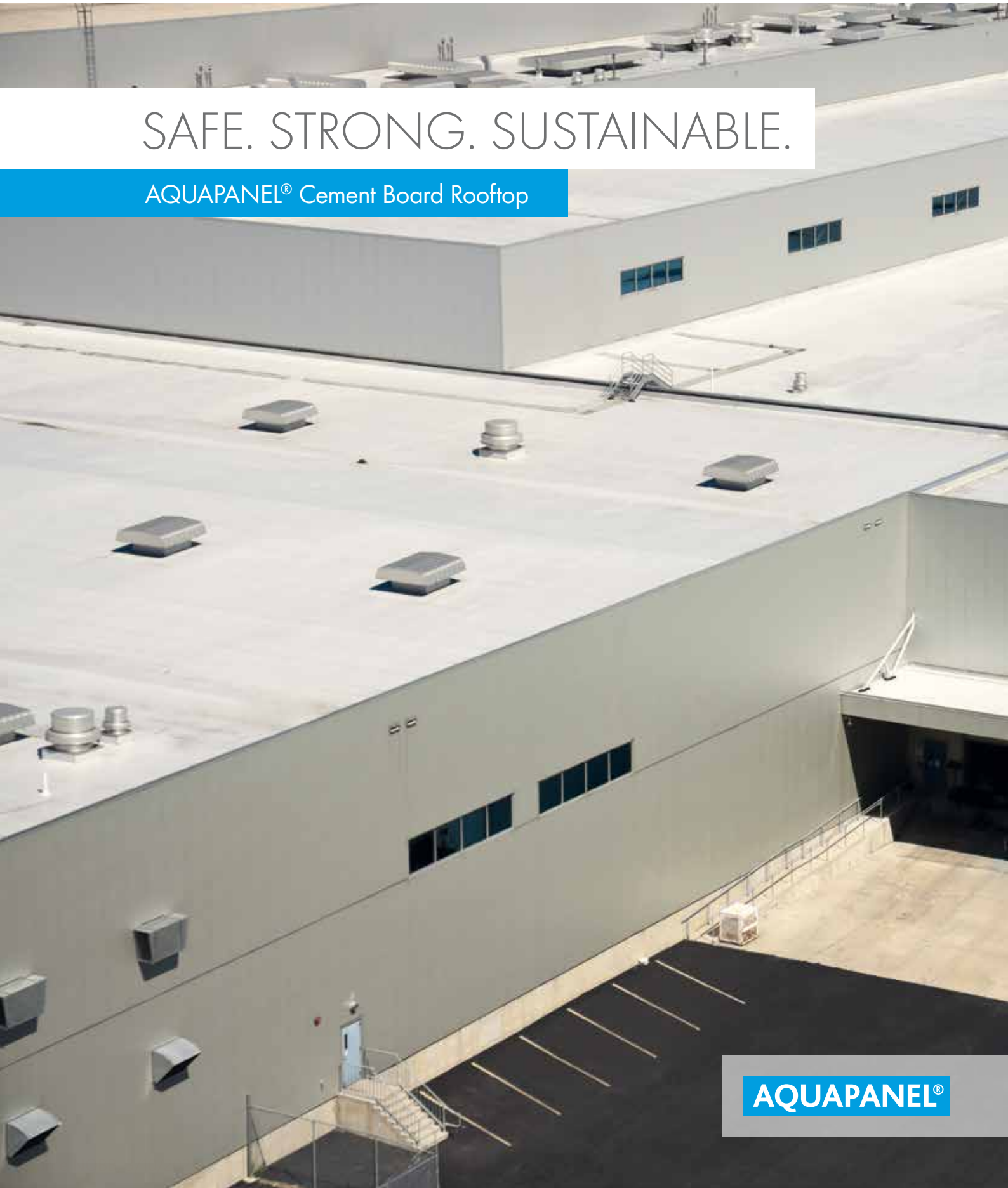
KNAUF

SAFE. STRONG. SUSTAINABLE.

AQUAPANEL® Cement Board Rooftop



AQUAPANEL®

AQUAPANEL® Cement Board Rooftop

A NEW DAWN IN FLAT ROOFING

Knauf drylining solutions with AQUAPANEL® Technology 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 a characteristic 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 this 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. Discover the features and advantages of AQUAPANEL® Cement Board Rooftop and find out which customer benefits our flat roofing solution holds for you.

CONTENTS

General demands for 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 requirements that AQUAPANEL® Cement Board Rooftop has been designed to address, by enhancing roofing systems with a range of benefits.

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.

Weather resistance

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

Fire protection

› Fire protection is a substantial planning factor in flat roofing. To counter fire hazards, roofs should be burdened with as little fire loads as necessary. Because in the case of fire the roof is empirically the most exposed building component to thermal stresses. And the higher the calorific value, the higher is also the heat generation in case of fire.

Lifetime costs

› Cost versus quality, value and durability. Ultimately, it all comes down to the total cost over the lifetime of the roof – and decisions need to be carefully weighed here.

TWO BOARDS - DIVERSE FUNCTIONALITIES

› AQUAPANEL® Cement Board Rooftop (6 mm) – 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.

AQUAPANEL® Cement Board Rooftop is a premium solution for single-shell, unventilated roofs, where normally insulation is directly covered by the waterproofing layer and towards the lower section of the roof, the insulation is protected by a vapour barrier against moisture diffusing through the ceiling of the building.

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.

› AQUAPANEL® Cement Board Rooftop (12.5 mm) – used as SUBSTRATE BOARD

The substrate board provides a platform for roofers and a flat surface for adhering the vapour barrier. The installation of a substrate board results, for instance, in a robust temporary waterproofing layer even before the insulation and the final waterproofing are mounted.

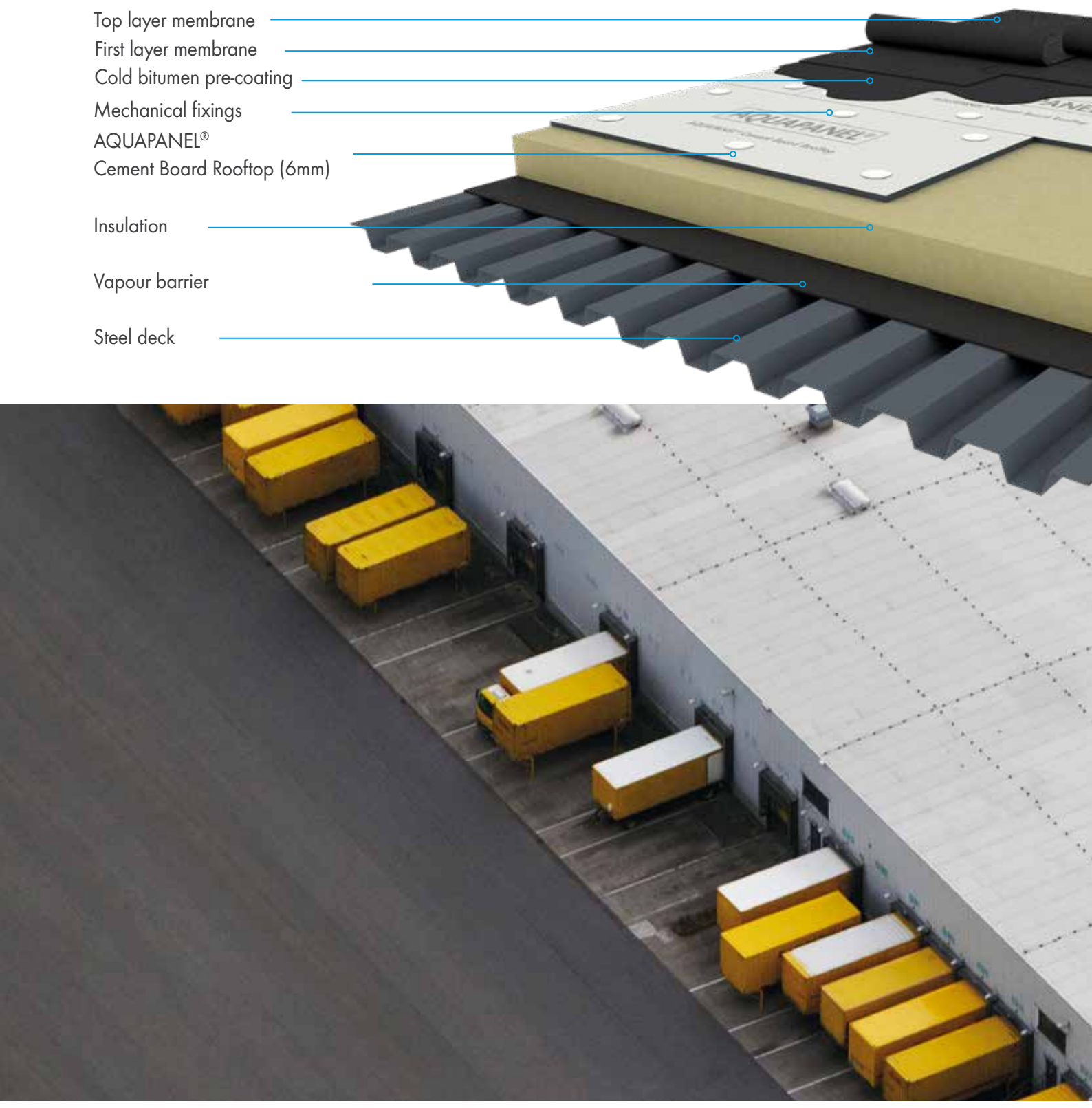
› AQUAPANEL® Cement Board Rooftop can be installed as a lightweight 6 mm cover board between the insulation and the waterproofing layer, or as a 12.5 mm substrate board directly onto the steel deck. Each application can be used individually, or both can be combined in one roof construction – with either 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 polystyrene (EPS). 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 versatile 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 joint adhesive, joint filler or reinforcing tape, known from drylining and facade applications, the result is a faster and easier installation.

THE COVER BOARD
BENEFITS



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), solar panels, exterior cleaning cages or other equipment, or you need to retain access for workers, you can be assured of the strength, safety and stability of your roof.

Protection against fire (flying sparks) from outside the building

› Non-combustible (building material class: A1) and protecting from sources of fire outside the building, the cover board is a strong, robust and reliable first line of defence. Additionally it allows the use of components such as fire-resistant mineral wool, which substantially reduces the fire load of the whole system.

Impact resistance

› Your roof needs to cope with many impacts, from hailstones to footfall – even to heavy machinery stressing the roof surface with high point loads. Therefore the roof needs a high load-bearing capacity in particular for heavy concentrated loads - especially when less pressure-resistant insulations are applied. AQUAPANEL® Cement Board Rooftop is built to withstand it all, protecting both membrane and insulation.

Extended roof life

› The strength and resistance of the cover board will invariably result in a longer roof life – and a lower total cost of ownership. No matter of the final design of the roof, whether it is a roof terrace, a green roof, or just rooftop pathways, you can trust it to perform, day in, day out. 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.

