

THRUWALL®
SOLUTIONS
FOR THE BUILDING
ENVELOPE

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Etex Building Performance

A leading provider of lightweight construction solutions

With a UK turnover in excess of £200 million, Etex Building Performance combines the products, solutions and expertise of three leading lightweight construction brands – Siniat, Promat and EOS – all under one roof.



siniat
Leading manufacturer of plasterboard and drywall solutions.

Promat
UK leader in passive fire protection.

EOS
Steel frame specialists.

We are part of the global Etex group of companies, which in the UK includes the Equitone brands.

Challenges of specifying the external envelope

Systems solutions to take away the uncertainty from specification of the external envelope.



We understand the challenges faced by specifiers when designing solutions for the external envelope of the building.

Until now, there has been a lack of a system based approach to the design and specification of lightweight external walls. Instead, each of the components of the wall are offered by different manufacturers with each providing data relating only to their part of the system.

The challenges faced are:

- External sheathing boards are sold by re-sellers rather than manufacturers and with only limited technical and testing information. They rarely provide the levels of data necessary to understand the contribution these boards will make to the performance of the finished building envelope once all the components are brought together.
- SFS providers take responsibility for the metal profiles, but with little or no consideration for how the finished construction will perform other than mechanically.
- Drywall manufacturers will typically provide standard details and testing information relating to the wall lining (fire, thermal, acoustic) but not for the performance of the building envelope as a proprietary system.

“Etex Building Performance are looking to be innovative and we as an industry are looking at all manner of innovations that assist in cutting down waste to simplify the process. Etex Building Performance* have been very good at that on this particular project and we’ve embraced that.”

Vernon Hallwood, Design Manager,
Graham Construction

*Previously referring to Siniat

Student accommodation, Salford University

THE SPECIFIERS RESPONSIBILITY

When these disparate elements are brought together it is left to the specifier to assess whether the chosen combination of materials (boards, metals, insulation) will deliver the required levels of performance.

- ❗ Fragmented Supply Chain
- ❗ Limited Technical Expertise
- ❗ Limited Test Evidence
- ❗ Lack of Supporting Warranties

The solution from Etex Building Performance

At Etex Building Performance, the combination of our expertise in internal drylining, SFS and external sheathing, as well as passive fire protection, means that we are uniquely positioned to be able to bring together these elements. We have created a range of tested and warranted Thruwall® solutions, which for our customers, takes the uncertainty out of throughwall design.

HELPING THE SPECIFIER MEET THE CHALLENGES OF DESIGNING THE EXTERNAL ENVELOPE



MEETING BUILDING PERFORMANCE REQUIREMENTS



FIRE

Approved Document B (Fire safety) of the building regulations sets out the performance criteria for fire resistance through the external envelope. This is dependent upon the building height and boundary distance. In the multi-storey residential sector, fire resistance is often required in both directions.



THERMAL

Approved Document L (Conservation of fuel and power) of the building regulations sets out the minimum thermal performance criteria for the external envelope. In addition, these can be further enhanced to meet specific building codes. Using external insulation is vital to improved thermal performance.



WEATHERING

The external sheathing boards contained within the external envelope must ensure that they retain their mechanical stability and resist mould growth even when exposed to the elements for extended periods during the construction phase. Some sheathing boards may need to be covered with a breather membrane during the construction phase.



ACOUSTICS

The sound insulation requirements for an external envelope will depend upon the external noise environment and the proximity and orientation of the façade to the noise source. Where a site is mainly subjected to traffic noise, the external envelope will need to provide sound insulation expressed in $R_w + C_{tr}$ dB to consider the rumbling, low frequencies of a busy road.



BUILDING MECHANICS

The external envelope will be required to resist wind loads and the supporting structure must support the additional weight of the cladding. The wind loads will vary significantly from project to project based upon site conditions, location, exposure and height of the building. The supporting structure, if manufactured from steel will follow Eurocode structural design codes.



AIRTIGHTNESS

Approved Document L (Conservation of fuel and power) of the building regulations set out the minimum requirements for airtightness of the external envelope.

PROVIDING CRUCIAL COST AND TIME BENEFITS



COST

The cost of the external envelope can be influenced by many factors including the complexity of the design, design change and the coordination of the building envelope to accommodate various elements, for example glazing, structural support, louvres and vents. The overall installed cost needs to be considered rather than solely the square metre rate of a material.



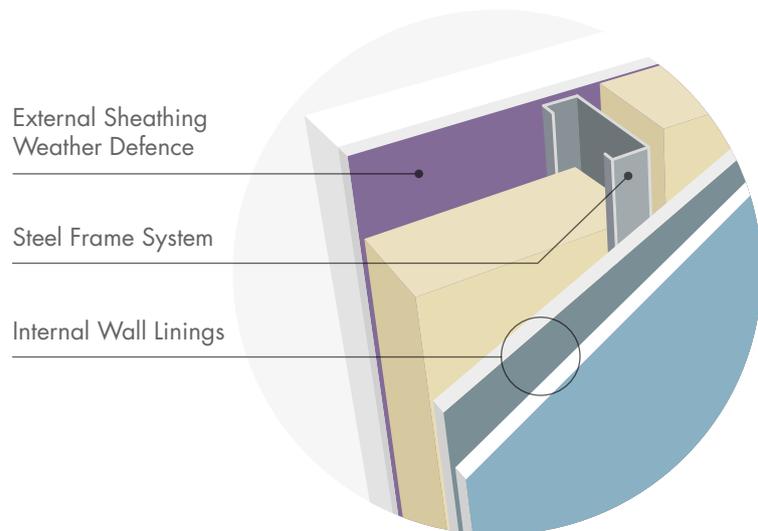
TIME

Whilst designing the external envelope, it is key to consider providing a weathertight external envelope at the earliest opportunity, so the internal works can commence. This removes the external envelope off the critical path, which ensures that the building programme is not compromised.

A Thruwall® System designed to remove the uncertainty of the design and specification of the external envelope

The Etex Building Performance Thruwall® System is a non-loadbearing in-fill system for the external building envelope composed of:

- The external sheathing or carrier board.
- Light gauge steel framing
- The internal wall lining.



EXTERNAL SHEATHING WEATHER DEFENCE

- Fully non-combustible (Euroclass A1) so is suitable for buildings with a height more than 18 metres.
- Has two BBA certificates.
- Can be left fully exposed on-site for up to 12 months.
- Dimensionally stable, which means boards can be butted tightly together providing exceptional levels of airtightness.
- Eliminates the need for a breather membrane.
- 50% faster to install than traditional cement particle board.
- Lightweight.
- Easy to cut, shape and bend offering more options for design detailing.



