

An aerial photograph of a large, modern industrial building with a flat roof. The building is light-colored with several windows and skylights. The roof is covered with various mechanical units and vents. The text "Safe. Strong. Sustainable." is overlaid on the upper part of the image.

Safe. Strong. Sustainable.

AQUAPANEL® Cement Board Rooftop

AQUAPANEL®: A new dawn in flat roofing

Knauf drylining solutions with AQUAPANEL® Technology Inside deliver a high-performance, sustainable and economical solution for interior and exterior construction.

As a business, we are committed to working in partnership with suppliers and customers to pioneer new and better solutions for interior and exterior walls, as well as ceilings and floors. AQUAPANEL® Cement Board Rooftop is the latest example of our innovation. Comprising a Portland cement core with lightweight aggregates, it is reinforced with a glass-fibre mesh on both sides to deliver exceptional strength and performance in roofing applications.

As part of Knauf, our solutions are known industry-wide for adding value at every stage. From granting greater design freedom for architects, to lighter and easier handling for installers, to faster build times and lower costs for all contractors – AQUAPANEL® is a proven partner for exceptional performance on every project.

Given our background in delivering robust, reliable cement board systems for industrial, commercial and residential construction, roofing is a natural extension of our capabilities and knowledge. That's why our latest product has been designed specifically to answer the key challenges of flat roofing: safety, strength and sustainability – all with the same 100% water resistance, creative flexibility and ease of installation as every other AQUAPANEL® cement board. The latest solution in global construction, AQUAPANEL® Cement Board Rooftop is a new dawn in flat roofing.





Contents

Market challenges	4
Key benefits	5
Flat roof constructions	6-8
Product overview	9
Compression-Deflection Test	10-11
Applications	12-14
Testimonial: Moy Materials	15

AQUAPANEL® Cement Board Rooftop

Market challenges

Solving the challenges of flat roofing...

Flat roofs make up a significant amount of the world's skylines. Whether industrial units, commercial venues or residential dwellings, these buildings all take a different approach when it comes to their roofs – and each faces unique challenges that AQUAPANEL® Cement Board Rooftop has been designed to address, by enhancing your roofing system with a range of benefits.

Roofs without ballast on the waterproofing layer are known as exposed roofs. These roofs commonly cover large spans of industrial and commercial buildings, with a steel deck as substrate, rather than a concrete deck. This makes for a more lightweight roof that's quicker and more cost-effective to install – but it does compromise on strength, safety and stability. Additionally, the membrane, whether bitumen, single-ply or liquid-applied, is subject to all weathers and conditions – which, altogether, raises a host of challenges.

Robustness

Robustness is a major challenge for flat roofing, and the strength of the roof system is a pressing concern. Strong wind and impact resistance are essential for any flat roof.

Fire protection

All aspects of a construction project are intensely scrutinised for fire protection. The roof is no different – and, given its position atop the building, fire resistance is an ever-present challenge.

Weather resistance

As the part of a building most exposed to the elements, the roof needs to be watertight and weatherproof – especially when it's a horizontal plane. The membrane must, therefore, be 100% waterproof and able to resist all weathers.

Lifetime costs

Cost versus quality, value and durability. This is the compromise that every contractor and customer needs to make for their roof. Ultimately, it all comes down to the total cost over the lifetime of the roof – and decisions need to be carefully weighed here.



AQUAPANEL® Cement Board Rooftop

Key benefits

...with a world of benefits

AQUAPANEL® Cement Board Rooftop is designed to tackle the challenges of flat roofing while adding value to the wider build. It's all through its unique construction, which works with a range of roofing systems to deliver strength, safety and sustainability for industrial, commercial and residential buildings alike.

AQUAPANEL® Cement Board Rooftop comprises two distinct boards: a lightweight 6mm cover board and a 12.5mm substrate board. These boards enhance the wider roofing system in a number of ways – all with the 100% water resistance that's the hallmark of the AQUAPANEL® range. It's a rewarding investment in the long-term future of your roof.



Extra structural strength

AQUAPANEL® Cement Board Rooftop adds strength to the roof and the wider building. So, whether you need to mount heat, ventilation and air-conditioning units (HVAC) or other equipment, or you need to retain access for workers, you can be assured of the strength, safety and stability of your roof.

Impact resistance

Your roof needs to cope with many impacts, from hailstones to footfall – even to heavy machinery. AQUAPANEL® Cement Board Rooftop is built to withstand it all, protecting both membrane and insulation. So, for everything from roof terraces to solar panels, rooftop pathways to heavy industrial equipment, you can trust it to perform, day in, day out.

Extended roof life

The strength and resistance of the boards will invariably result in a longer roof life – and a lower total cost of ownership. This means less maintenance or need for replacement, minimal problems over the system's lifetime, and a roof you can trust to last longer and cost less overall.

Weather resistance

Like all AQUAPANEL® Cement Board products, it is 100% water resistant, and mould and mildew resistant. Strong and robust, it's built to cope with whatever the weather can throw at it.

