

Case study

Stone wool insulation versus exposure to the elements

Beckley Point, Plymouth





The challenge

Standing at a lofty 23 stories, Beckley Point is renowned for being the tallest building in Plymouth.

The aim of the building is to provide state-of-the-art student residences for Plymouth's large student population. Located at the very heart of the city centre, a mere stone's throw from both the University of Plymouth and the Plymouth College of Art, Beckley Point student residence couldn't be more convenient for those attending either educational institution. All the colour and conveniences of the city are within strolling distance and the main train station is just a few hundred metres away.

Costing £30.79 million to construct, the 505-bed student residence was built for durability and to provide a comfortable indoor environment for the students. The project used ROCKWOOL RainScreen Duo Slab®, a stone wool insulation product specifically developed for use within ventilated cladding systems, as well as sealed systems such as curtain walling.

Not only does the insulation product offer thermal properties, RainScreen Duo Slab also has proven acoustic benefits helping to keep out the noise of the city and create an atmosphere more conducive to study.¹

Importantly, the insulation has a Euroclass A1 non-combustible reaction to fire rating, which is vital for the fire performance of the high-rise structure. Although RainScreen Duo Slab was specified from the outset, the tragic fire at Grenfell Tower in June 2017 led to a review of the planned outer cladding panels during the project at Beckley Point. While assessing how to proceed, the façade contractor went into liquidation, causing the construction to be delayed for almost a year.

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1. As demonstrated by independent in-situ laboratory testing, RainScreen Duo Slab helps to reduce the transfer of airborne noise - with results for typical systems as high as Rw 62 dB. Quiet Mark accredited. For more information please see the [Rainscreen Acoustic Reference Guide](#).



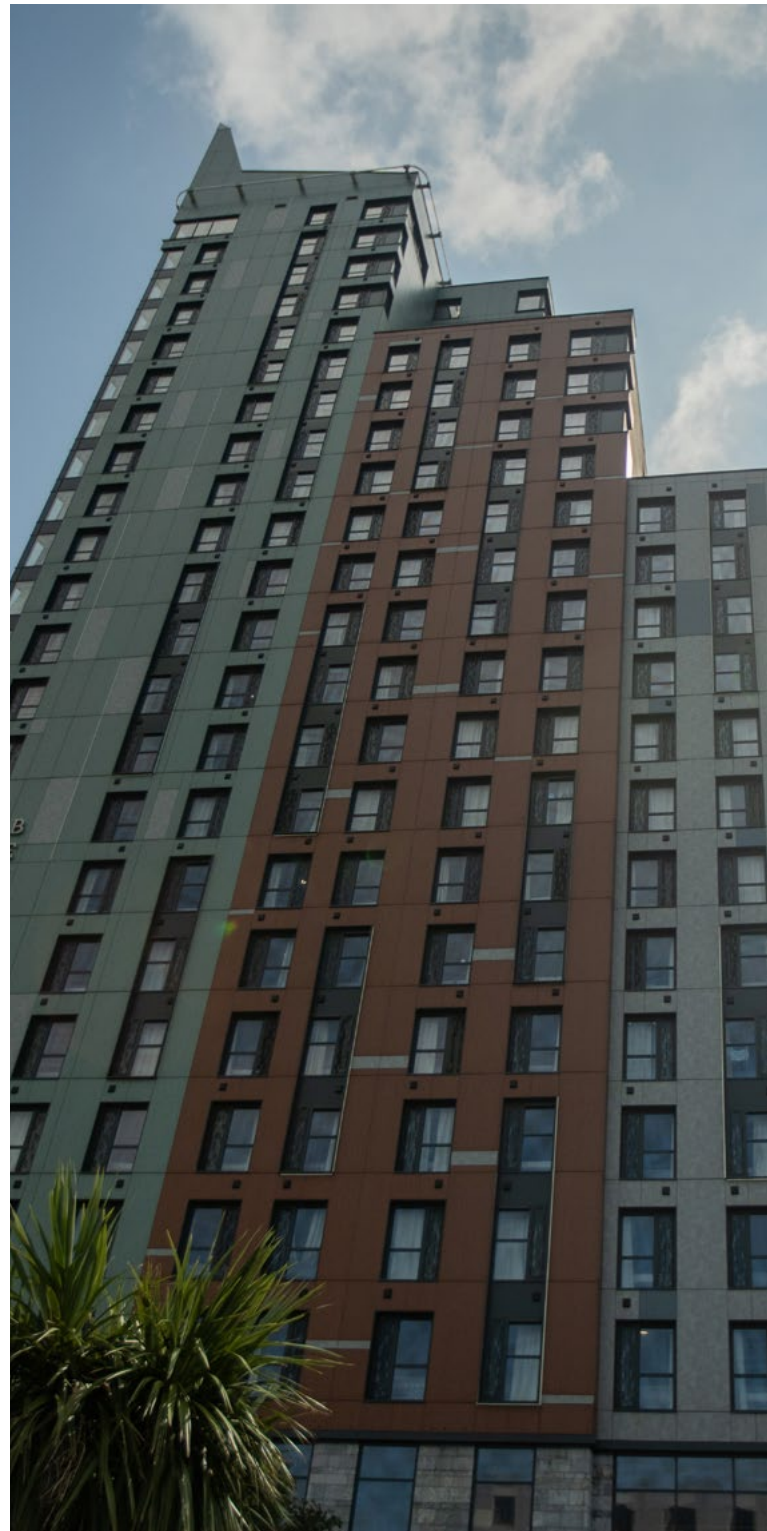
The solution

RainScreen Duo Slab had already been installed on most of the building's façade and as a result, was left exposed for almost a year.

However, the design and manufacture of RainScreen Duo Slab meant that the product could withstand the elements². RainScreen Duo Slab is manufactured with the factory-applied water-repelling agent to provide protection during installation. The product also uses Dual Density technology, meaning the outer surface of each RainScreen Duo Slab features a distinctly higher density than the underside. This provides a firm and robust surface for the application of fixings, while the resilient underside can accommodate unevenness in the substrate.

Once installed, the higher-density outer surface, in combination with the factory-applied water-repelling agent, improves resistance to rain ingress during construction.

The moisture-resistant properties of the stone wool insulation meant that once it was checked for physical damage, it could be covered with the selected cladding and perform just as it would have done without the delay and exposure.³ Students were even able to move in and occupy the building before the cladding was installed.



The result

While external factors made the construction project incredibly challenging with lengthy delays outside of anyone's control, the stability, strength and moisture resistance of stone wool insulation withstood an unplanned test against the elements.⁴

2. ROCKWOOL provides clear installation guidance for its insulation products, which includes that the product should not be left exposed. While this example demonstrates the inherent properties of stone wool to resist moisture, exposure is not recommended.

3. When it comes to handling moisture, stone wool insulation offers water repellent properties, keeping your home warm and dry without any reduction in thermal performance over time. Source: DTU Civil Engineering Prof. Carsten Rode, "Influence of moisture on performance of mineral wool insulation" (2018)

4. Ibid