Enhanced wind uplift performance

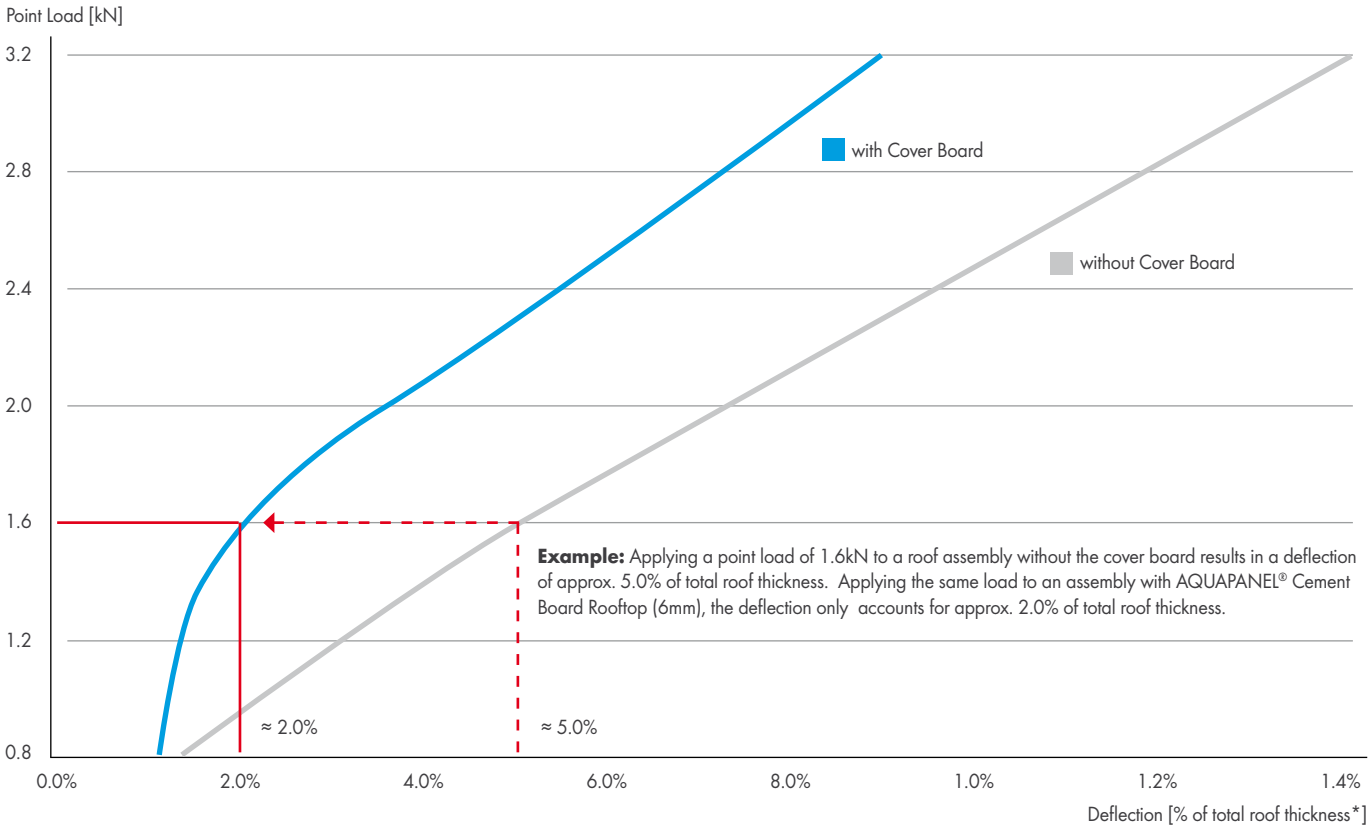
› Provided by the whole roofing system, wind uplift performance is a vital factor in resistance – and the resilient cover board plays a crucial role here.

Separation layer

› AQUAPANEL® Cement Board Rooftop serves as a separation layer, preventing blistering and compatibility issues between the membrane, adhesive and substrate.

THE COVER BOARD

POINT LOAD TESTS



AQUAPANEL® Cement Board Rooftop adds strength and impact resistance

All flat roofs are exposed to impact – whether it's caused by hailstones and falling objects or the presence of machinery and maintenance workers. These stresses 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 (see diagram above).

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).

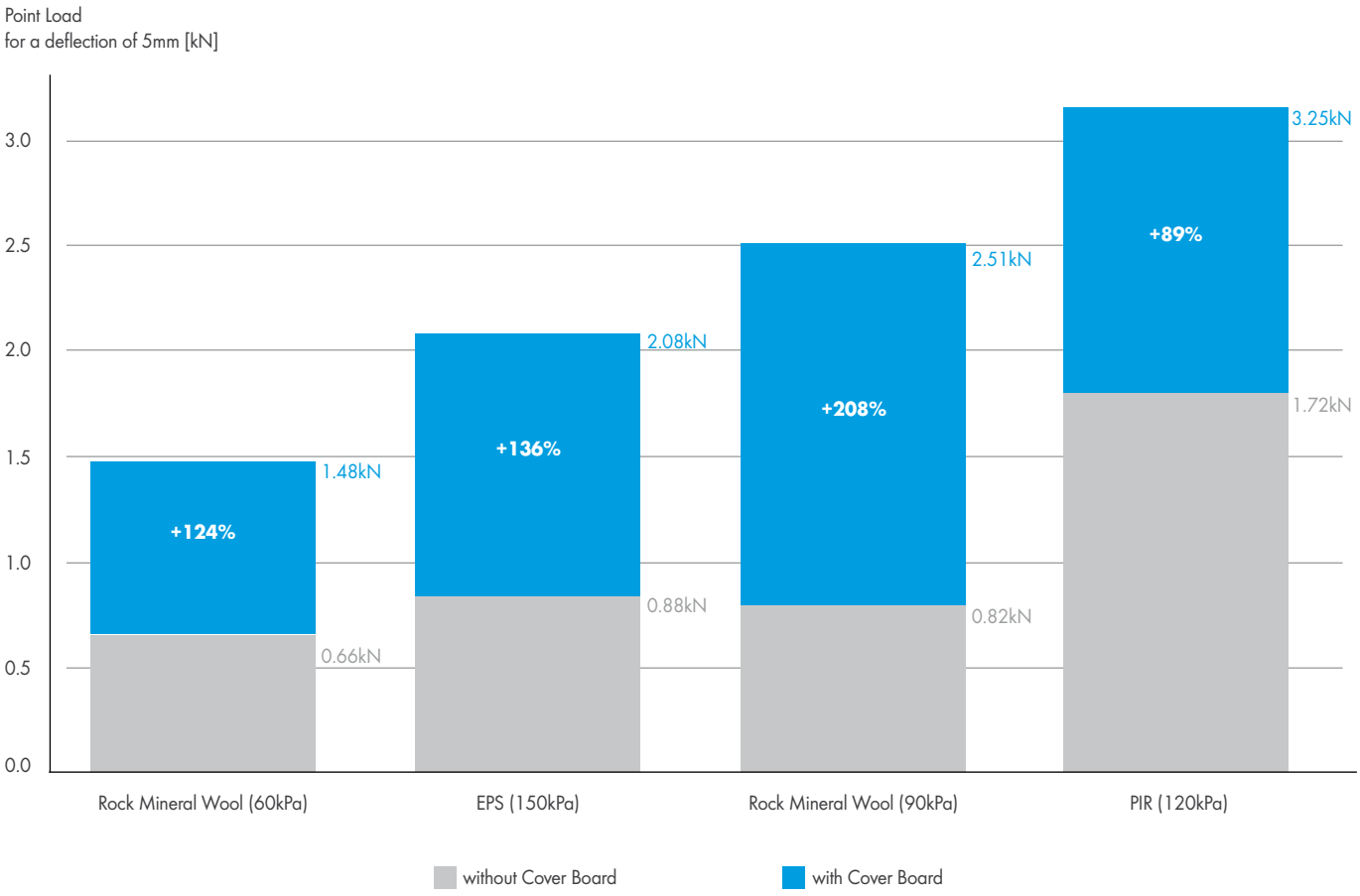
Finally, as overall system performance is determined by all of the individual components working together, each insulation type was deployed on identical assemblies comprising a steel deck, vapour barrier and a two-layer bitumen waterproofing membrane.

To test the strength of each assembly, a cylinder (Ø 79.8mm according to EN 12430) was used to apply a load to a single point. Measured in kilonewtons (kN), this load was steadily increased, while the amount of compression – or deflection – in the materials was quantified in percent of total roof thickness.*

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 the risk of 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.

** Total roof thickness results from the composition of its layers, consisting of vapour barrier, insulation, cover board, and waterproofing layer.*

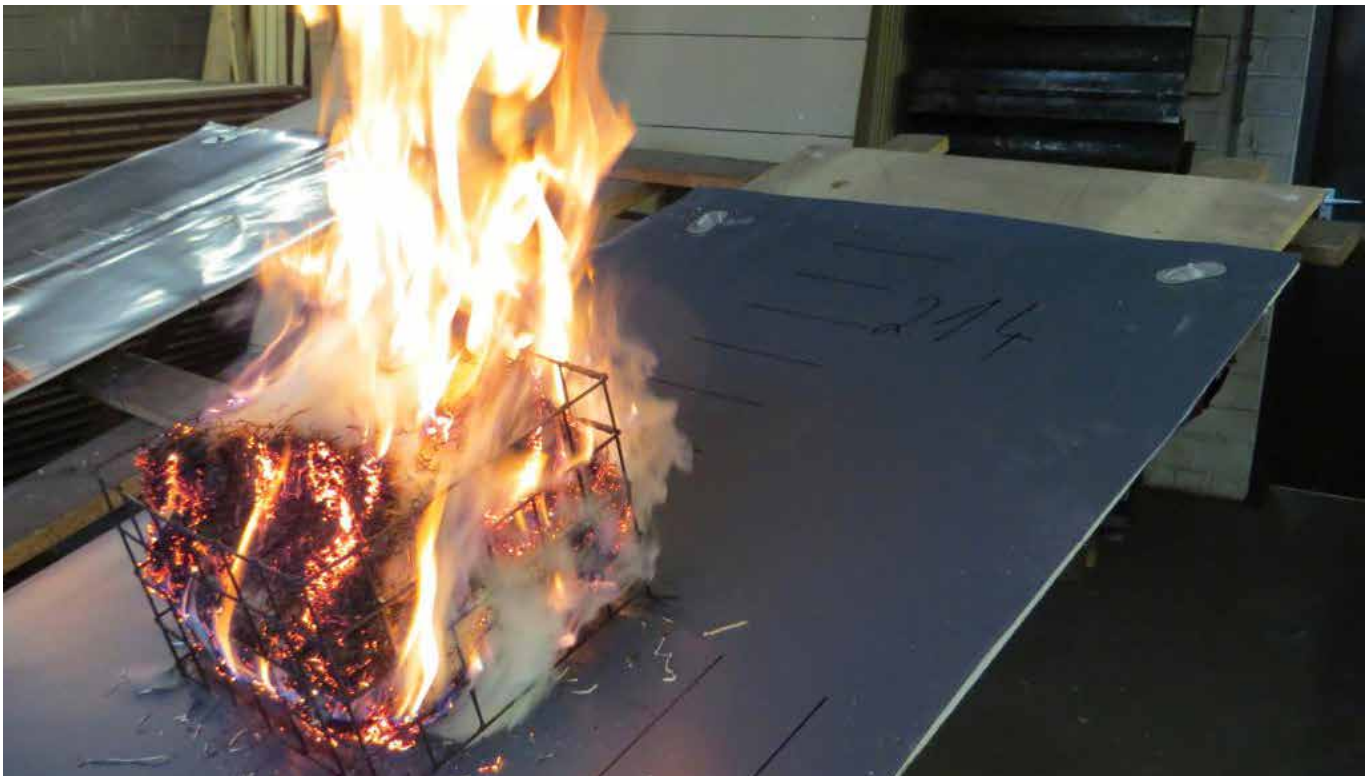


To classify the effects, which AQUAPANEL® Cement Board Rooftop (6mm) has on different insulation types, more accurately, this investigation was repeated with test samples, only consisting of insulation with and without the cover board on top (see diagram above). For every test setup, the point load for a given deflection of 5mm was measured (according to standard EN 12430).