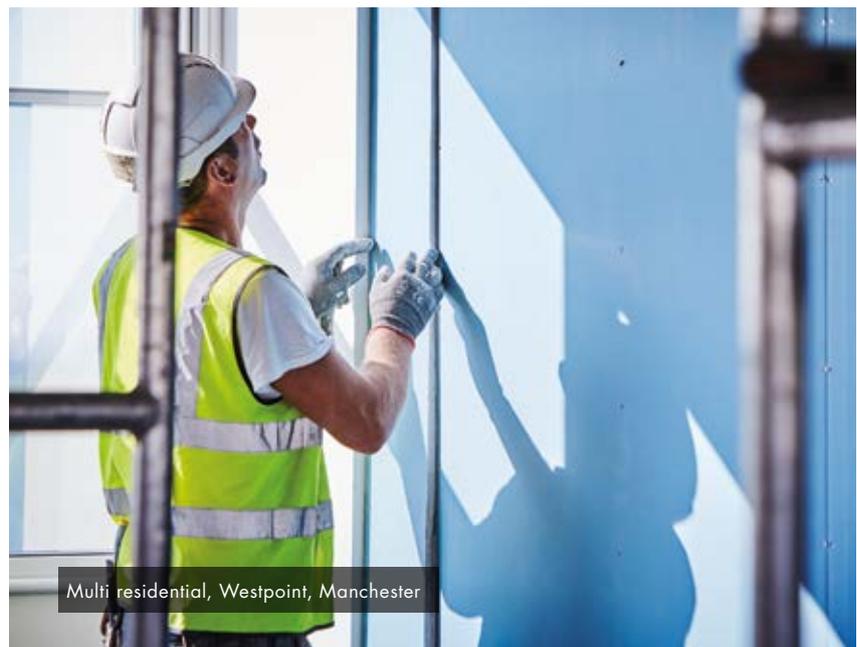
STEEL FRAME SYSTEMS (SFS)

- The fully engineered Steel Frame System (SFS) is custom designed according to the specific requirements of any project.
- All sections are delivered cut to length – zero cutting or wastage on site.
- Factory assured standards of quality.
- Colour coded and individually labelled.
- Lightweight.



INTERNAL WALL LININGS

- Depending on the performance criteria of a project an appropriate wall lining can be selected to provide enhanced levels of sound insulation, fire, moisture, impact or vapour resistance.



Offering a range of fully tested solutions

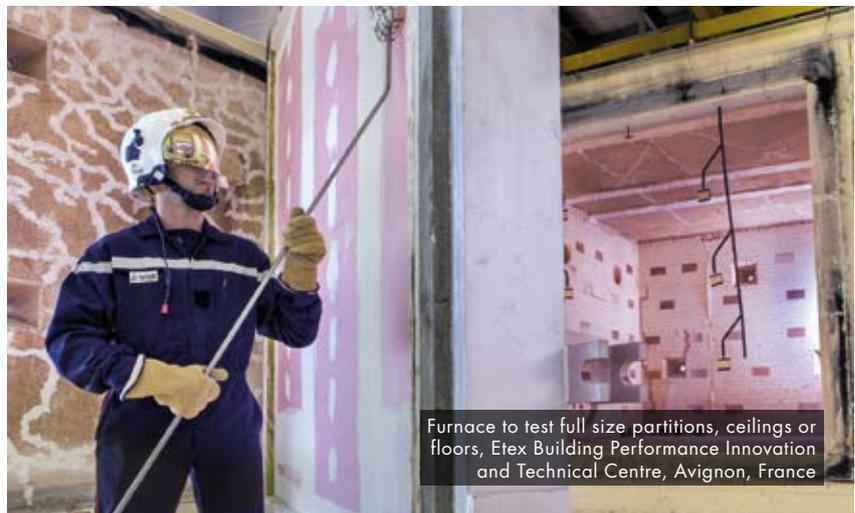
At Etex Building Performance we understand that no one wants to be exposed to risk.

Our testing regimes are designed to ensure that when specifying our Thruwall® System you have complete peace of mind; knowing that all our systems have been subject to extensive fire, acoustic, weathering, airtightness and mechanical tests.



FIRE

Our Thruwall® Systems have been fire tested according to BS EN1364-1 (non-loadbearing) in both directions and can provide fire resistance (EI) from 60 to 120 minutes depending on the system chosen. Weather Defence not only provides high levels of fire resistance it is also rated at Euroclass A1 non-combustible, so is suitable for buildings with a height of more than 18 metres.



Furnace to test full size partitions, ceilings or floors, Etex Building Performance Innovation and Technical Centre, Avignon, France



ACOUSTIC

Our Thruwall® Systems have been acoustically tested according to ISO 10140-2 (Laboratory measurement of sound insulation of building elements – Part 2: Measurement of airborne sound insulation) and can provide sound insulation up to 50 R_w dB (45 R_w + C_{tr} dB) depending on the system chosen.



Acoustic laboratory to analyse airborne sound transmission, impact noise reduction and acoustic correction, Etex Building Performance, Innovation and Technical Centre, Avignon, France



- Fire resistance up to 120 minutes.
- Weather Defence fully non-combustible (Euroclass A1).
- Sound insulation up to 50 R_w dB (45 R_w + C_{tr} dB).



Industrial scale climate chamber testing facility, Etex Building Performance, Innovation and Technical Centre, Avignon, France



WEATHERING

Weather Defence has undergone extensive weathering tests in our purpose-built laboratory. Boards are tested to ensure that they retain their mechanical stability and resist mould growth even when exposed to the elements for extended periods during the construction phase.

Weather Defence can be left exposed on site for up to 12 months. Whilst it is highly resistant to water, the board is also open to vapour, allowing the building to breathe and release potentially damaging moisture trapped within the Thruwall®. These qualities mean that there is no need to install a breather membrane over the sheathing board; saving both time and cost.