Fire protection

Non-combustible and protecting from sources of fire outside the building, the board is a strong, robust and reliable first line of defence.

Enhanced wind uplift performance

Provided by the whole roofing system, wind uplift performance is a vital factor in resistance – and the resilient cement board plays a crucial role here.

Separation layer

Providing a flat surface to install the membrane, and preventing blistering and compatibility issues between the membrane, adhesive and substrate, the board is designed for easy, problem-free installation.

Noise reduction

The thickness and construction of AQUAPANEL® Cement Board Rooftop provides an effective barrier against external or internal noise.

AQUAPANEL® Cement Board Rooftop

Flat roof constructions



Flat roof constructions

AQUAPANEL® Cement Board Rooftop is a premium solution for single-shell, unventilated roofs, where – above the steel or concrete deck – insulation is directly covered by the waterproofing layer. Towards the lower section of the roof, the insulation is protected by a vapour barrier against moisture diffusing through the ceiling of the building.

AQUAPANEL® Cement Board Rooftop can be installed as a cover board between the insulation and the waterproofing layer, or as a substrate board directly onto the steel deck. Each application can be used individually, or both can be combined in one roof construction – with either option bringing the benefits of AQUAPANEL® Cement Board Rooftop into your roof system.

When it comes to the materials used in the different layers of the roof construction, a multitude of options and combinations are available. The insulation, for example, typically comprises rock mineral wool, polyisocyanurate (PIR), or expanded or extruded

polystyrene (EPS or XPS). The waterproofing layer, meanwhile, is usually composed of either modified bitumen, or single-ply (e.g. PVC and TPO) or liquid-applied membranes – and each of these categories has multiple materials to choose from.

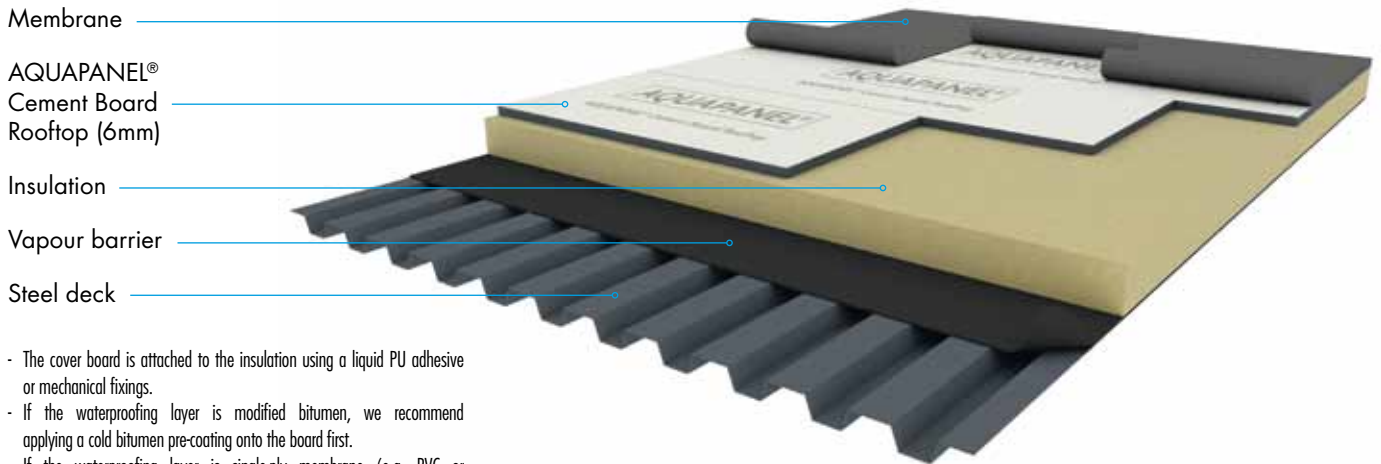
All of these layers, however, must be fixed. On exposed roofs, which are not ballasted by gravel, pavers or vegetation, this is normally done mechanically with fasteners, or the layers are fully or partially adhered. AQUAPANEL® Cement Board Rooftop is ideal for a variety of materials and attachment methods, making it a flexible solution for a wide range of roof systems.

Regardless of the type of materials or attachment methods, you can always simply lay AQUAPANEL® Cement Board Rooftop butt-jointed. As this eliminates the need for adhesive, joint filler or reinforcing tape, the result is a faster and easier installation.

AQUAPANEL® Cement Board Rooftop

AQUAPANEL® Cement Board Rooftop (6mm) – used as cover board

A cover board supports and reduces stress on the roof membrane and protects the insulation by dispersing point and area loads. It is the first defensive layer for fire outside the building and is 100% water resistant.