The results show that AQUAPANEL® Cement Board Rooftop substantially increases the bearable point loads of every tested insulation type – in case of rock mineral wool (90kPa) with a thickness of 120mm by 208%. And in combination with PIR (120kPa), AQUAPANEL® Cement Board Rooftop even withstands forces up to 3.25kN.

And what's more, the use of AQUAPANEL® Cement Board Rooftop as a cover board also means that planners are capable to exploit the advantages of an insulation type – in case of rock mineral wool for example superior fire and acoustic performance – without being forced to compromise on point load resistance. For instance rock mineral wool (60kPa) covered by AQUAPANEL® Cement Board Rooftop (6mm) reaches 180% of the point load of EPS (150kPa) at a deflection of 5mm, when it has no cover board on top.

In summary, AQUAPANEL® Cement Board Rooftop considerably increases system options and adds strength and impact resistance to your flat roof, whatever the application.



THE COVER BOARD

FIRE PROTECTION

Constructive fire protection is an essential planning factor for flat roofs. To counter risks of fire, fire loads for roofs should be kept at the lowest possible level. That is because in the case of fire, roofs have shown to be the building component with the heaviest thermal stress. And the higher the energy content is, the higher the heat generation in the case of fire will be. AQUAPANEL® Cement Board Rooftop's classification as building class A1 (non-combustible) due to its fire behaviour clarifies that its use comprises no addition to the roof construction's fire load. On the contrary, depending on the requirements, the use of AQUAPANEL® Cement Board Rooftop will even reduce the fire load of the roof construction, as it enables the installation of fire resistant or non-combustible components. Using AQUAPANEL® Cement Board Rooftop 6 mm as a cover board will have a load-distributing effect and therefore positively affect the load-bearing capacity of non-combustible insulation materials (i.e. mineral wool) in flat roofs with high pressure loads.

When more pressure-resistant but combustible insulation materials are used, the installation of AQUAPANEL® Cement Board Rooftop 6 mm between the waterproofing and thermal insulation layer has another positive effect. The boards form a constructive separation between waterproofing and thermal insulation. This is an important factor according to valid standards, which demand so-called "hard roofing" for new buildings as well as for renovations. In the testing method B_{Roof}(t1) according to DIN CEN1187 the spreading of fires on roof surfaces, the spreading within roof constructions, the penetration of roofs by fire and the occurrence of burning droplets or burning parts from roofs' undersides or surfaces are assessed. Flat roof systems with AQUAPANEL® Cement Board Rooftop 6 mm as cover boards under elastomere- and polymere-modified bitumen membranes (e.g. Bauder PYE G 200 S4 as base layer and Bauder PYE PV 200 S5 EN as top layer), which were put to this test, furnished proof of a "hard roofing" even when combustible insulation materials will be installed underneath. AQUAPANEL® Cement Board Rooftop thereby effectively contributes to the fire protection of a wide range of flat roof systems.

THE COVER BOARD

WIND UPLIFT PERFORMANCE

Every roof is affected by wind forces resulting from such factors as wind speed or main weather direction as well as roof characteristics such as height, shape and dimensions. These wind loads cause pressure and suction forces that occur perpendicular to the roof surface. On flat roofs there is usually much higher wind suction than pressure, so the entire flat roof structure has to be secured against lifting.

Securing the position of waterproofing membranes and subjacent layers plays an important role when it comes to the service life of flat roof constructions. For every project, the desired measure must therefore be specified by the planner. In principle, there are three ways for securing a flat roof construction: ballast, mechanical attachment, and bonding. Especially in construction of large-scale industrial buildings, mechanical fastening prevailed as economical method to secure the roof layers against wind-uplift.

For static reasons, an attachment without additional loads is required especially for lightweight roof constructions.

In order to investigate the influence of a cover board on the performance of a flat roof construction with mechanical fastening, a test series based on ETA Guideline 006 was carried out at the Institute of Industrial Aerodynamics GmbH (I.F.I.) of the University of Applied Sciences Aachen, Germany. The tested flat roof system included the following elements (from top to bottom):

- Two-layered bitumen waterproofing system (self-adhesive base layer, torched-on top layer)
- Cold bituminous primer
- AQUAPANEL® Cement Board Rooftop 6mm used as cover board
- Insulation (Knauf Insulation DDP2-U Plus, thickness: 100mm)
- Trapezoidal steel deck

The cover board was fixed with 6 mechanical fasteners (type: ZKSK) from Harald Zahn GmbH. This corresponds to a number of only 3.3 fasteners per m^2. The 6 m x 1.5 m wide test specimen was exposed to wind uplift forces in several load cycles and withstood loads of up to 2500 N per fastener. This is 1.39 times the wind load that comparable roof constructions can withstand without the AQUAPANEL® Cement Board Rooftop 6mm. Even higher loads are conceivable, if the number of fasteners per m^2 or the board thickness is increased.

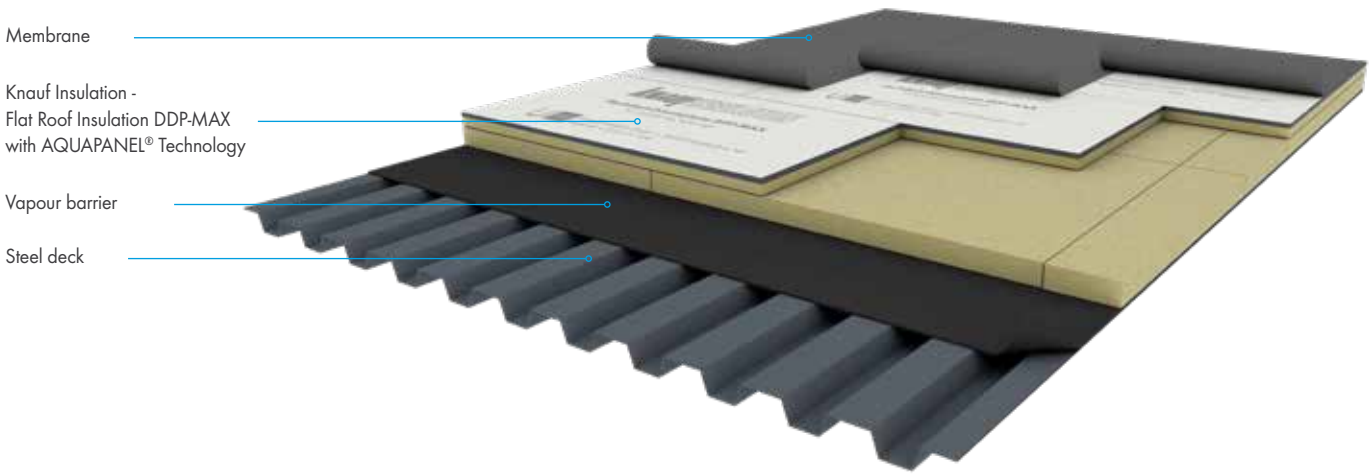
THE COVER BOARD

COMPOSITE BOARD (DDP-MAX)

A prefabricated 6 mm 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.

› Knauf Insulation - Flat Roof Insulation DDP-MAX with AQUAPANEL® Technology

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

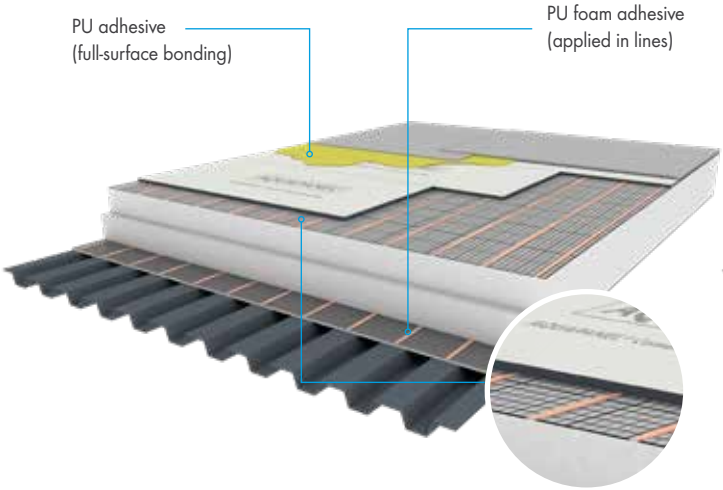


THE COVER BOARD

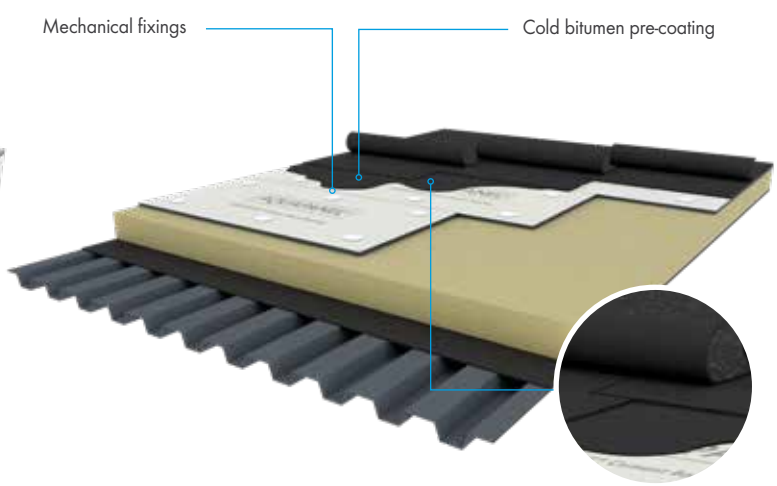
INSTALLATION

› The cover board is attached to the insulation using a PU foam or mechanical fixings.
› If the waterproofing layer is modified bitumen, we recommend applying a cold bitumen pre-coating onto the board first.