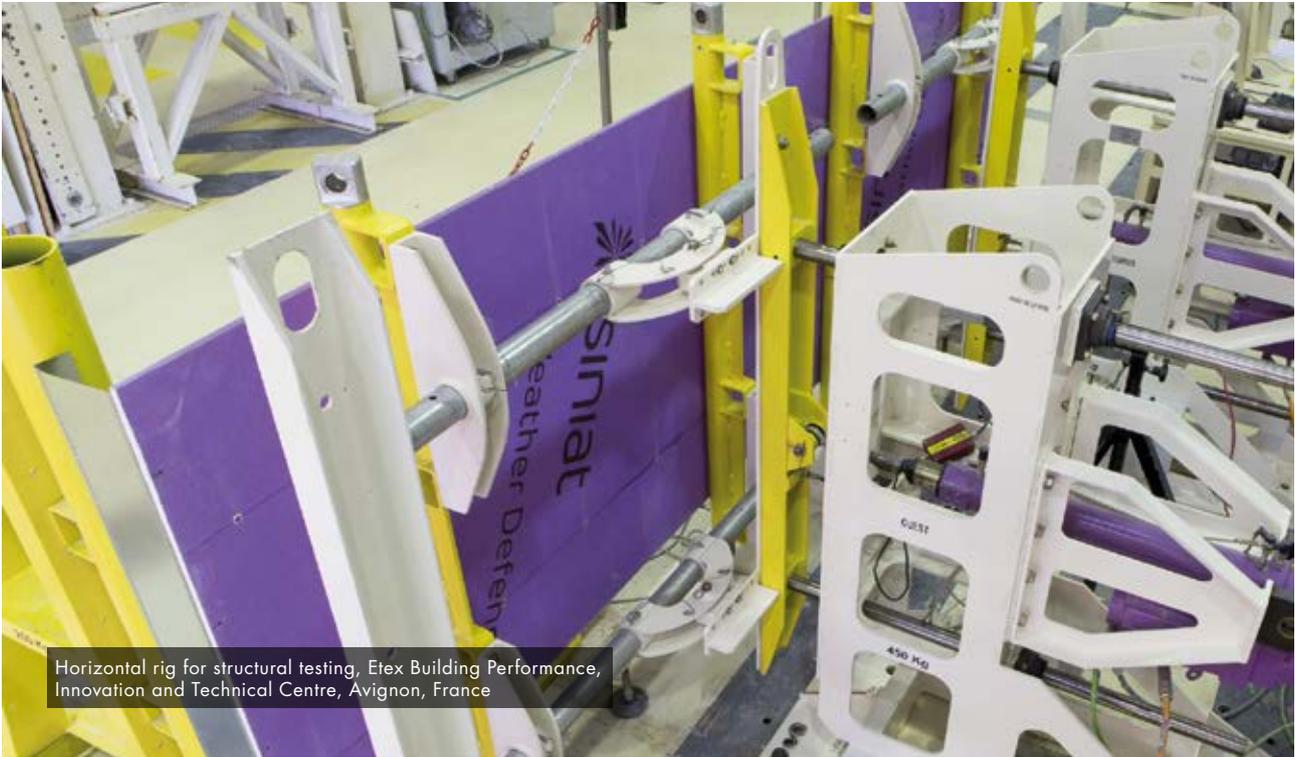


AIRTIGHTNESS

Weather Defence is an extremely stable substrate and will only expand by fractions of a millimetre as humidity changes. This means that gaps don't need to be left between the boards. On a recent project utilising Weather Defence, an airtightness of less than 1.53/m²/hr was achieved (Abercynon Primary School).



- Can be left fully exposed on-site for up to 12 months.
- Eliminates the need for a breather membrane.
- Only expands by fractions of a millimetre.
- No gaps between the boards, which improves airtightness.



Horizontal rig for structural testing, Etex Building Performance, Innovation and Technical Centre, Avignon, France



BUILDING MECHANICS AND DURABILITY

Our external sheathing boards are tested extensively to ensure that they will perform when installed in severe weather conditions and to achieve the required levels of mechanical and pull out strength, even when wet.

Our internal wall linings are tested for impact resistance and, depending on your needs, we can provide wall linings which achieve a Severe Duty rating according to BS 5234-2.



STRUCTURE

The Steel Framing System (SFS) framing selected for your project will depend on:

- The height of the in-fill wall.
- The weight of the cladding.
- The wind load.

The higher the wall, the greater the stud depth and gauge will need to be – or tighter stud centres will be required to resist the loads. We can help establish the wind load using BREVE software once the façade arrangement, building height and location are known.

Wind loads will increase with more exposed façades, taller buildings, and in locations closer to the west coast of mainland UK.

Our engineers will calculate the wind load and follow Eurocode structural design codes to determine the recommended framing design (see worked example on page 19). Thermal performance, including U-values and condensation risk, are affected by the amount of metal bridging the insulations; so for the optimum overall system performance the structure should be considered at the same time as fire, acoustics and thermal performance.



The Etex Building Performance Thruwall® package makes this collaborative design work much easier to achieve with a single point of contact.

Supported by our 30 Year Warranty

By choosing Etex Building Performance for your Thruwall® solution, not only do you benefit from a fully tested system and the technical support provided by our teams of experts; you also get the support of the Etex Building Performance Thruwall® warranty.

Our products and components are rigorously tested together to ensure compatibility and system performance, enabling us to guarantee the technical performance of our Thruwall® solutions.

When Thruwall® Systems are built using our specified components and adhere to our installation and validation process they will achieve our Etex Building Performance Warranty.

We are confident that the Etex Building Performance Thruwall® solution will stand the test of time. When you specify our Thruwall® System, our 30 year warranty* means that you can have complete peace of mind.

Full details of our warranty are available upon request.

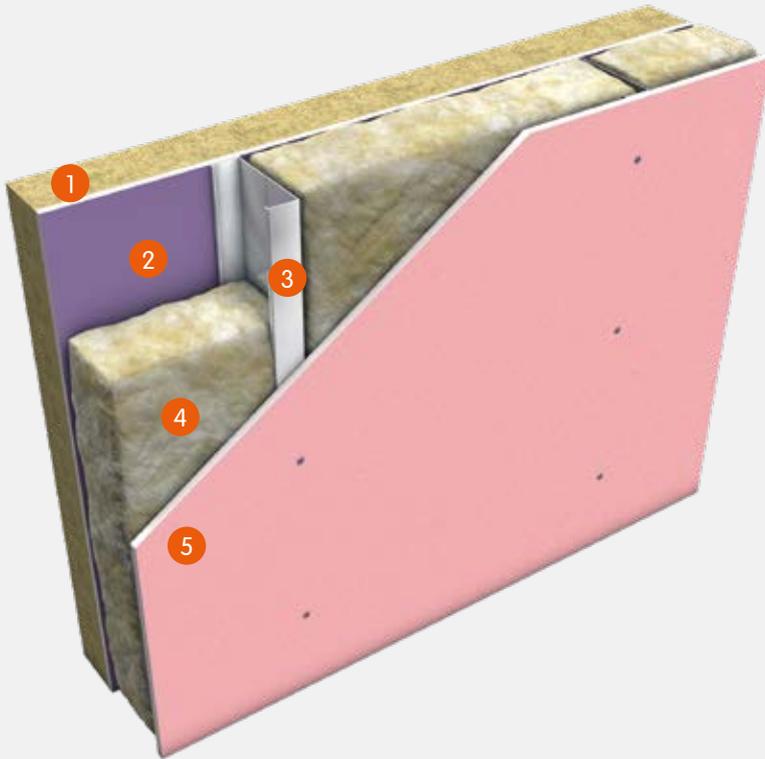


*30-year warranty is available following a specification and a validation process, please contact us for further details and for terms and conditions. System components may not be substituted.