Membrane

AQUAPANEL®
Cement Board
Rooftop (6mm)

Insulation

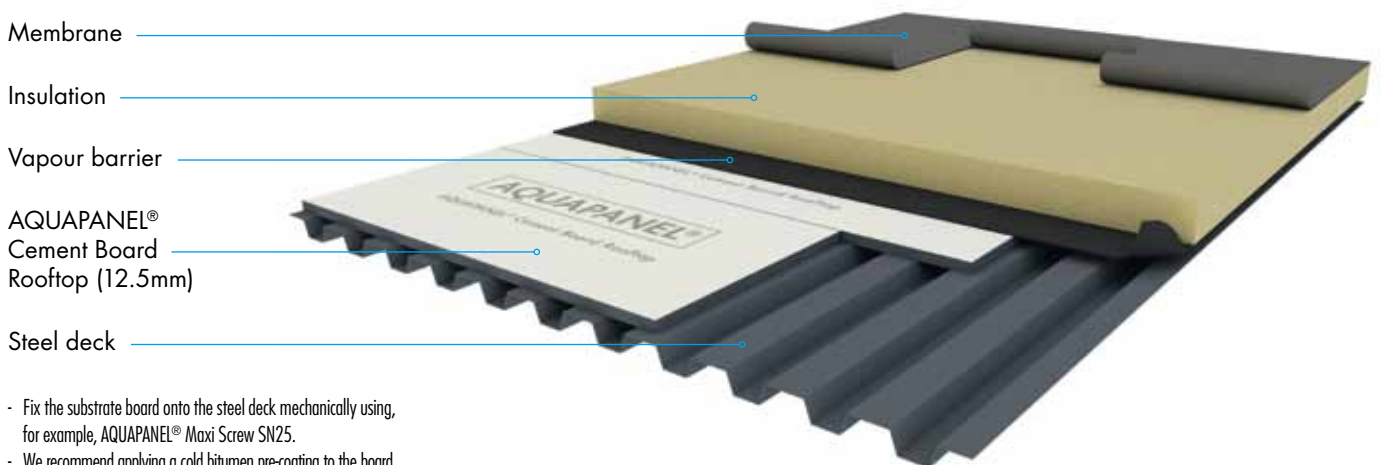
Vapour barrier

Steel deck

- The cover board is attached to the insulation using a liquid PU adhesive or mechanical fixings.
- If the waterproofing layer is modified bitumen, we recommend applying a cold bitumen pre-coating onto the board first.
- If the waterproofing layer is single-ply membrane (e.g. PVC or TPO), you should use either a mechanical fixing or a PU adhesive. For best results with adhesives, we recommend using with a fleece-backed membrane.

AQUAPANEL® Cement Board Rooftop (12.5mm) – used as substrate board

The substrate board mimics a concrete deck, providing a platform for roofers and a flat surface for adhering the vapour barrier. The installation of a substrate board results in advanced fire protection and noise reduction.



Membrane

Insulation

Vapour barrier

AQUAPANEL®
Cement Board
Rooftop (12.5mm)

Steel deck

- Fix the substrate board onto the steel deck mechanically using, for example, AQUAPANEL® Maxi Screw SN25.
- We recommend applying a cold bitumen pre-coating to the board.
- The bitumen vapour barrier is attached above the bitumen coating.

AQUAPANEL® Cement Board Rooftop

Flat roof constructions

AQUAPANEL® Cement Board Rooftop (6mm including insulation)

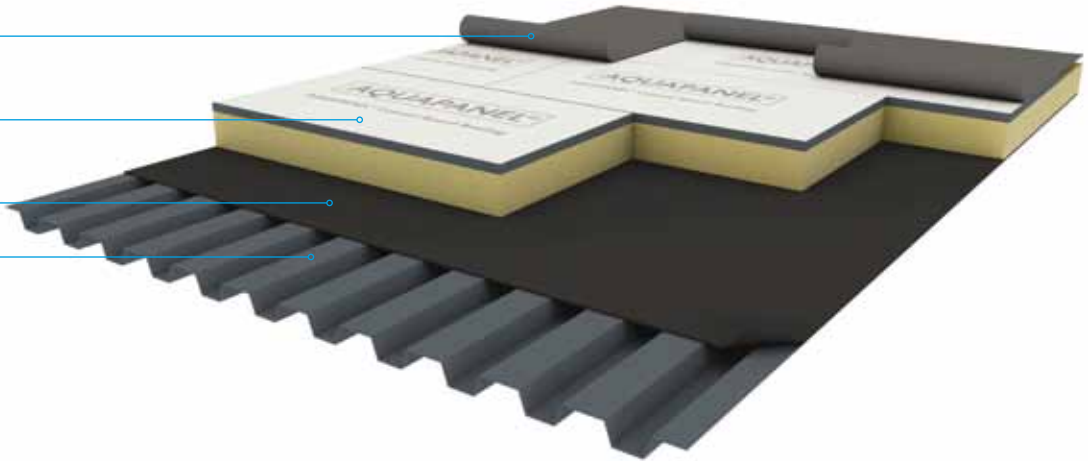
This cover board is a prefabricated composite board with rock mineral wool insulation, ensuring immediate protection during any installation.