SINGLE-PLY MEMBRANE



MODIFIED BITUMEN



THE COVER BOARD

PHYSICAL PROPERTIES

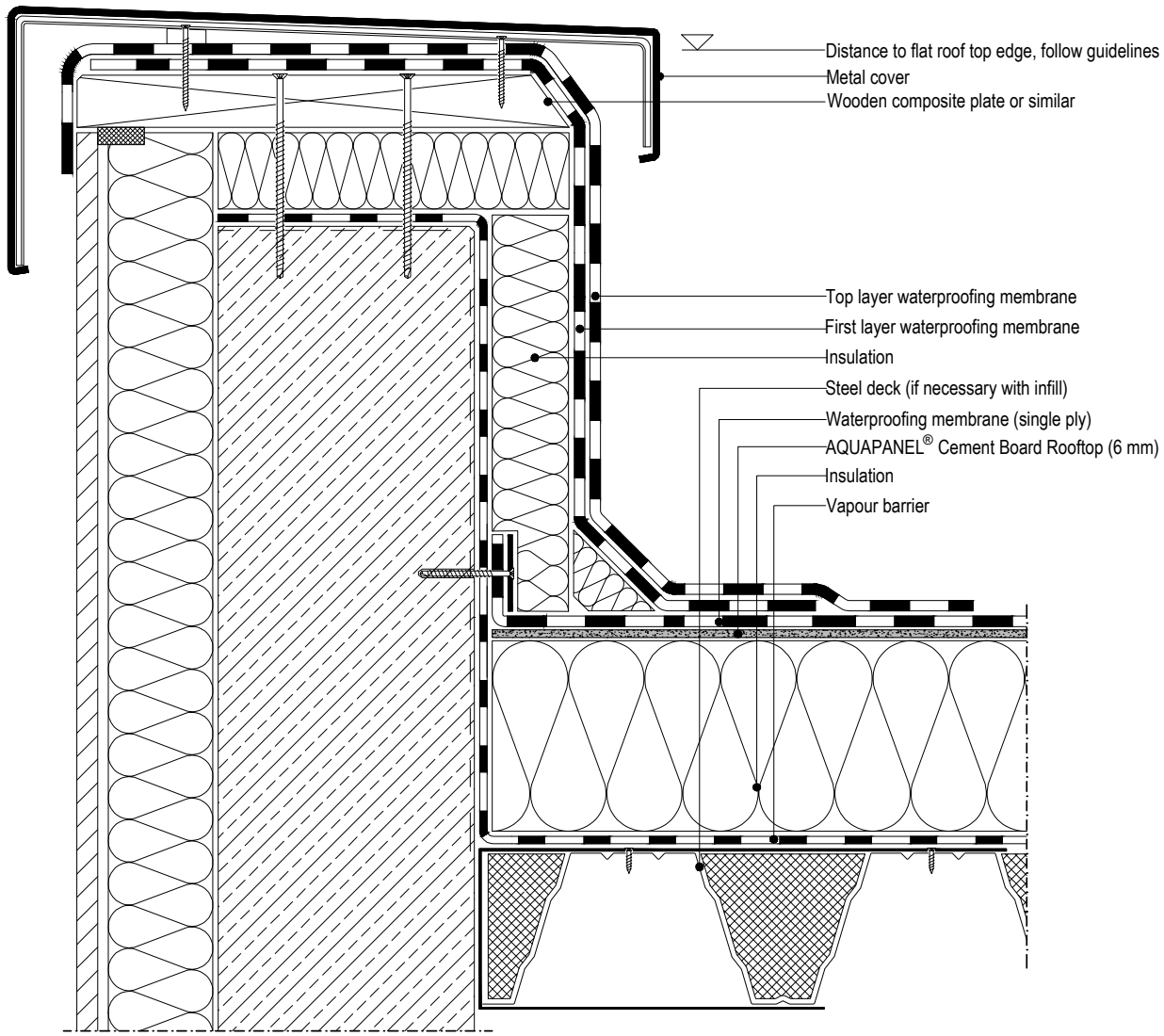
Product	**AQUAPANEL® Cement Board Rooftop (6mm)**	
Used as	Cover board	
Thickness (mm)	6	
Length (mm)	1200/2400	900/2400
Width (mm)	900	1200
Weight (kg/m²)	Approx. 8.5	
Dry bulk density (kg/m³) according to EN 12467	1250	
Bending strength (MPa) according to EN 12467	≥ 7	
Thermal conductivity (W/mK) according to EN ISO 10456	0.34	
Thermal expansion (10^{-6} K^{-1})	7	
Water vapour diffusion coefficient μ (-) according to EN ISO 12572	48	
Length variation 65% - 85% humidity (mm/m) according to EN 318	0.38	
Mould resistance	No growth (IBR certified)	
pH value	12	
Building material class according to EN 13501	A1 non-combustible	

Note

› The drawings illustrate the general concept of how the system works and interfaces with other construction components. The drawings do not substitute an execution design. Follow the local standards and guidelines for the planning and structural design. The technical specifications and information on the products given in the technical data sheets and system descriptions / approvals must be observed.

AQUAPANEL® Cement Board Rooftop (6mm) - construction with cover board

FR2C-V1.1 Vertical section attic



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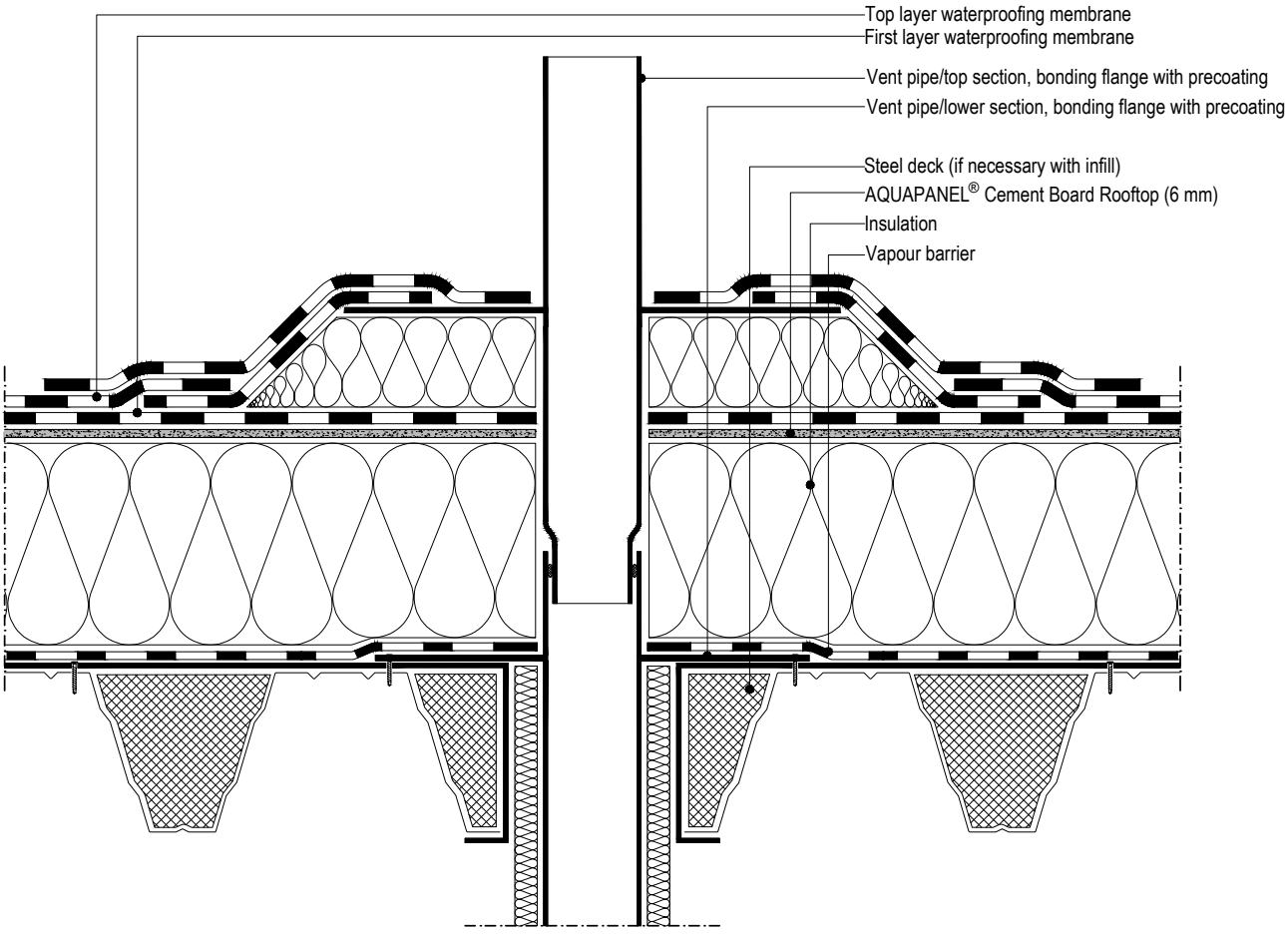
AQUAPANEL® Cement Board Rooftop (6mm) - construction with cover board

FR2C-V2.1 Vertical section connection to vent pipe



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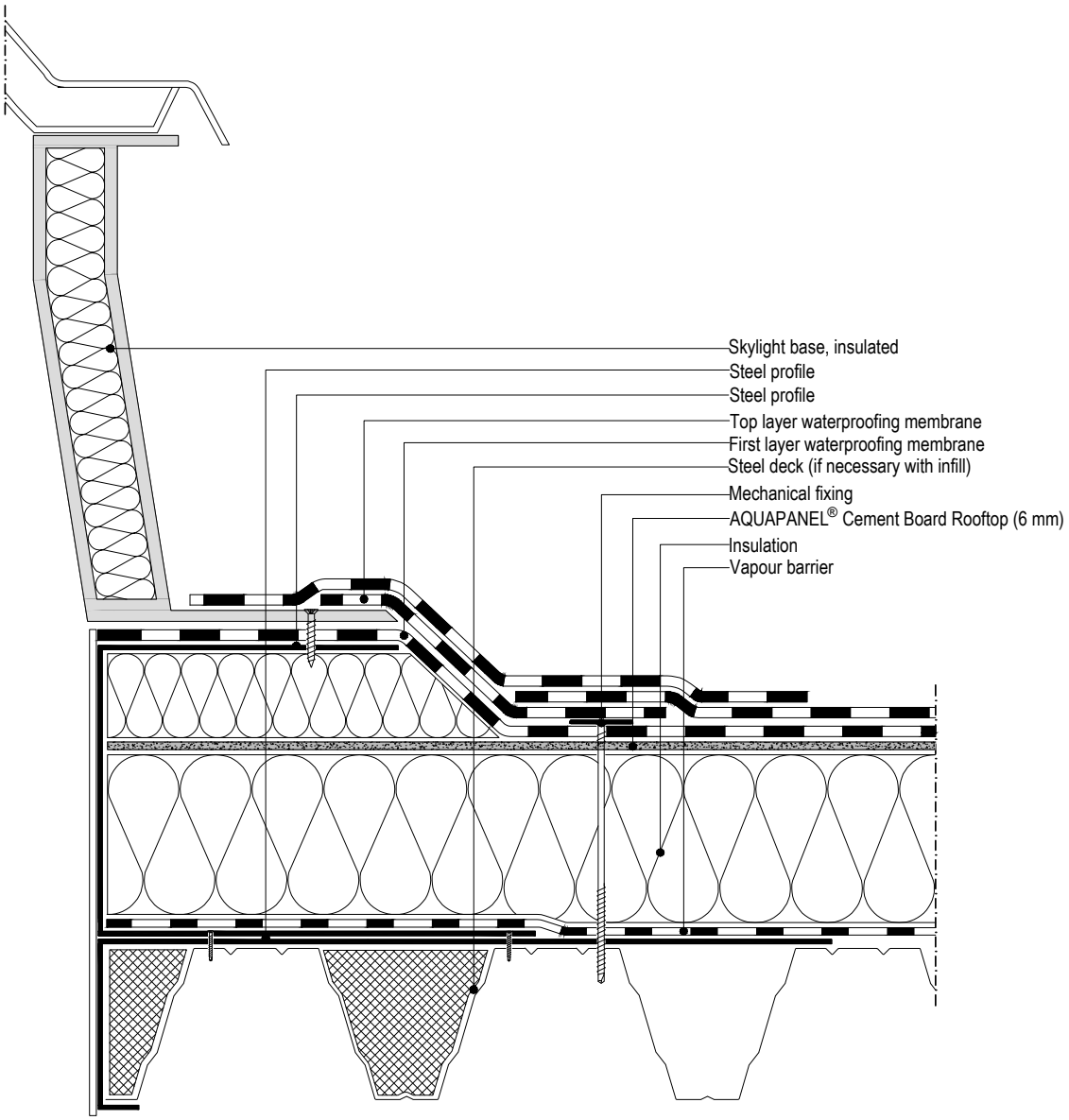
AQUAPANEL® Cement Board Rooftop (6mm) - construction with cover board

