool.com or call 01656 868 490

Visit www.rockwool.com/UK/tools for more information



ROCKWOOL Resource Hubs...

Digital specification support for insulation applications.

Responding to the increased demand for online specification materials, ROCKWOOL has launched a series of application-focused digital hubs that make it easier to navigate routes to compliance and design buildings that perform.

Mapped to key insulation application areas, the ROCKWOOL Resource Hubs provide access to technical tools, data, guidance and installation support all in one place:

FirePro®
When specifying FirePro® products, the suite of resources provides guidance on all things passive fire protection.

Ventilated Façade
Bringing together all relevant technical literature, the resource hub helps specifiers to navigate routes to compliance when using ventilated facades.

Acoustic
Helping to better understand the role of building acoustics, specialist acoustics resources for creating safe and sound environments can be found here.

HVAC
A comprehensive suite of resources designed to save time and make it easier to deliver project specifications.

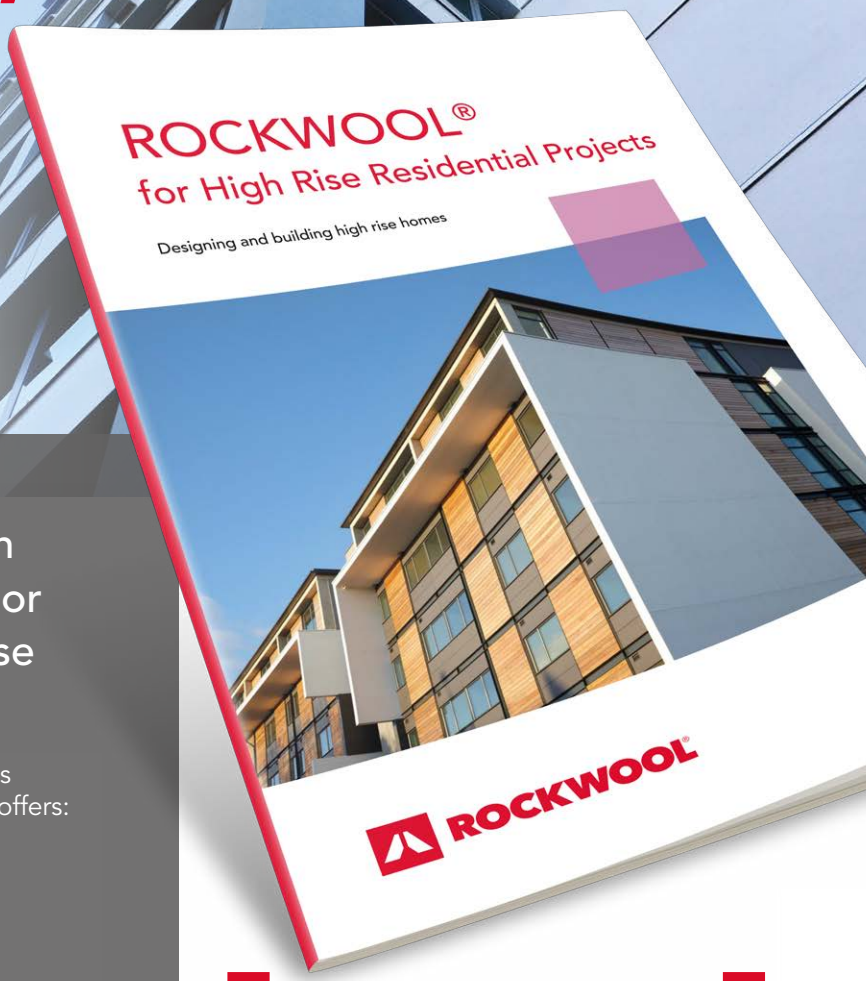
Flat Roof
Support the design of flat roof insulation with specialist tools, guidance and technical data.

Social Housing
Putting all the key resources, information and case studies for social housing projects together in one place - as well as useful links to further social housing resources.

Use the Resource Hubs to identify the right non-combustible stone wool insulation products for specific applications.

Explore the ROCKWOOL Resource Hubs now:
www.rockwool.com/uk/resource-hubs

High rise residential, made easier



Design and specify effective high rise structures with our new sector guide, 'ROCKWOOL for High Rise Residential Projects'.

Built around the concept that modern high rise homes should be as safe as they are comfortable, the guide offers:

- Application-specific advice for insulation
- Relevant case studies
- Acoustic, thermal and fire performance guidance
- Building regulations advice for high rise residential projects
- More information on key ROCKWOOL resources and CPDs

Download 'ROCKWOOL for High Rise Residential Projects':

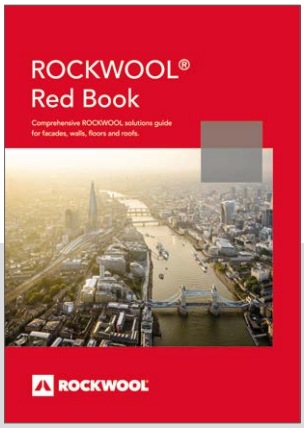
rockwool.com/uk/high-rise

ROCKWOOL®

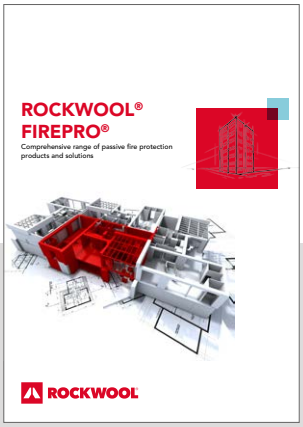
rockwool.com/uk

Additional resources

ROCKWOOL SoundPro is part of a suite of specialist guides. The following are also available to support the specification of ROCKWOOL solutions in a wide range of building applications:

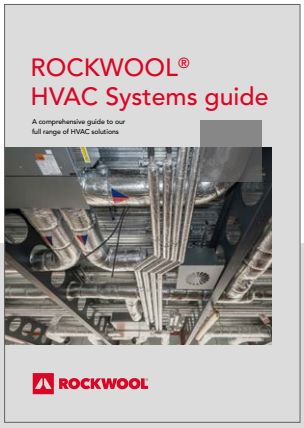


Red Book



FirePro® Book

Part L Guide



HVAC Book

All supporting product documentation for solutions detailed in ROCKWOOL SoundPro is available to download from the ROCKWOOL website, including:

- Product Datasheets
- Material Safety Datasheets
- Brochures
- Reports
- Price Lists
- Certificates

Register now at www.rockwool.com/uk to receive the latest technical updates.

Share your feedback

Is ROCKWOOL SoundPro providing you with the specification support you need?

Let us know how we can improve the content: go.rockwool.com/ROCKWOOL-SoundPro-Feedback

Legal disclaimer

The ROCKWOOL Trademark

ROCKWOOL® - our trademark

The ROCKWOOL trademark was initially registered in Denmark as a logo mark back in 1936. In 1937, it was accompanied with a word mark registration; a registration which is now extended to more than 60 countries around the word.

The ROCKWOOL trademark is one of the largest assets in the ROCKWOOL Group, and thus well protected and defended by us throughout the world.

If you require permission to use the ROCKWOOL logo for your business, advertising or promotion. You must apply for a Trade Mark Usage Agreement. To apply, write to: marketcom@rockwool.com.

Trademarks

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Page 2: Rockfon

Page 7: Shutterstock

Page 9: Higgins Partnerships

Page 13: Shutterstock

Page 48: Rockfon

Page 49: Rockfon

Page 50: Higgins Partnerships

Notes

Notes

May 2023

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Version 1.00 May 2023