Membrane

AQUAPANEL®
Cement Board Rooftop
(6mm including insulation)

Vapour barrier

Steel deck



AQUAPANEL® Cement Board Rooftop (6mm) – used in renovation

The list of main roof problems is long. Quite as long as the possible reasons for it. And as every flat roof has its lifetime, there is an ever existant need for refurbishment on the market. In some cases the existing roof construction does not need to be removed. Thus the insulation can be upgraded and the waterproofing can be renewed atop the existing roof construction together with a (re-)cover board.

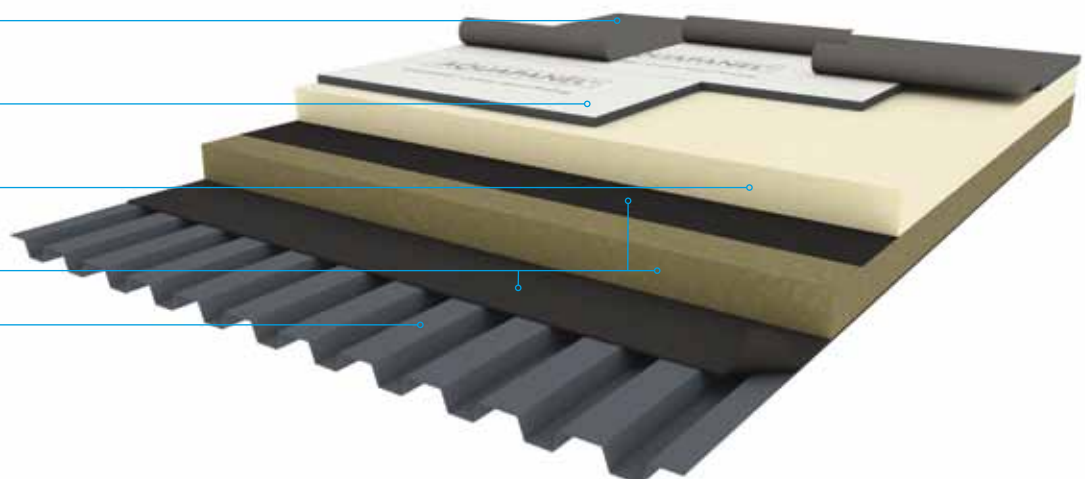
Membrane

AQUAPANEL®
Cement Board
Rooftop (6mm)

Insulation

Existing roof
construction

Steel deck



AQUAPANEL® Cement Board Rooftop

Product overview

AQUAPANEL® Cement Board Rooftop works as part of a broader roofing system; acting as the strength within the roof, its robustness, resistance and resilience are rooted in the product's configuration. To accommodate different applications within the roof construction, the board is available in two thicknesses: 6mm and 12.5mm. The 6mm board is used as a cover board, and the 12.5mm board is used as substrate board.

Product	AQUAPANEL® Cement Board Rooftop (6mm)	AQUAPANEL® Cement Board Rooftop (12.5mm)
Used as	Cover board	Substrate board
Thickness (mm)	6	12.5
Length (mm)	1200/2400	1200/2400
Width (mm)	900	900
Weight (kg/m ²)	Approx. 8.5	Approx. 16.5
Dry bulk density (kg/m ³) according to EN 12467	1250	1150
Bending strength (MPa) according to EN 12467	≥ 7	≥ 7
Thermal conductivity (W/mK) according to EN ISO 10456	0.34	0.35
Thermal expansion (10 ⁻⁶ K ⁻¹)	7	7
Water vapour diffusion coefficient μ (-) according to EN ISO 12572	48	66
Length variation 65%-85% humidity (mm/m) according to EN 318	0.38	0.23
pH value	12	12
Mould resistance	No growth (IBR certified)	No growth (IBR certified)
Building material class according to EN 13501	A1 non-combustible	A1 non-combustible

Composite board

A prefabricated 6mm cover board with an underlay of rock mineral wool from Knauf Insulation increases the load bearing capacity of the mineral wool. By effectively spreading the load across a wider area, this ensures immediate protection during installation. It also reduces effort and labour, as there is no need to fix the board to the insulation on site.



FM tests

AQUAPANEL® Cement Board Rooftop is tested by FM Approvals, a world-leading, third-party testing and certification service provider. As part of a flat roof assembly, AQUAPANEL® Cement Board Rooftop has so far passed ASTM E108 spread of flame test and negative uplift pressure test within the scope of FM Approvals Standard 4470.

Please be aware, tests involve different materials in specific combinations with AQUAPANEL® Cement Board Rooftop. To meet FM requirements with your system design, each component must be identical to the one in the test assemblies.

AQUAPANEL® Cement Board Rooftop

Compression-Deflection Test

Putting AQUAPANEL® strength to the test

All flat roofs are vulnerable to impact – whether it's caused by hailstones and falling objects or the presence of machinery and maintenance workers. The resulting damage can compromise system performance, which is where the unique qualities of AQUAPANEL® Cement Board Rooftop have an important role to play.