FR2C-V3.1 Vertical section connection to skylight



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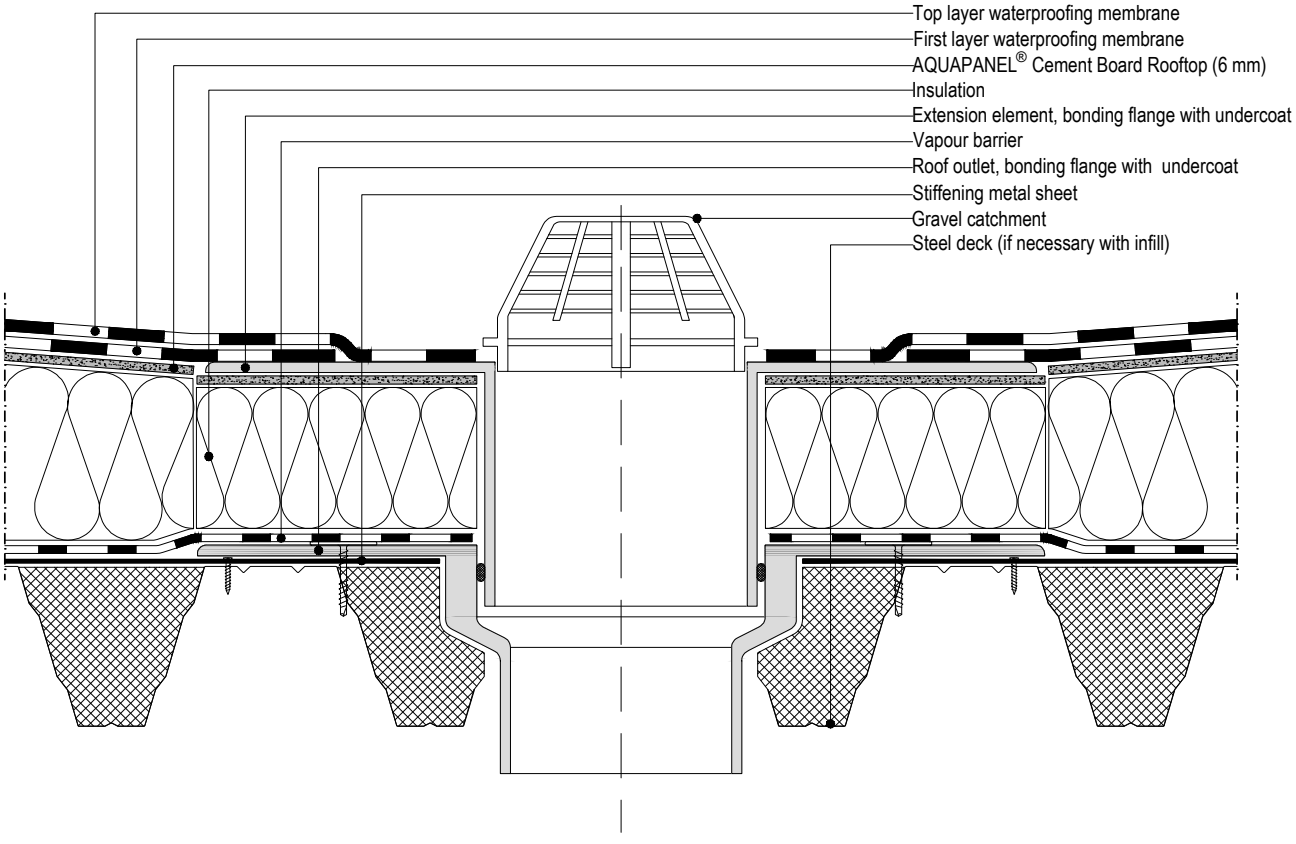
AQUAPANEL® Cement Board Rooftop (6mm) - construction with cover board

FR2C-V4.1 Vertical section connection to roof outlet



THE SUBSTRATE BOARD
BENEFITS

Sooner weather resistance

› Like all AQUAPANEL® Cement Board products, the substrate board 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. Additionally, with installing the board directly onto the steel deck – together with a vapour barrier – a robust temporary waterproofing can be achieved even before the insulation and the waterproofing layer are mounted. This means that the building envelope is reliably closed sooner and the interior works can start earlier, which safes a lot of time and money for your project.

Safe and efficient workplace

› Providing a flat surface to install the vapour barrier or the waterproofing membrane, the board is designed for easy, problem-free installation even during peak periods of material transport and construction traffic on top of the roof. For example the professional material transport on top of the roof is done with a lift-and-roller, which is very difficult on trapezodial steel decks. The flat surface of AQUAPANEL® Cement Board Rooftop guarantees an easier transport of material.*

**The transport with a hand pallet truck is not recommended*

Noise reduction

› The thickness and construction of AQUAPANEL® Cement Board Rooftop provides an effective barrier against external or internal noise, especially when insulation materials like PIR and EPS are used. For example rain noise can significantly be reduced inside the building.

Protection against fire from inside the building

› Protection against fire from inside plays an important role – especially for extensive roofs with a steel deck as substrate. Any spreading of the fire via the roof has to be prevented. Besides the use of non-combustible insulation materials also thin vapour barriers with low fire loads (i.e. PE foil, aluminium) should be applied. Using the non-combustible AQUAPANEL® Cement Board Rooftop 12.5 mm as a substrate – and thereby bridging the low beads – those vapour barriers will be protected against piercing during the installation phase. This reliably prevents vapour diffusion into the roof construction from inside during the complete lifecycle of the flat roof.

Thinner roof constructions

› Thinner roof designs are possible, because thinner layers of insulation can be applied facilitated by bridging the low beads of the steel deck with AQUAPANEL® Cement Board Rooftop.

THE SUBSTRATE BOARD

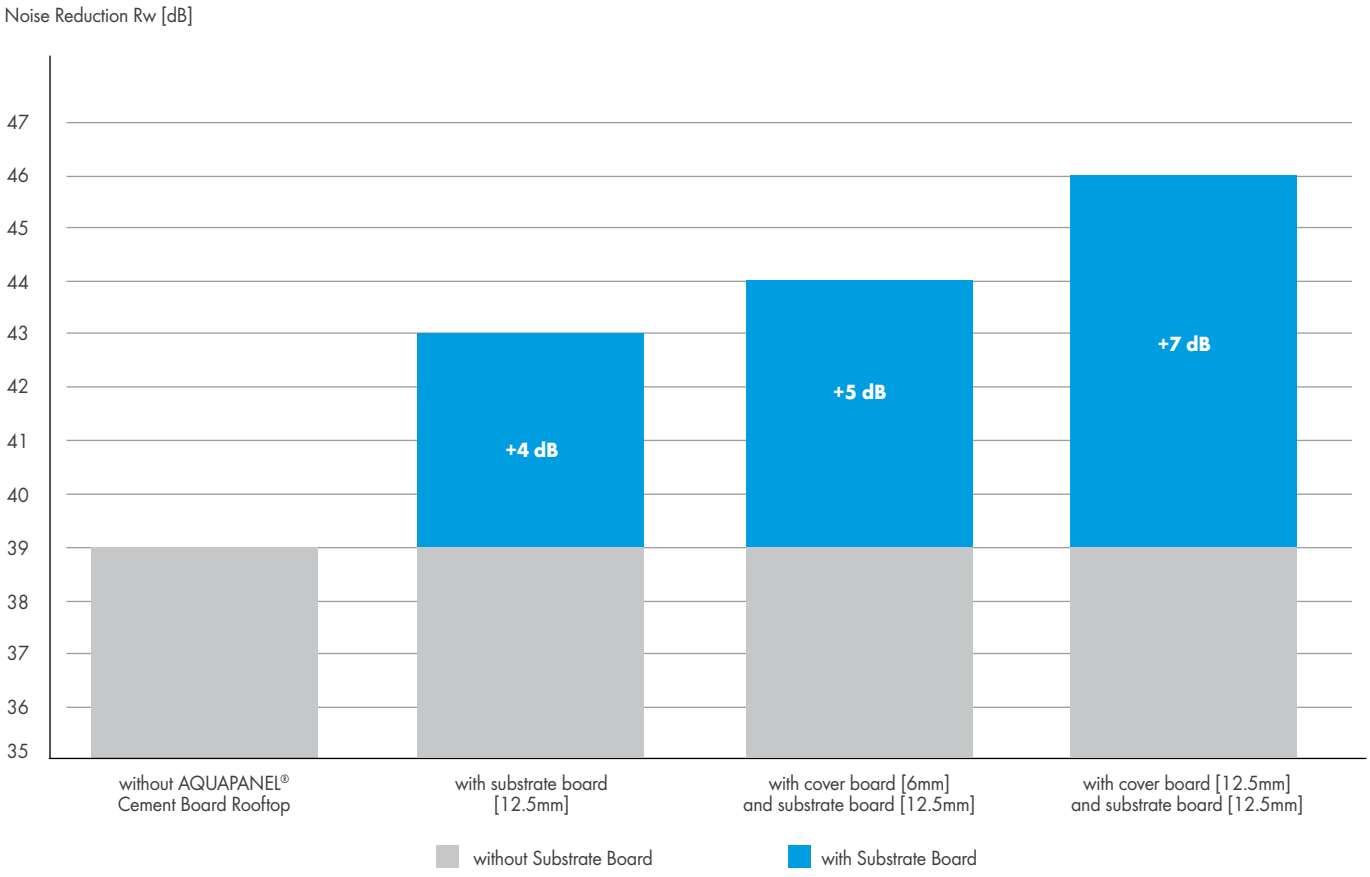
NOISE REDUCTION

The installation of AQUAPANEL® Cement Board Rooftop has a significant impact on sound insulation of the entire flat roof construction. In a series of test setups, this influence was put to the test and quantified.

The basis for these tests is a flat roof construction comprising the following materials (from top to bottom):

- 1.5 mm polyvinyl chloride (PVC) waterproofing sheet (about 1.9 kg/m²) attached with fasteners (2.3 pieces/m²)
- 120 mm Knauf Insulation rock mineral wool insulation board DDP2-U-PLUS (about 143 kg/m³)
- 0.25 mm vapour barrier (sd < 120 - DIN EN 13984 class E)
- Trapezoidal steel deck 135/310 (nominal thickness = 0.88 mm)

This construction achieves a noise reduction of Rw = 39 dB (tested according to ISO 10140-2). When installing the AQUAPANEL® Cement Board Rooftop 12.5mm as substrate board between the steel deck and the vapour barrier, the noise reduction is further improved by additional 4 dB. Even more, if you choose a construction in which – in addition to the substrate board – the AQUAPANEL® Cement Board Rooftop is also installed as a cover board, the noise protection even can be increased by a total of 5-7 dB depending on cover board thickness (see graph below).



THE SUBSTRATE BOARD

ROBUST WEATHER RESISTANCE

As a substrate for the vapor barrier, the AQUAPANEL® Cement Board Rooftop 12.5mm offers a robust temporary waterproofness. Once installed, internal works can start without any problems, even before mounting the thermal insulation and waterproofing layer. The resilience of this temporary construction is characterized by its ability to accommodate high point loads as well as its robustness to wind loads.

To prove this robustness, this temporary construction was subjected to wind load tests by the Institute of Industrial Aerodynamics GmbH (IFI) of the University of Applied Sciences Aachen, Germany, which chose a roof structure in which the AQUAPANEL® Cement Board Rooftop was fastened to the steel deck with the AQUAPANEL® Maxi Screws SN25 (15 pieces/m²). Afterwards the board layer was covered by a cold bitumen pre-coating and then covered with a bituminous vapor barrier. In the tests, this construction resisted wind loads up to 2500N/m².