Our Thruwall® Systems

ETW 112: WEATHER DEFENCE SHEATHING, SINGLE LAYER INTERNALLY – 60 MINUTES FIRE

60 minute Thruwall® solution for medium-rise construction



- 1 **External insulation:**
100mm rock mineral wool
(0.035 W/mK)
- 2 **Sheathing:**
1x 12.5mm Weather Defence
- 3 **Framing:**
EOS light steel in-fill framing
- 4 **Cavity insulation:**
Full-fill glass mineral wool (0.035 W/mK)
- 5 **Internal boards (inner):***
1x 15mm Fire Board
(for standard applications)
System reference: ETW 112F
or, 1x 15mm Megadeco (for faster
decoration and impact-resistance)
System reference: ETW 112M
or, 1x 15mm Aqua Board
(for wet areas)
System reference: ETW 112A
or, 1x 15mm LaDura
(for impact and durability)
System reference: ETW 112L



Fire Resistance:
to EN 1364-1 (non-loadbearing) EI 60 mins (inside to out)
EI 60 mins (outside to in)



Reaction to Fire:
to EN 13501-2 All components – at least A2 Limited Combustibility
Weather Defence sheathing – A1 Non-Combustible
Glass mineral wool – A1 Non-Combustible



Sound Insulation:
to ISO 10140-2 45 R_w dB or 40 R_w + C_{tr} dB



Height/strength:
to EN 1993-1-1 Varies by wind and cladding loading, see page 19



U-value:
to BR443 and BRE465 (Excluding cladding and fixing correction)
Varies by framing specification, indicative values below:
0.20 W/m²K Studs 100x1.2 @ 600mm centres
0.24 W/m²K Studs 100x1.6 @ 300mm centres
0.18 W/m²K Studs 150x1.2 @ 600mm centres
0.23 W/m²K Studs 150x1.6 @ 300mm centres

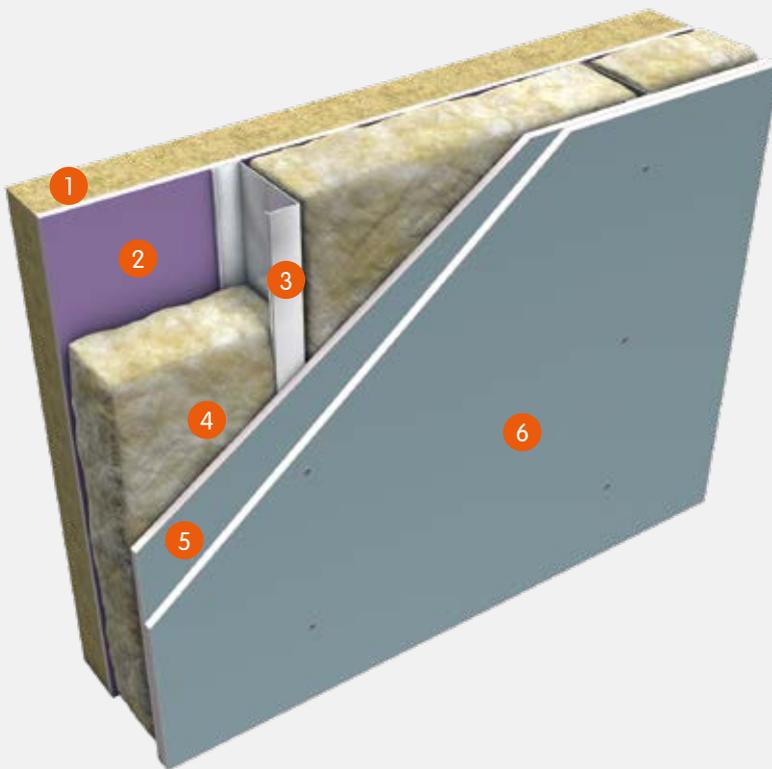
*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

OUR THRUWALL® SYSTEMS

ETW 113: WEATHER DEFENCE SHEATHING, DOUBLE LAYER INTERNALLY – 60 MINUTES FIRE

60 minute Thruwall® System, for medium-rise buildings



- 1 External insulation:**
100mm rock mineral wool
(0.035 W/mK)
- 2 Sheathing:**
1x 12.5mm Weather Defence
- 3 Framing:**
EOS light steel in-fill framing
- 4 Cavity insulation:**
Full-fill rock or glass mineral wool
(0.035 W/mK)
- 5 Internal boards (inner):***
1x 12.5mm dB board
- 6 Internal boards (outer):***
1x 12.5mm dB Board
(for standard applications)
System reference: ETW 113D
.....
or, 1x 12.5mm Megadeco (for faster
decoration and impact-resistance)
System reference: ETW 113M
.....
or, 1x 12.5mm Aqua Board
(for wet areas)
System reference: ETW 113A
.....
or, 1x 12.5mm LaDura
(for impact and durability)
System reference: ETW 113L

	Fire Resistance: to EN 1364-1 (non-loadbearing)	EI 60 mins (inside to out) EI 90 mins (outside to in)
	Reaction to Fire: to EN 13501-2	All components – at least A2 Limited Combustibility Weather Defence sheathing – A1 Non-Combustible Rock or glass mineral wool – A1 Non-Combustible
	Sound Insulation: to ISO 10140-2	48 R_w dB or 43 $R_w + C_{tr}$ dB
	Height/strength: to EN 1993-1-1	Varies by wind and cladding loading, see page 19
	U-value: to BR443 and BRE465 (Excluding cladding and fixing correction)	Varies by framing specification, indicative values below: 0.19 W/m ² K Studs 100x1.2 @ 600mm centres 0.23 W/m ² K Studs 100x1.6 @ 300mm centres 0.17 W/m ² K Studs 150x1.2 @ 600mm centres 0.22 W/m ² K Studs 150x1.6 @ 300mm centres