In addition to being 100% water resistant, AQUAPANEL® Cement Board Rooftop adds exceptional strength to roofs, allowing planners to optimise their systems and ensure total integrity throughout. To prove this, the strength and resistance of various roof assemblies have been tested for impact and load bearing – both with and without AQUAPANEL® Cement Board Rooftop (6mm) used as a cover board.

In order to get a comprehensive picture, the most common types of flat roof insulation material were tested, including rock mineral wool, polyisocyanurate (PIR), and expanded polystyrene (EPS).

Finally, as overall system performance is determined by all of the individual components working together, each insulation type was deployed on identical assemblies comprising a steel deck, vapour barrier and a two-layer bitumen waterproofing membrane.

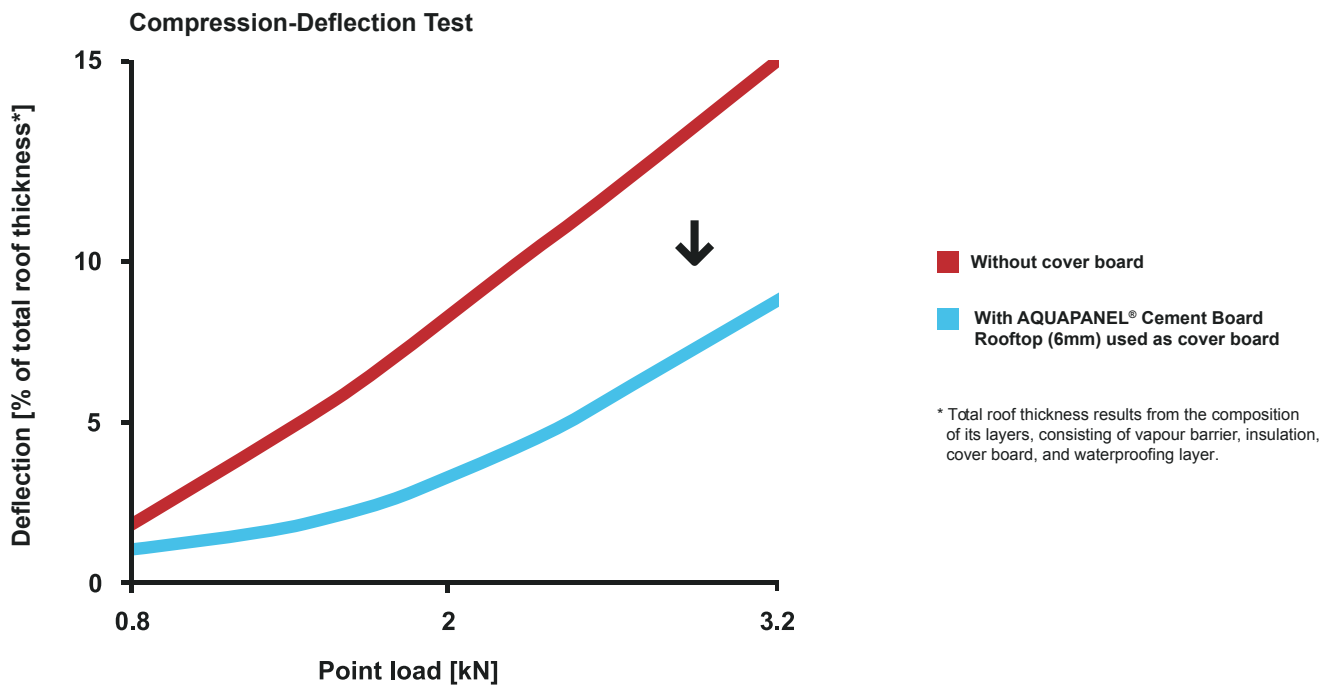


AQUAPANEL® Cement Board Rooftop

AQUAPANEL® Cement Board Rooftop adds strength and impact resistance

To test the strength of each assembly, a 4x4 pressure stamp was used to apply a load to a single point. Measured in kilonewtons (kN), this was steadily increased, while the amount of compression – or deflection – in the materials was quantified. Clearly, the greater the impact resistance, the lesser the deflection and the more robust the protection.

As the results clearly show, by using AQUAPANEL® Cement Board Rooftop as a cover board, the amount of deflection, and therefore potential damage, is significantly reduced, independent from the used insulation material. This doesn't just protect the membrane and the insulation: it protects the integrity of the whole system.



AQUAPANEL® Cement Board Rooftop improves all-round system capabilities

Load-bearing capacity and impact resistance are just two key terms to describe the performance of AQUAPANEL® Cement Board Rooftop. But this is far from the whole story. Additionally, it expands the capabilities of flat roof assemblies at various levels – including improvements to sound insulation and fire protection (depending on insulation material used) – whether it is used as a cover board, substrate board or in combination.

AQUAPANEL® Cement Board Rooftop Applications



Flexible applications

AQUAPANEL® Cement Board Rooftop is the perfect component for flat and low-slope roofing systems, enhancing them in a variety of ways, adding strength, safety and sustainability to the overall roof – and being flexible for use in a range of applications.