It should be remembered that the loads during an ongoing construction can be reduced by up to 30%, depending on the safety measures taken and the duration of the construction phase. Thus, wind loads of 3250N/m² would be temporarily applicable. If, object-specific, even higher loads are to be expected, increasing the number of screws per square meter can even further improve the corresponding resistance of the tested roof structure.

THE SUBSTRATE BOARD

FM APPROVED

In commercial as well as in industrial buildings the integrity of the building and all assets inside are of crucial importance for the company's success. When compromised, the diminution of value as well as the costs for recovery or potential losses through production stops can be immense. Also interruptions of the value chain can lead to the reduction of market shares due to customer migration, damage to the company's reputation and loss of shareholder value.

This is why building owners look for possibilities of damage prevention in new buildings as well as in renovations. Special attention should be paid to flat roofs, as they belong to the most compromised parts of the building in case of fire. One option is the use of tested and certified products and services, which minimise the risk of damage and reduce costs in case of an actual damage. FM Approvals, a business unit of FM Global, one of the biggest international industrial property insurers, is offering a worldwide certification service to guarantee that the quality and performance of products comply with highest damage prevention standards. Only products that pass strict testing at FM's Global Research Campus in the U.S. receive the "FM Approved" mark. We have put our AQUAPANEL® Cement Board Rooftop through these tests, which examined the following performance requirements for a roof construction:

- Fire behaviour with fire from above
- Fire behaviour with fire from below
- Hail impact resistance
- Water resistance
- Walkability
- Vulnerability to heat damage
- Corrosion resistance
- Wind suction safety

A flat roof construction with AQUAPANEL® Cement Board Rooftop 12.5mm used as substrate board has passed the FM Approval Certification Norm 4470 and our production plant in Iserlohn, Germany, was inspected by FM Approvals.* Hence we are allowed to print the "FM Approved" test mark onto our substrate boards, giving customers this sense of security that AQUAPANEL® is the right choice.

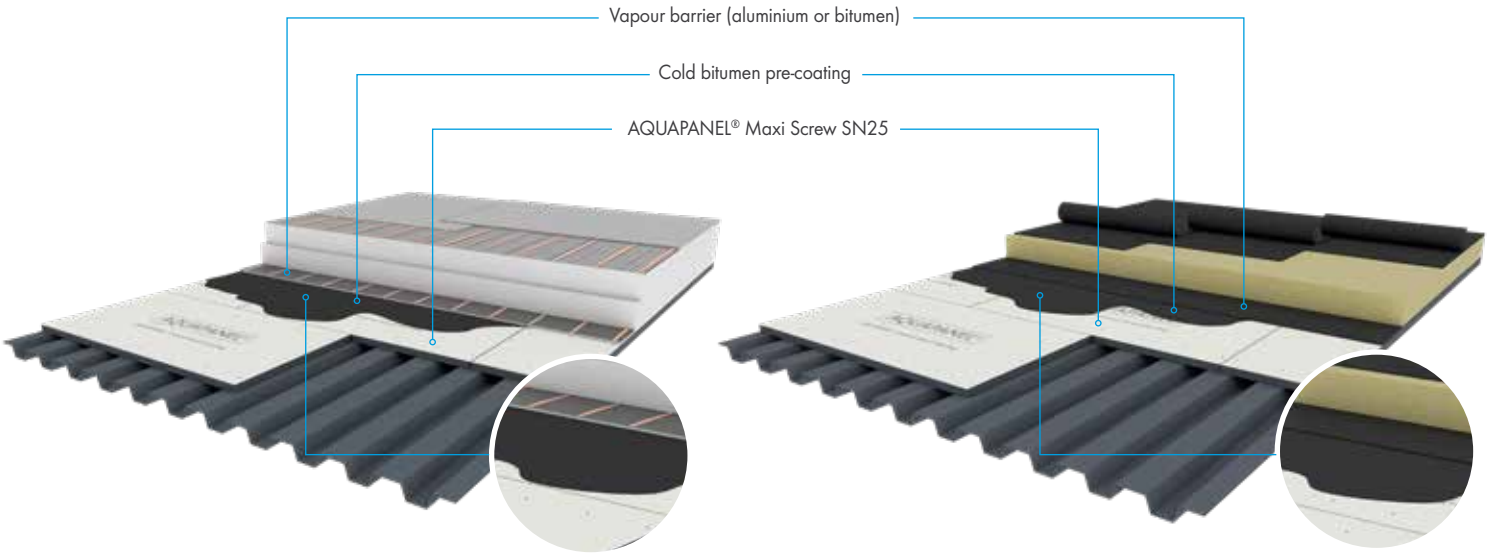
FM APPROVED

** The above-mentioned tests always refer to complete roof constructions, which require specific components and combinations with AQUAPANEL® Cement Board Rooftop. To comply with all FM requirements, all components of the roof construction have to correspond with those used in the test setup.*

THE SUBSTRATE BOARD

INSTALLATION

- Fix the substrate bard onto the steel deck mechanically using, for example, AQUAPANEL® Maxi Screws SN25.
- We recommend applying a cold bitumen pre-coating to the board.
- The vapour barrier is attached above the bitumen coating.
  This gives a robust watertight flat roof in a very short time and the interior construction can already start.



THE SUBSTRATE BOARD

PHYSICAL PROPERTIES

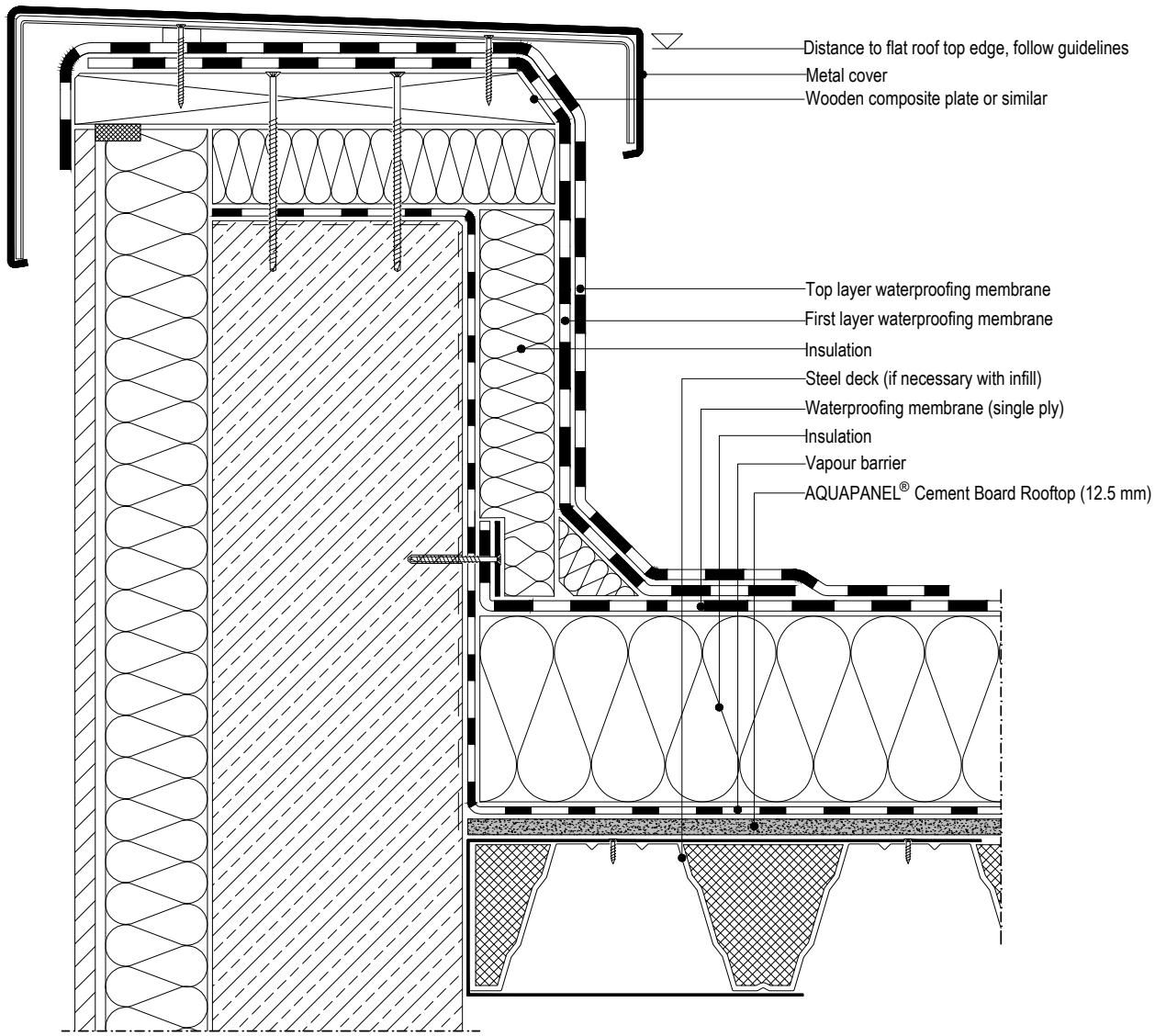
Product	**AQUAPANEL® Cement Board Rooftop (12.5mm)**	
Used as	Substrate board	
Thickness (mm)	12.5	
Length (mm)	1200/2250/2400	2400
Width (mm)	900	1200
Weight (kg/m²)	Approx. 16.5	
Dry bulk density (kg/m³) according to EN 12467	1150	
Bending strength (MPa) according to EN 12467	≥ 7	
Thermal conductivity (W/mK) according to EN ISO 10456	0.35	
Thermal expansion (10^{-6} K^{-1})	7	
Water vapour diffusion coefficient μ (-) according to EN ISO 12572	66	
Length variation 65% - 85% humidity (mm/m) according to EN 318	0.23	
Mould resistance	No growth (IBR certified)	
pH value	12	
Building material class according to EN 13501	A1 non-combustible	

Note

› The drawings illustrate the general concept of how the system works and interfaces with other construction components. The drawings do not substitute an execution design. Follow the local standards and guidelines for the planning and structural design. The technical specifications and information on the products given in the technical data sheets and system descriptions / approvals must be observed.