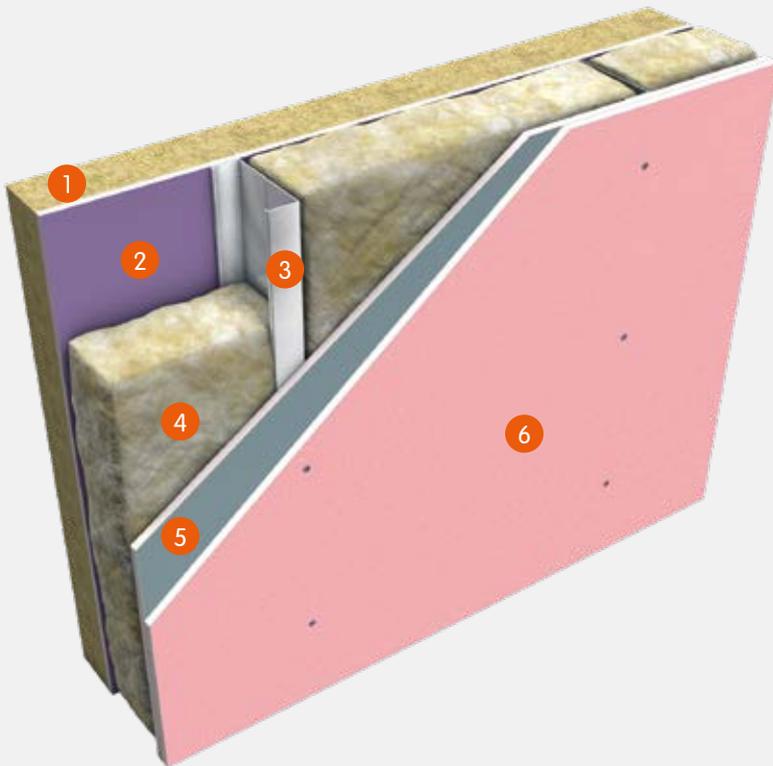
*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

OUR THRUWALL® SYSTEMS

ETW 114: WEATHER DEFENCE SHEATHING, DOUBLE LAYER INTERNALLY – 90 MINUTES FIRE

90 minute Thruwall® System, for the taller buildings



- 1 **External insulation:**
100mm rock mineral wool
(0.035 W/mK)
- 2 **Sheathing:**
1x 12.5mm Weather Defence
- 3 **Framing:**
EOS light steel in-fill framing
- 4 **Cavity insulation:**
Full-fill rock or glass mineral wool
(0.035 W/mK)
- 5 **Internal boards (inner):***
1x 15mm dB Board
- 6 **Internal boards (outer):***
1x 15mm Fire Board
(for standard applications)
System reference: ETW 114F
.....
or, 1x 15mm Megadeco (for faster
decoration and impact-resistance)
System reference: ETW 114M
.....
or, 1x 15mm Aqua Board
(for wet areas)
System reference: ETW 114A
.....
or, 1x 15mm LaDura
(for impact and durability)
System reference: ETW 114L



Fire Resistance:
to EN 1364-1

EI 90 mins (inside to out)
EI 90 mins (outside to in)



Reaction to Fire:
to EN 13501-2

All components – at least A2 Limited Combustibility
Weather Defence sheathing – A1 Non-Combustible
Rock or glass mineral wool – A1 Non-Combustible



Sound Insulation:
to ISO 10140-2

49 R_w dB or 43 $R_w + C_{tr}$ dB



Height/strength:
to EN 1993-1-1

Varies by wind and cladding loading, see page 19



U-value:
to BR443 and BRE465
(Excluding cladding and fixing
correction)

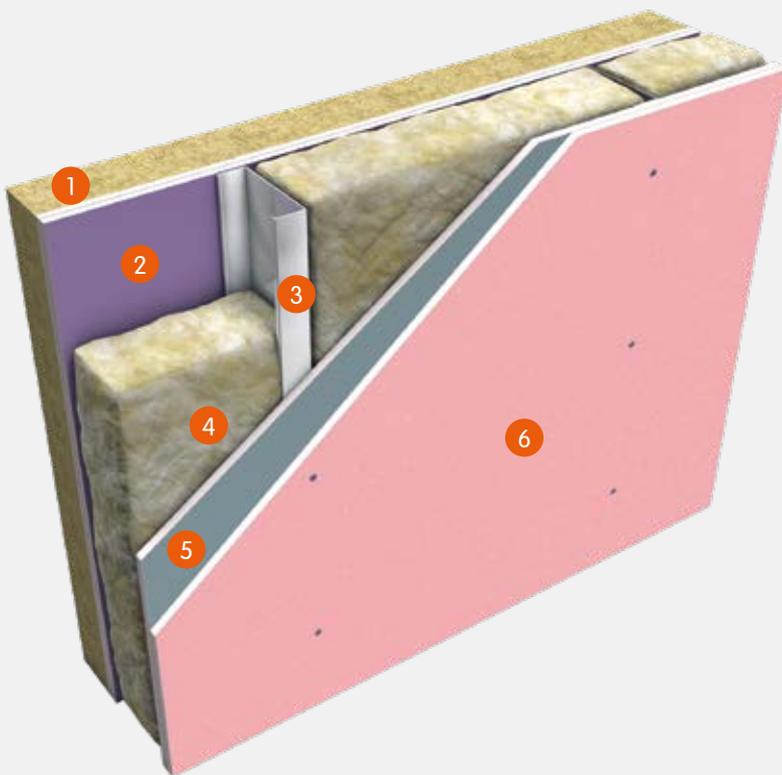
Varies by framing specification, indicative values below:
0.20 W/m²K Studs 100x1.2 @ 600mm centres
0.23 W/m²K Studs 100x1.6 @ 300mm centres
0.17 W/m²K Studs 150x1.2 @ 600mm centres
0.22 W/m²K Studs 150x1.6 @ 300mm centres

*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

OUR THRUWALL® SYSTEMS

ETW 134: DOUBLE WEATHER DEFENCE SHEATHING, DOUBLE LAYER INTERNALLY – 120 MINUTES FIRE 120 minute Thruwall® System, for the tallest buildings and with improved sound insulation



- 1 External insulation:**
100mm rock mineral wool
(0.035 W/mK)
- 2 Sheathing:**
2x 12.5mm Weather Defence
- 3 Framing:**
EOS light steel in-fill framing
- 4 Cavity insulation:**
Full-fill rock or glass mineral wool
(0.035 W/mK)
- 5 Internal boards (inner):***
1x 15mm dB Board
- 6 Internal boards (outer):***
1x 15mm Fire Board (for standard applications)
System reference: ETW 134F
or, 1x 15mm Megadeco (for faster decoration and impact-resistance)
System reference: ETW 134M
or, 1x 15mm Aqua Board (for wet areas)
System reference: ETW 134A
or, 1x 15mm LaDura (for impact and durability)
System reference: ETW 134L