Accessible roofs

Whether safe access is needed for workers or building occupants, AQUAPANEL® Cement Board Rooftop's physical resistance and structural strength enhance the whole application.

Storage and equipment housing

In developments where the building footprint is restricted, the roof presents invaluable storage space for all kinds of equipment – including heat, ventilation and air-conditioning units (HVAC). AQUAPANEL® Cement Board Rooftop has the strength to support it all.

Green roofs

Flat roofs make ideal spaces for greenery and roof gardens – and AQUAPANEL® Cement Board Rooftop enhances their performance with 100% water resistance, as well as mould and mildew resistance, to keep nature in its place.

Net-zero energy buildings

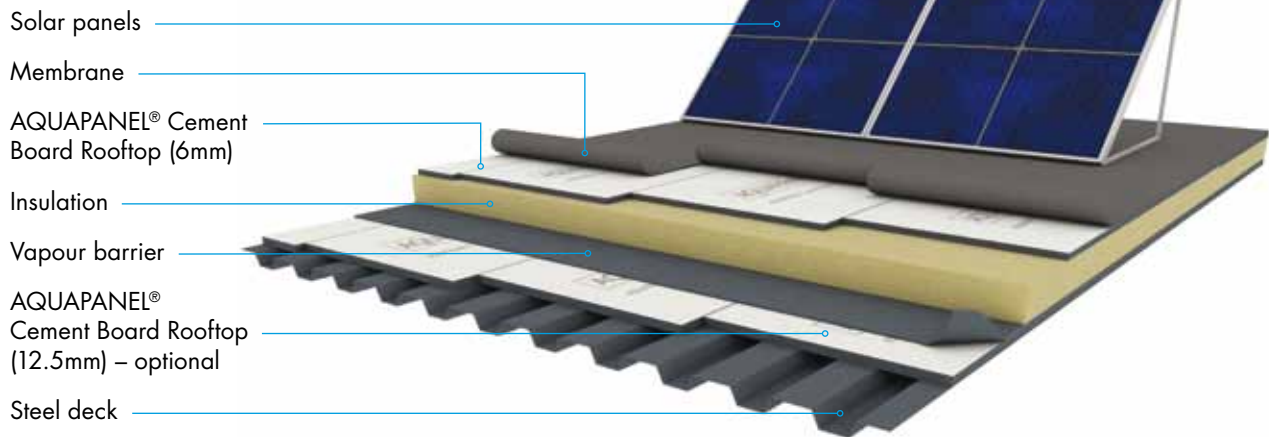
For completely sustainable, self-sufficient buildings, the roof provides essential space for solar panel installation – which is enabled by the strength and stability for housing equipment on the roof.

Roof terraces

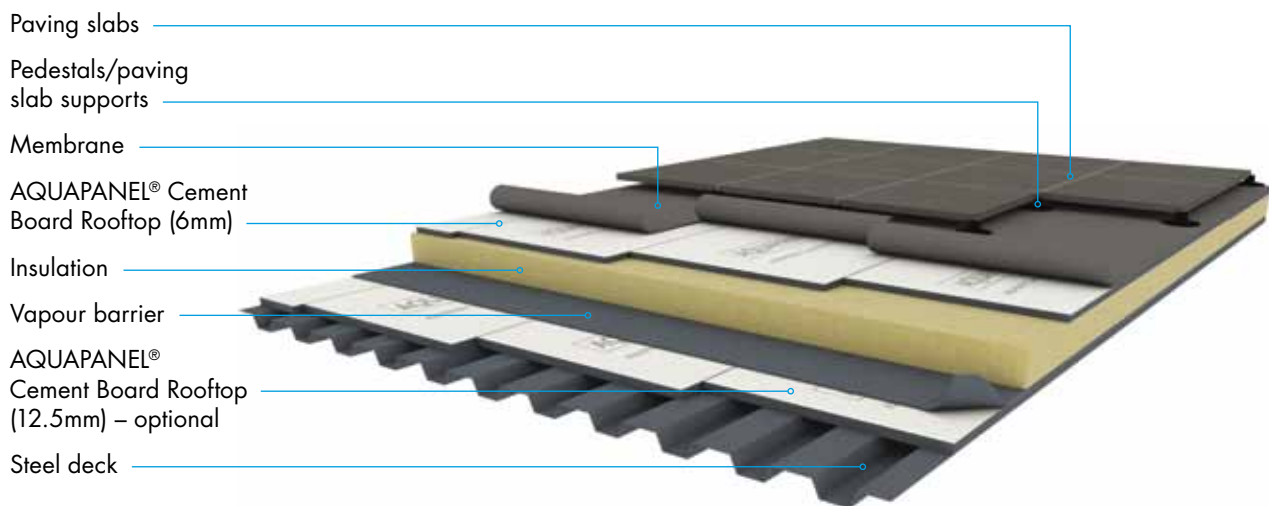
For rooftop recreation space with walkways and planting, AQUAPANEL® Cement Board Rooftop features high impact resistance for a safer, more stable space.