AQUAPANEL® Cement Board Rooftop (12.5mm) - construction with substrate board

FR3C-V1.1 Vertical section attic



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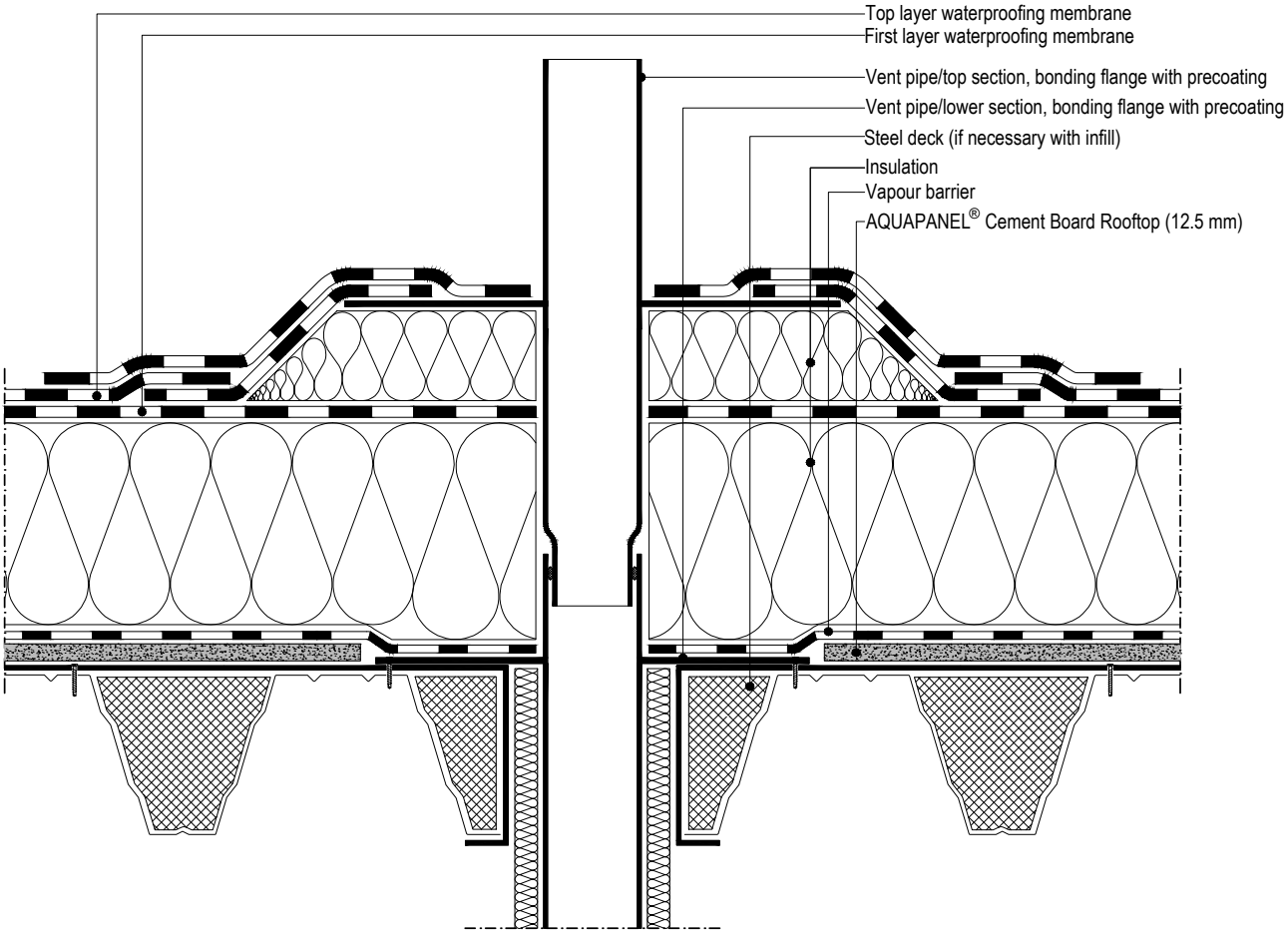
AQUAPANEL® Cement Board Rooftop (12.5mm) - construction with substrate board

FR3C-V2.1 Vertical section connection to vent pipe



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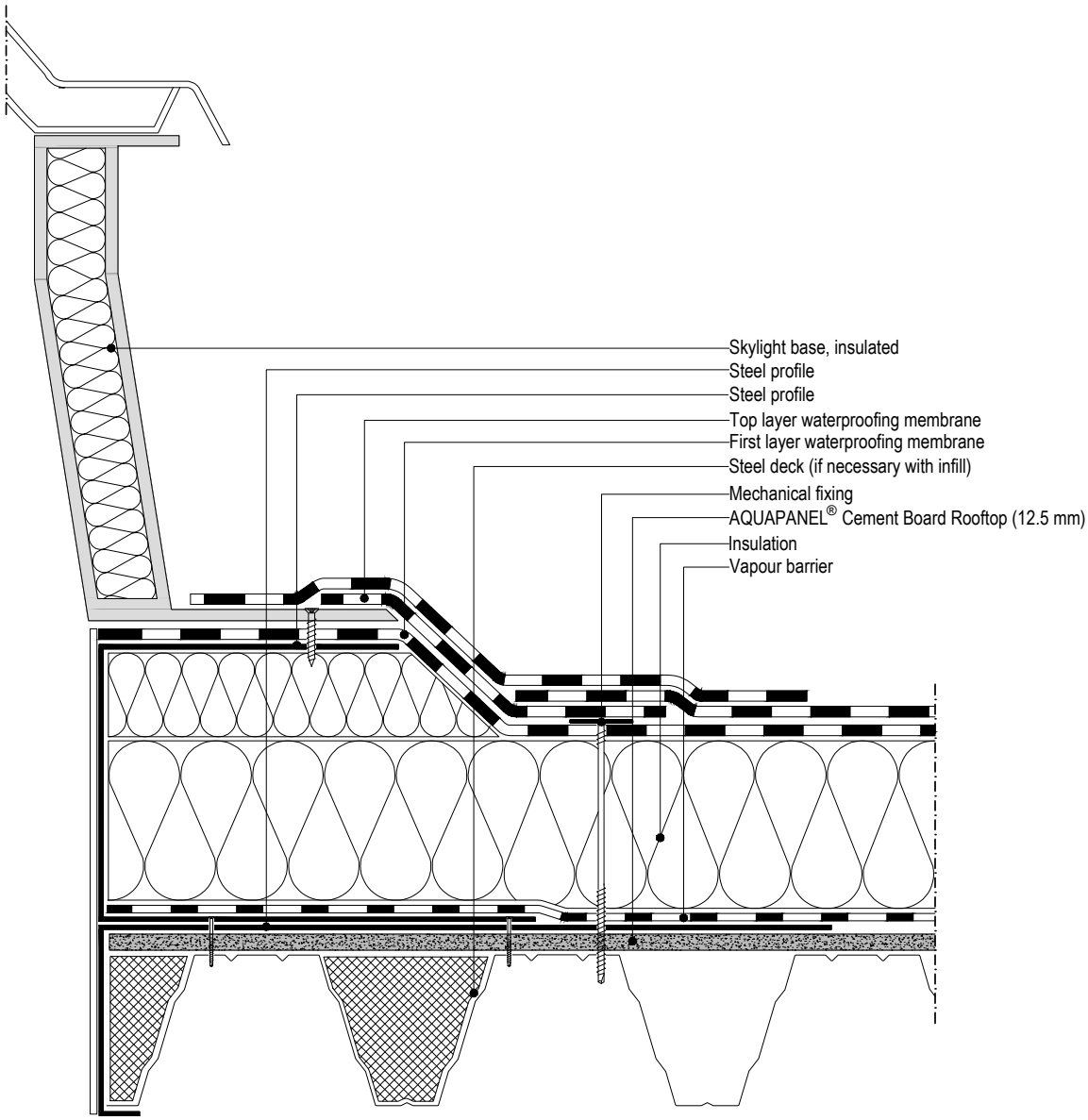
AQUAPANEL® Cement Board Rooftop (12.5mm) - construction with substrate board

FR3C-V3.1 Vertical section connection to skylight



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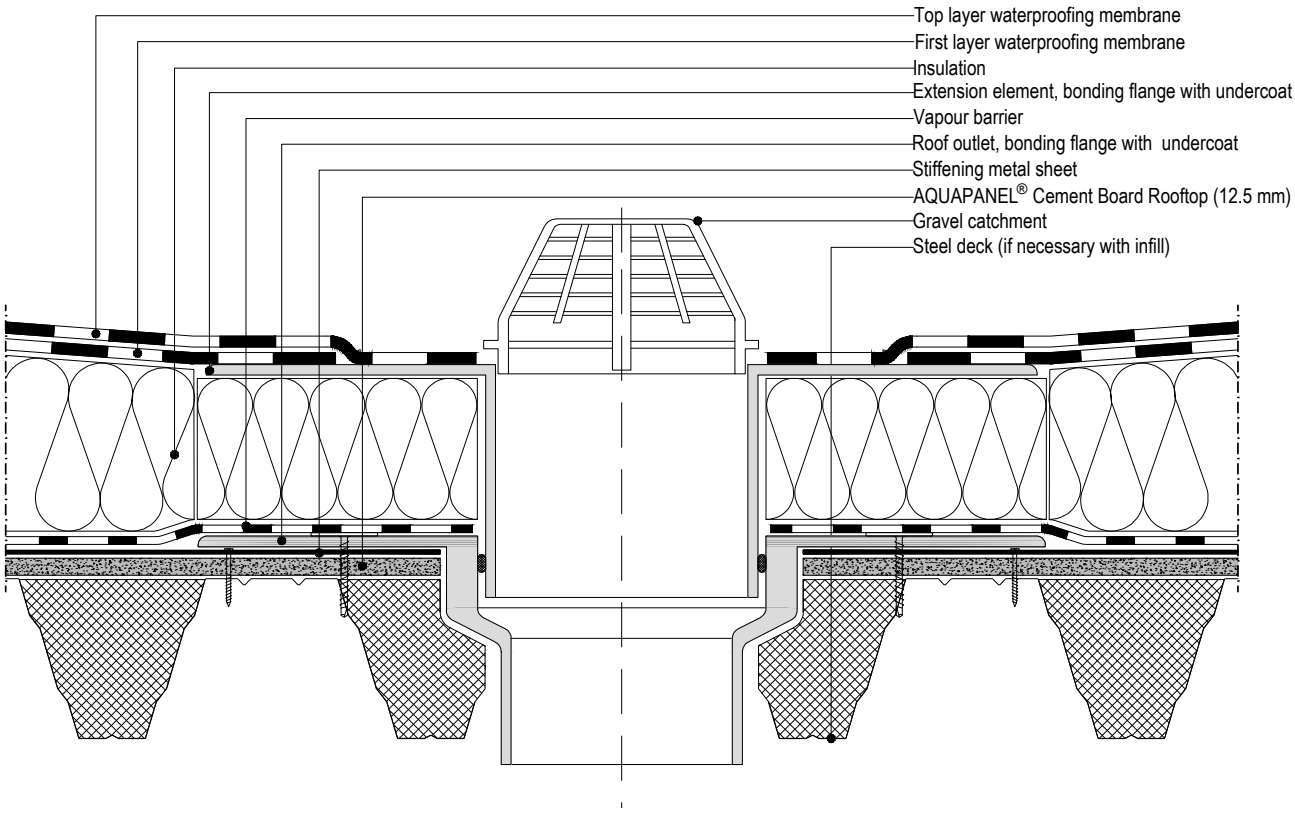
AQUAPANEL® Cement Board Rooftop (12.5mm) - construction with substrate board

FR3C-V4.1 Vertical section connection to roof outlet



NON-FLAMMABLE ATTIC

SPECIAL APPLICATION: PROTECTION AGAINST FIRE SPREAD

In addition to protection against fire from inside and outside the building, the prevention of fire spreading from or to surrounding buildings has to be taken into account, while constructing a flat roof. Therefore, if a construction is built in a short distance to flanking buildings, the early planning of fire protecting walls is absolutely necessary and subject to strict conditions and guidelines.

AQUAPANEL® Cement Board Rooftop is a premium solution for external firewalls, thanks to its non-combustibility (building material class A1). For this purpose, two layers of AQUAPANEL® Cement Board Rooftop (12.5mm) are installed (see drawing on the right page). Furthermore, a metal sheet is integrated between the two cement boards, by which the metal cover can be attached on the attic and the stability is increased. The non-flammable cladding above the waterproofing-membrane additionally provides a higher fire protection. Thus, the non-flammable attic with AQUAPANEL® Cement Board Rooftop meets all requirements of the fire protection regulations, which are imposed on a firewall.

