

Technical Information - Acoustic Properties

At a glance

- The Low Carbon Construction Building System panels will achieve sound reductions of Rw 44dB for their internal wall solutions when tested to BS EN ISO 10140-2: 2010. This far exceeds the minimum building regulations requirement of Rw 40 dB.
- Low Carbon Construction Building System panels will achieve sound reductions in excess of Rw 45dB for their party wall solutions when tested to BS EN ISO 10140-2: 2010. This exceeds the minimum building regulations requirement of Rw 45 dB.
- Ctr: a low frequency correction factor that can be applied to the DnT,w performance measured on site.
- All our developments PASS Airtight & Noisecheck Ltd's UKAS testing.
- Rw: a laboratory measurement of Airborne Sound Reduction.
- DnT,w: a site measurement of Standardised Weighted Level Difference.
- LnT,w: a site measurement of Standardised Weighted Sound Transmission (impact sound insulation performance).

More detail

Architectural acoustics is the science and engineering of achieving good sound within buildings and is a branch of acoustical engineering. Noise transmission from both the interior to exterior and exterior to interior of a building is measured and analysed, as controlling this allows a space to function.

With regard to external walls, there are no specific requirements for sound insulation or performance set out in the Building Regulations. The acoustic performance of an external wall is only typically considered when a significant external noise source, such as a railway line or airport, is present.

Where this is the case, the level of the most frequently occurring noise would dictate the ultimate performance of the external façade. In most cases, the window units and trickle vents are the dominant source of noise entrance into buildings.

For internal walls, the Building Regulations specify airborne sound insulation performance targets that vary depending on the area of the UK the site is located. The airborne sound insulation targets are expressed as Airborne Sound Reduction (Rw) and are based on laboratory test data.

Low Carbon Construction Building System panels will achieve sound reductions in excess of Rw 45dB for their party wall solutions when tested to BS EN ISO 10140-2: 2010 (field measurements of airborne sound insulation between rooms) on separating walls externally faced with 25x10mm timber battens, 1 layer of 12.5mm Gyproc Fireline board and one layer of 12.5mm Gyproc Wallboard.

A laboratory test on a single wall panel with 12.5mm Gyproc Wallboard on each face achieved a sound reduction of 40dB. Should the sound insulation performance need to be enhanced, multiple layers of acoustic rated plasterboard can be used, however an acoustic consultant would be needed to determine the specification for the performance requirements.

Party wall Building Regulations vary across the UK, but specify airborne sound insulation performance targets for separating/party/compartiment walls, expressed as Standardised Weighted Level Difference (DnT,w) and depending on local regulations may include a correction for low frequency performance (DnT,w + Ctr).

Building Regulations specify airborne sound insulation performance targets for intermediate floors, which vary depending on the location of the site. They are expressed as Airborne Sound Reduction (R_w) based on laboratory test data. The Building Regulations also specify airborne sound insulation and impact sound transmission performance targets for separating/party/compartment floors. These are expressed as Standardised Weighted Level Difference ($D_{nT,w}$) and depending on local regulations may include a correction for low frequency performance ($D_{nT,w} + C_{tr}$). The impact sound transmission performance targets are expressed as Standardised Weighted Impact Sound Pressure Level ($L_{nT,w}$).

There are no specific requirements for the sound insulation performance of roofs set out in the Building Regulations. This is usually only considered when a significant external noise source is present and as with similar lightweight structures, layers of plasterboard can help to reduce noise transmission to the rooms below.

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