AQUAPANEL® Cement Board Rooftop

Solar panels and other heavy equipment

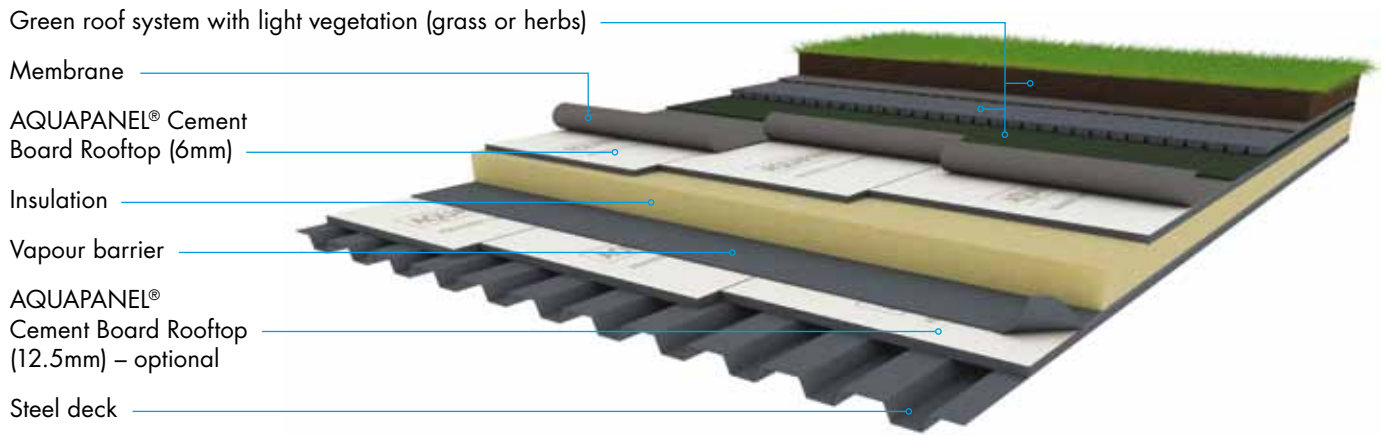


Roof terraces

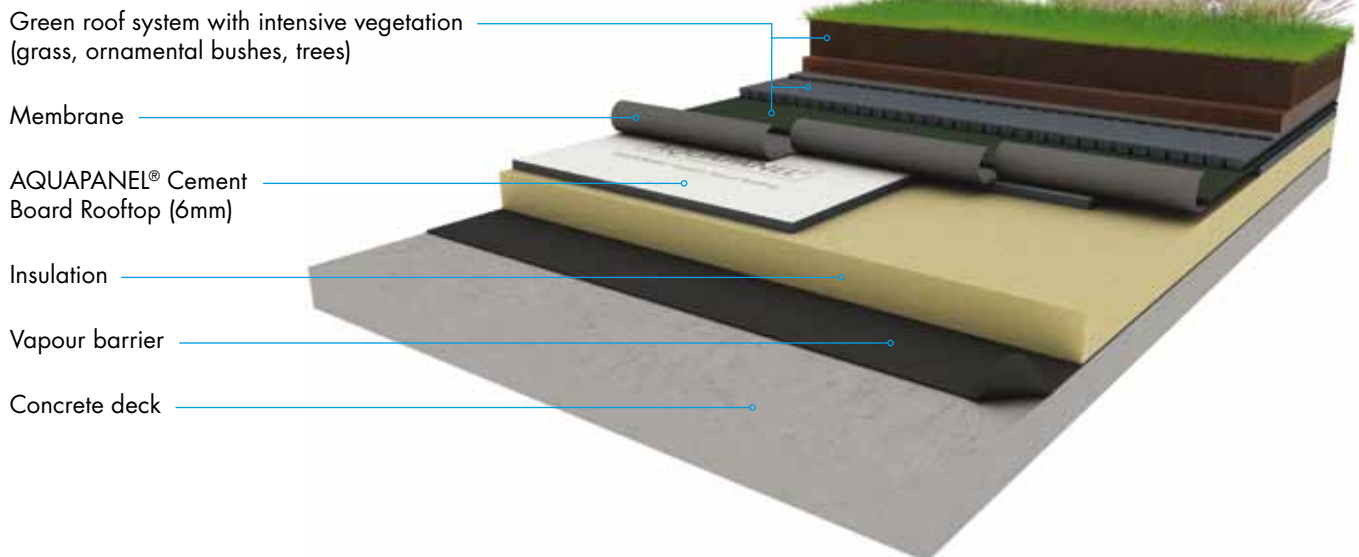


AQUAPANEL® Cement Board Rooftop Applications

Extensive green roofs



Intensive green roofs



AQUAPANEL® Cement Board Rooftop

Testimonial

Testimonial: Moy Materials

Founded in 1979, Moy Materials Ltd is one of the UK and Ireland's leading suppliers of high performance flat roof waterproofing systems for the roofing industry.