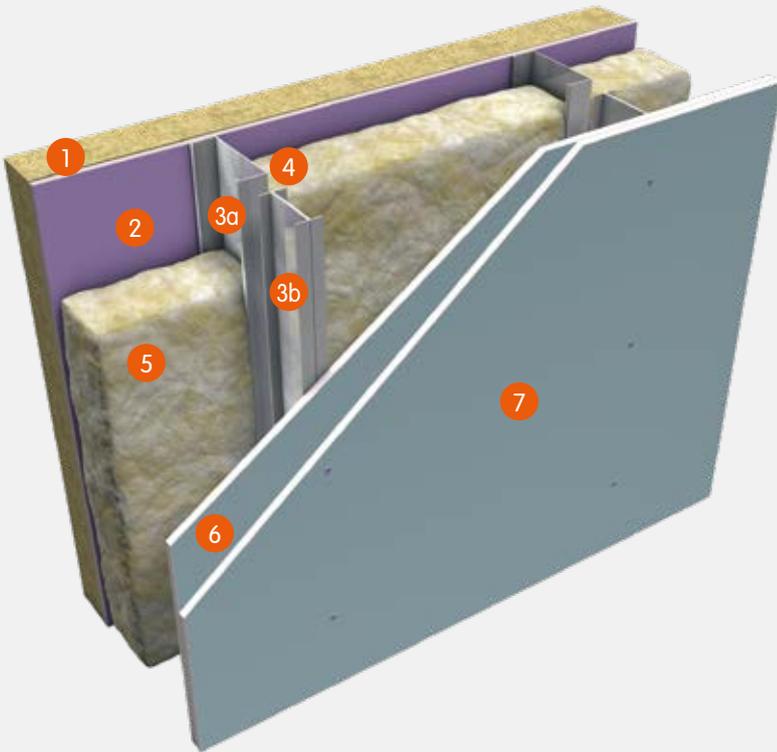
	Fire Resistance: to EN 1364-1 (non-loadbearing)	EI 120 mins (inside to out) EI 120 mins (outside to in)
	Reaction to Fire: to EN 13501-2	All components – at least A2 Limited Combustibility Weather Defence sheathing – A1 Non-Combustible Rock or glass mineral wool – A1 Non-Combustible
	Sound Insulation: to ISO 10140-2	50 R _w dB or 45 R _w + C _{tr} dB
	Height/strength: to EN 1993-1-1	Varies by wind and cladding loading, see page 19
	U-value: to BR443 and BRE465 (Excluding cladding and fixing correction)	Varies by framing specification, indicative values below: 0.20 W/m ² K Studs 100x1.2 @ 600mm centres 0.23 W/m ² K Studs 100x1.6 @ 300mm centres 0.17 W/m ² K Studs 150x1.2 @ 600mm centres 0.23 W/m ² K Studs 150x1.6 @ 300mm centres

*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

OUR THRUWALL® SYSTEMS

ETW 213: WEATHER DEFENCE SHEATHING, DOUBLE LAYER ON INTERNAL LINING – 60 MINUTES FIRE 60 minute Thruwall® solution for medium-rise construction



- 1 External insulation:**
100mm rock mineral wool
(0.035 W/mK)
- 2 Sheathing:**
1x 12.5mm Weather Defence
- 3 Framing:**
3a: EOS Light steel in-fill framing
3b: 70/90mm GTEC I-Stud Lining
- 4 Cavity:**
Varies (min. 10mm)
- 5 Cavity insulation:**
Partial or full-fill rock or glass mineral wool
(0.035 W/mK)
- 6 Internal boards (inner):***
1x 12.5mm dB board
- 7 Internal boards (outer):***
1x 12.5mm dB board
(for standard applications)
System reference: ETW 213D
or, 1x 12.5mm Megadeco (for faster
decoration and impact-resistance)
System reference: ETW 213M
or, 1x 12.5mm Aqua Board (for wet areas)
System reference: ETW 213A
or, 1x 12.5mm LaDura (for impact
and durability)
System reference: ETW 213L

	Fire Resistance: to EN 1364-1 (non-loadbearing)	EI 60 mins (inside to out) EI 60 mins (outside to in)
	Reaction to Fire: to EN 13501-2	All components – at least A2 Limited Combustibility Weather Defence sheathing – A1 Non-Combustible Rock or glass mineral wool – A1 Non-Combustible
	Sound Insulation:	59 R_w dB or 49 $R_w + C_{tr}$ dB
	Height/strength (SFS): to EN 1993-1-1	Varies by wind and cladding loading, see page 19
	Height (Internal Lining): to L/240	IS70/B: 4.5m IS90/B: 5.4m
	U-value: to BR443 and BRE465 (Excluding cladding and fixing correction)	Varies by framing specification, indicative values below: 0.20 W/m ² K Studs 100x1.2 @ 600mm centres + I-Stud lining @ 600mm centres 0.23 W/m ² K Studs 100x1.6 @ 300mm centres + I-Stud lining @ 600mm centres 0.17 W/m ² K Studs 150x1.2 @ 600mm centres + I-Stud lining @ 600mm centres 0.22 W/m ² K Studs 150x1.6 @ 300mm centres + I-Stud lining @ 600mm centres

*Laminated vapour control layers are available where required by condensation risk analysis.

Note: All system performances are indicative, based on typical conditions, generic insulation, and exclude cladding. Site, building, façade, insulation and cladding specific information must be determined for inclusion in final performance calculations.

OUR THRUWALL® SYSTEMS

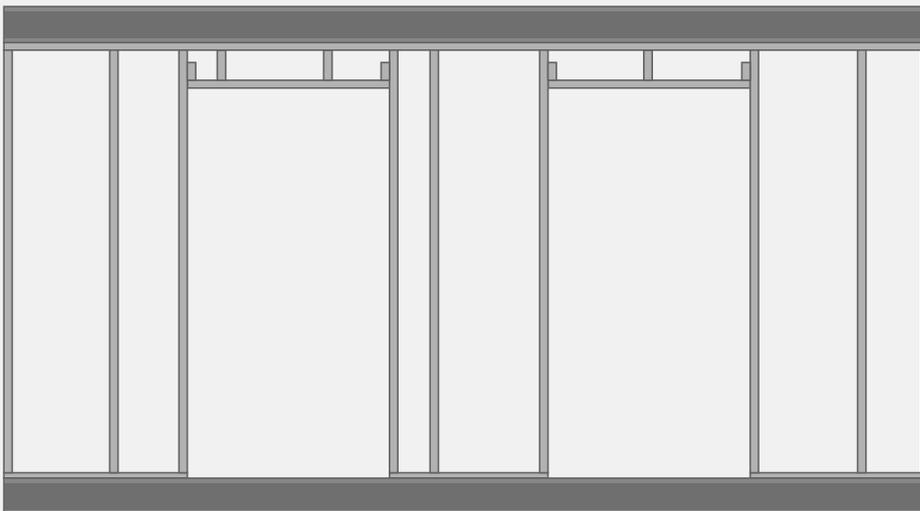
STRUCTURE: CUSTOM DESIGNED STEEL FRAMES

The Steel Frame System (SFS) selected for your project will depend on:

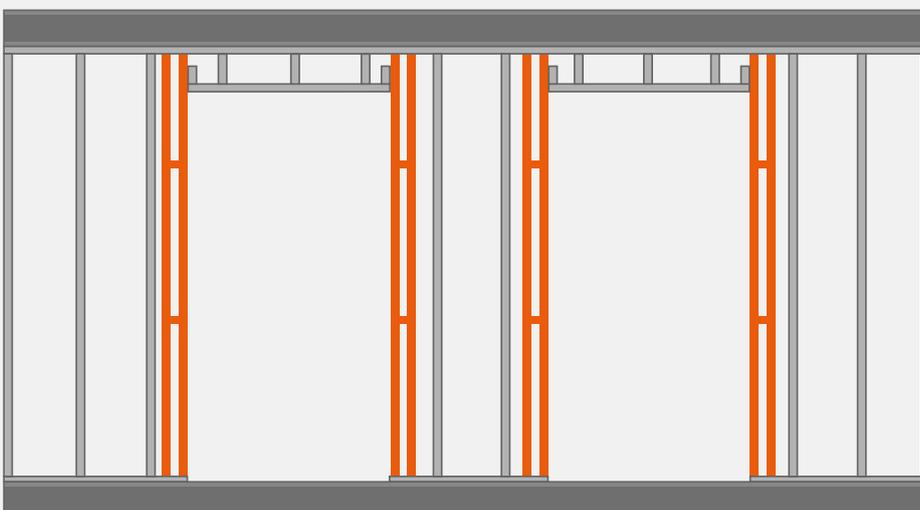
- The height of the in-fill wall.
- The wind load.
- The weight of the cladding.



WORKED EXAMPLE



Wind Pressure: **0.894 kN/m²**
 Wind Suction: **-1.137 kN/m²**
 General Stud: **SS 10012**
 (Single Stud 100mm x 1.2mm at 600mm centres)
 Jamb Stud: **SS 10012**
 (Single Stud Jamb 100mm x 1.2mm)



Wind Pressure: **1.000 kN/m²**
 Wind Suction: **-1.250 kN/m²**
 General Stud: **SS 10012**
 (Single Stud 100mm x 1.2mm at 400mm centres)
 Jamb Stud: **DS 10012**
 (Double Stud Jamb 100mm x 1.2mm)

Building Regulations and Performance Criteria



FIRE

Etex Building Performance Thruwall® Systems are designed to achieve the full range of fire resistance requirements needed by the UK multi-storey residential construction market. Building Regulations require fire resistance through the external wall depending on building height and boundary distance.

Where the boundary distance is sufficient, Building Regulations allows areas of the façade to be ‘unprotected’ and not requiring a level of fire resistance. This is principally to allow for windows and glazing which may never achieve the highest levels of resistance, but can also include the façade. To reduce the risk of fire spread via the façade we recommend exceeding Regulations and always using systems which perform in both directions thus minimising the amount of ‘unprotected’ area. By doing so the number of routes for fire spread through the façade are significantly reduced.

Etex Building Performance Thruwall® Systems are built using materials of non combustible and limited combustibility materials (Euroclass A1 or A2), the only sure means of achieving Building Regulations compliance without extensive testing. By sheathing the external wall with non and limited combustibility materials, no fuel would be added to a cladding fire, reducing the risk of spread. If the cladding selected for use with the Thruwall® is not entirely limited combustibility then specialist engineering advice and testing should be sought in determining performance to BS8414 and BR135.

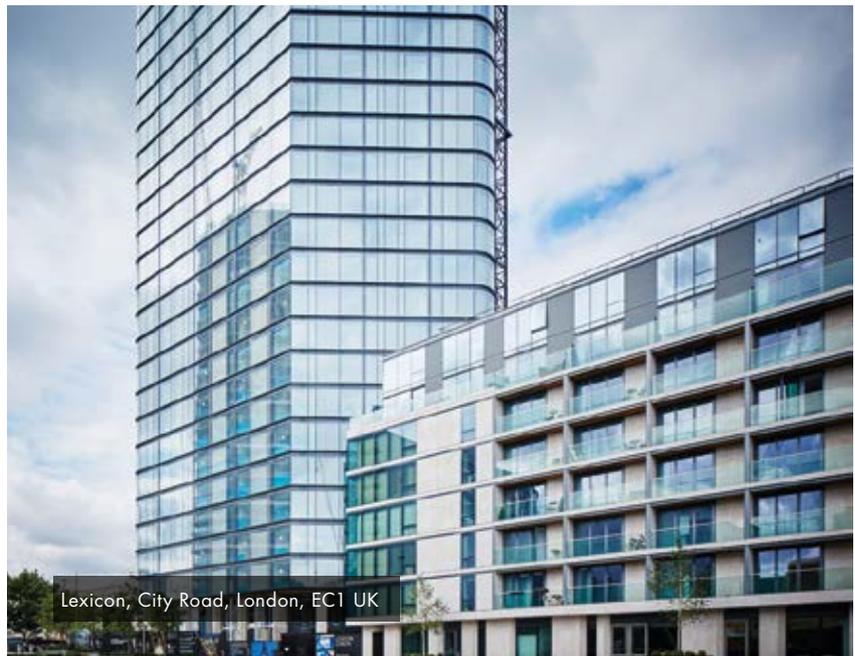
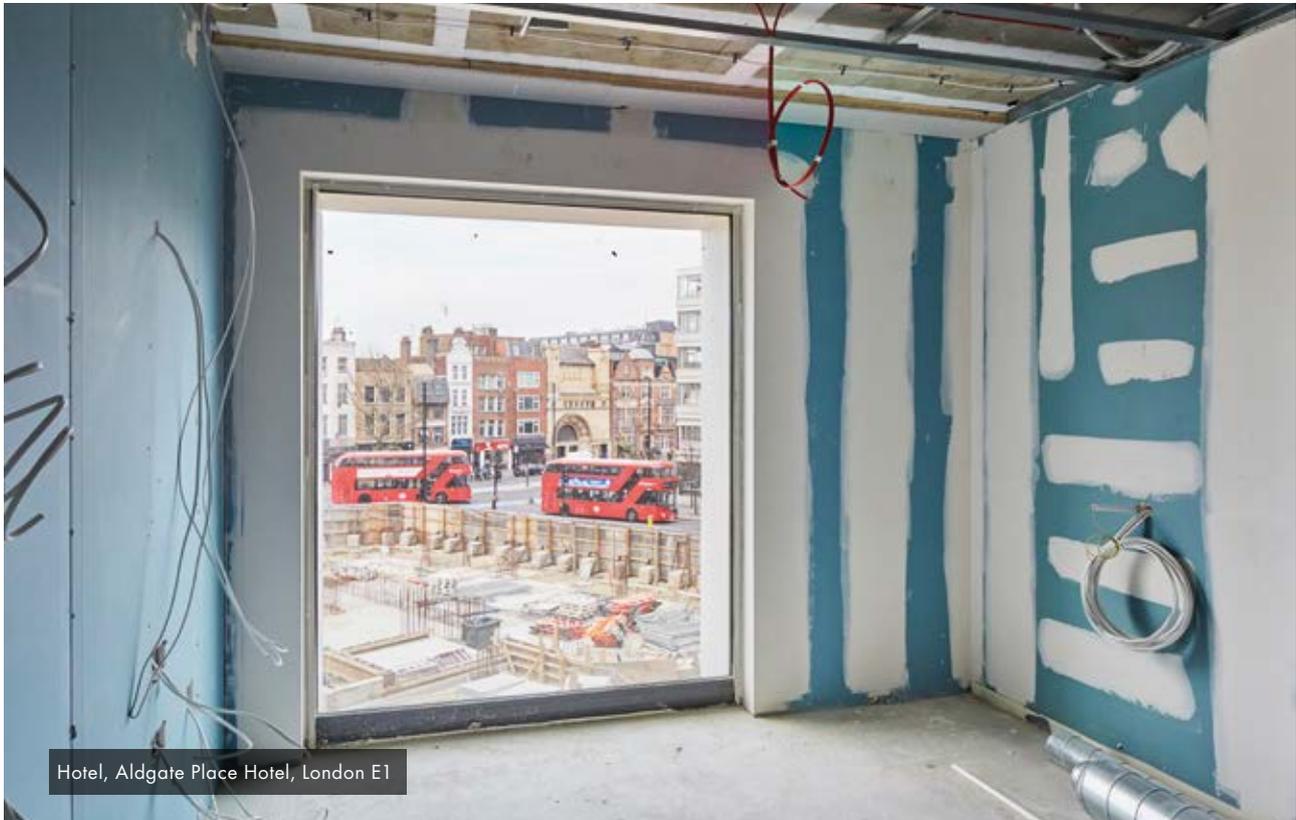