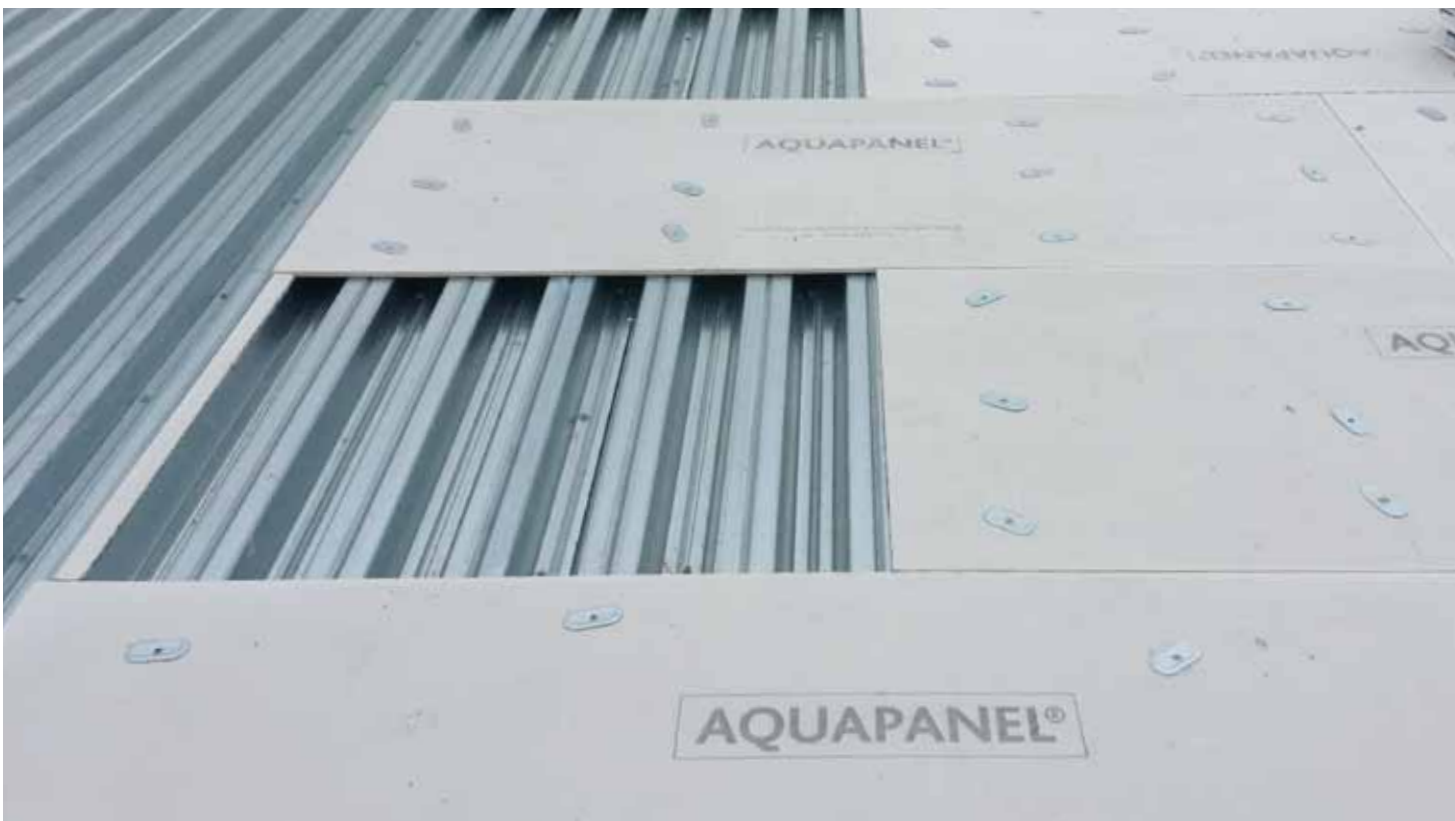
"In construction, things are always changing – especially when it comes to flat roofing, which increasingly needs to support heavy-duty machinery, solar panels, air conditioning units; all the things that are vital for buildings today.

As a systems supplier, we're always on the lookout for reliable, high-quality components and first-class service; for strong, resistant and stable products to answer this challenge – and AQUAPANEL® Cement Board Rooftop is our go-to component. We use it as both cover and substrate boards, depending on the requirements of our projects across the UK, Ireland and Europe, in everything from pharmaceutical facilities to data centres.

Fixing it mechanically to a steel deck gives us a lightweight structure that's as strong as a concrete deck. It gives our people a safe and stable working platform, as well as a secondary waterproofing line that speeds the roofing process through immediate weathertightness. The cover board also provides an extremely robust rain and moisture-resistant platform to support the membrane and protect the insulation – and it's all compatible with bitumen bonding.

Altogether, AQUAPANEL® Cement Board Rooftop is an indispensable part of our systems. It's a great solution, protecting high-value internal works while providing a durable, stable and – above all – safe roof that's built to last."

Cathal Quinn – Director, Moy Materials



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