Table 1: Approved Document B2 requirements for new-build apartment buildings:

Height of top floor	<1m from boundary	≥1m from boundary (unless deemed unprotected)
≤ 18m	60 minutes integrity 60 minutes insulation In both directions	60 minutes integrity 15 minutes insulation Inside to out only
≤ 30m	90 minutes integrity 90 minutes insulation In both directions	90 minutes integrity 15 minutes insulation Inside to out only
> 30m (must also feature sprinklers)	120 minutes integrity 120 minutes insulation In both directions	120 minutes integrity 15 minutes insulation Inside to out only



Hotel, Aldgate Place Hotel, London E1



SOUND INSULATION

The sound insulation requirements for an external wall will depend on the external noise environment and the proximity and orientation of the façade to the noise source. Typical client or planning requirements are for apartments to meet the internal noise levels recommended by the World Health Organisation, as shown in BS8233.

A quiet location may require no special treatment to achieve internal levels, but a busy urban site will need detailed noise measurements and calculation by acousticians based on the site's noise spectrum to determine the wall performance needed.

Table 2: Indoor ambient noise levels for dwellings:

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $t_{Aeq,1\text{hour}}$	—
Dining	Dining room/area	40 dB $t_{Aeq,1\text{hour}}$	—
Sleeping (daytime resting)	Bedroom	35 dB $t_{Aeq,1\text{hour}}$	30 dB $t_{Aeq,8\text{hour}}$

Where a site is regularly subjected to traffic noise these calculations will show the external wall needs to provide sound insulation expressed in $R_w + C_{tr}$ dB to take into account the rumbling, low frequencies of a busy road. Depending on the site, the values required can range from 20-50 $R_w + C_{tr}$ dB, with lower values easily achieved and higher values needing additional boards and components.



STRUCTURE

Our Thruwall® In-fill Systems are non-loadbearing except to resist wind loads and support cladding. We have designed our systems to be responsive to the different cladding types that can be used and the variations in wind loads across the UK.

Wind loads will vary significantly from project to project, based on site conditions, location, exposure and height of the building, whilst cladding loads vary less dramatically but are also taken into account in our Eurocode calculations. Our framing solutions will vary depending on these changing loads, and increased wall heights will incur greater bending forces needing an increase in framework. More detail on how structural performance varies is found on page 19.



THERMAL

Improved thermal efficiency is key to major residential developments, both to meet Building Regulations or enhanced codes. However, thermal performance is heavily dependent on all of the components in the Thruwall® System. By sourcing the wall design from one supplier, we can optimise the design by considering all the performance requirements early in the design process.

Using external insulation is vital to improved thermal performance – our Thruwall® Systems recommend non-combustible insulation of at least 100mm depth applied externally. All Etex Thruwall® Systems improve upon the Building Regulations U-value backstop of 0.30 W/mK, and can

be designed to achieve U-values of 0.18 W/mK, or better, when needed for the most energy efficient projects. Finally, eliminating condensation risk is vital for an external wall, preventing mould or structural damage. We can calculate condensation risk and provide internal plasterboards with integrated vapour control layers to restrict the passage of moist, warm, internal air into the wall, and our breathable sheathing board, Weather Defence, allows vapour to escape externally.

Want to know more?

Our Architectural Specification Managers and Technical Services Teams are on hand to help you select the right Thruwall® solution for your project.

By contacting us during the design phase we can evaluate all of a project's technical requirements and influencing factors such as the building's location and orientation.

We will provide you with a custom designed Project Pack showing the details and performance of the Thruwall® System along with standard details for the SFS design.

Once the specification is secured we will proceed to provide you with a full detailed design including costing data.

As the installation phase commences, one of our site technicians can come to site to provide support and advice. When complete, the same technician will come to site in order to ensure compliance and issue the warranty.

To contact one of our specialists call us on **0800 145 6033** or e-mail **technical@etexbp.co.uk**



To see how Etex Building Performance can benefit your next project, call our Technical Services Team on 0800 145 6033

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