Note

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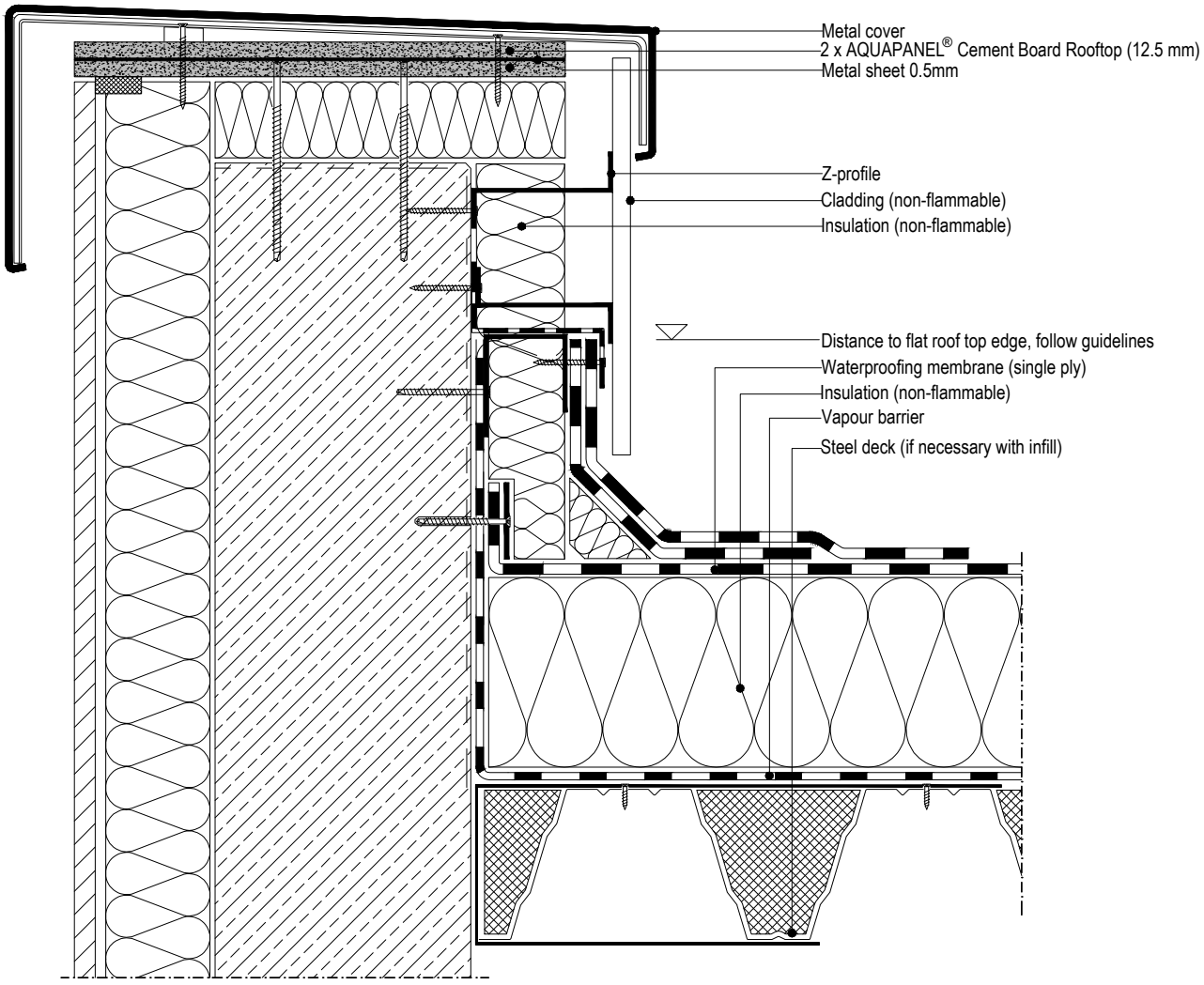
AQUAPANEL® Cement Board Rooftop - non-flammable attic

FR2C-V1.1 Vertical section attic



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) or exterior cleaning cages. AQUAPANEL® Cement Board Rooftop has the strength to support it all.

Renovations

› 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.

Roof terraces

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

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.

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

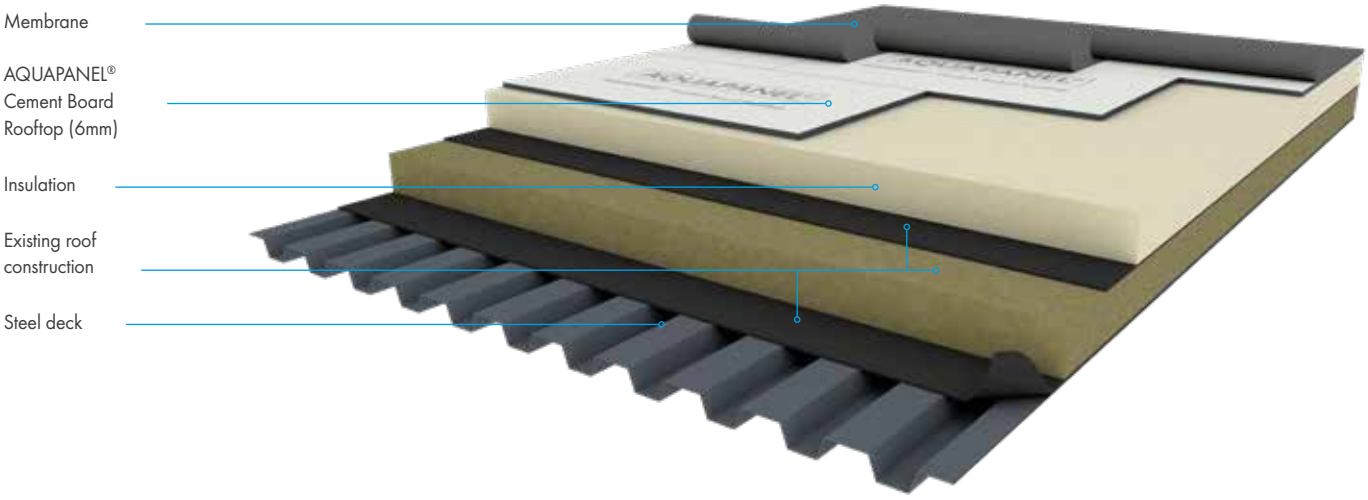
Net-zero energy buildings

› 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.

VERSATILE FIELDS OF APPLICATION

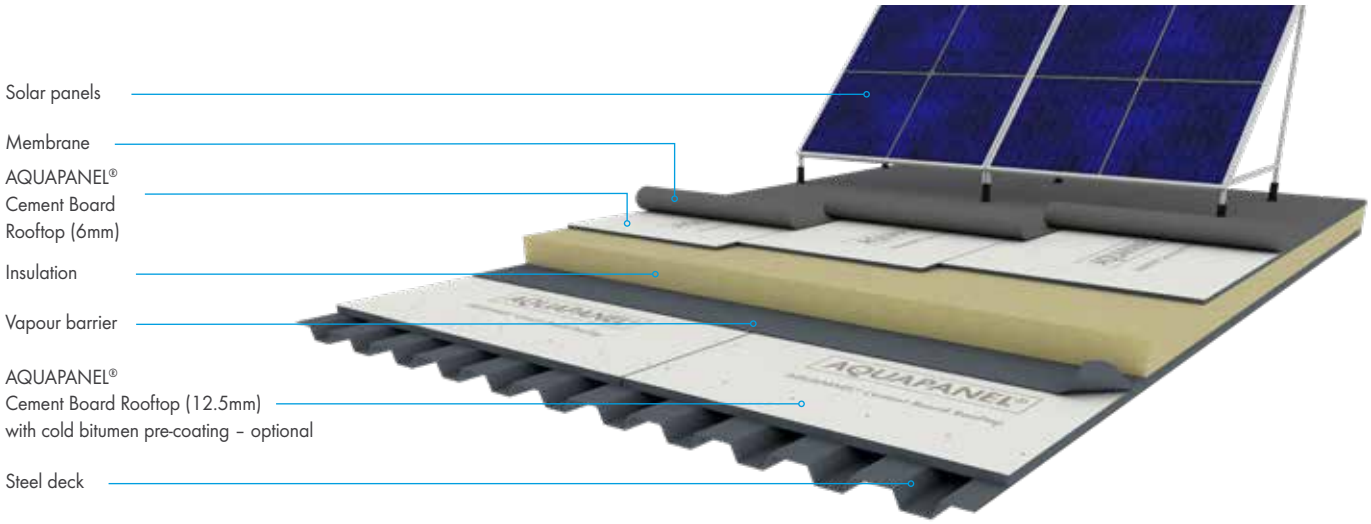
AQUAPANEL® Cement Board Rooftop is the perfect component for flat and low-slope roofing systems, enhancing them in a variety of ways, adding strength, safety and sustainability to the overall roof – and being flexible for use in a range of applications.

› Renovations

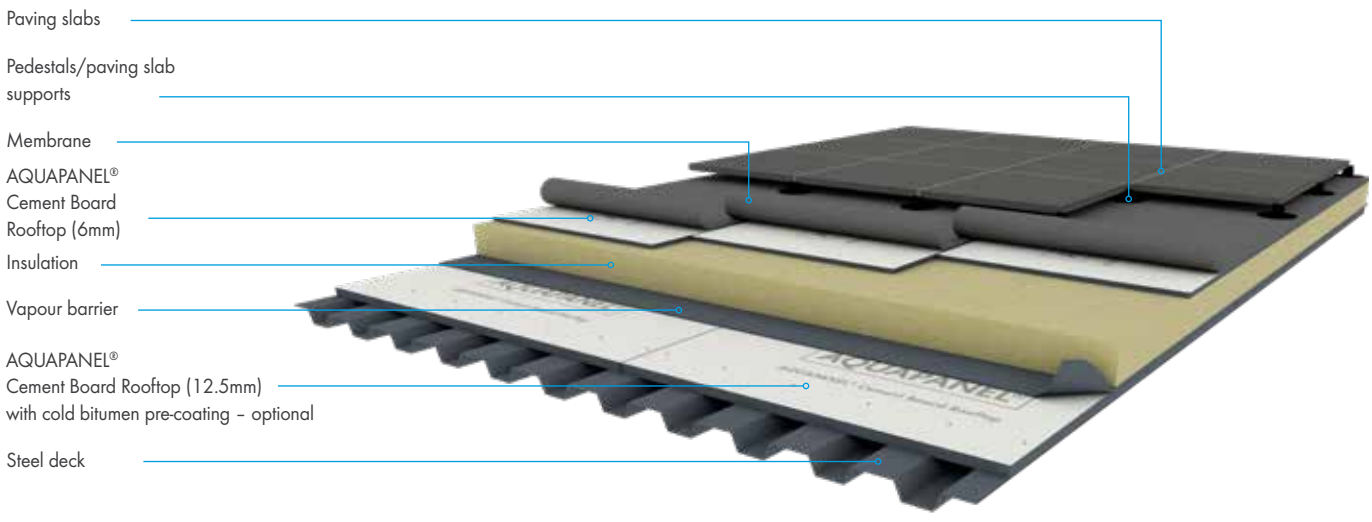


The sketch on this page is a simplification of reality. Details of the roof constuction (e.g. fasteners and adhesives) are not displayed.

› Solar panels and other heavy equipment

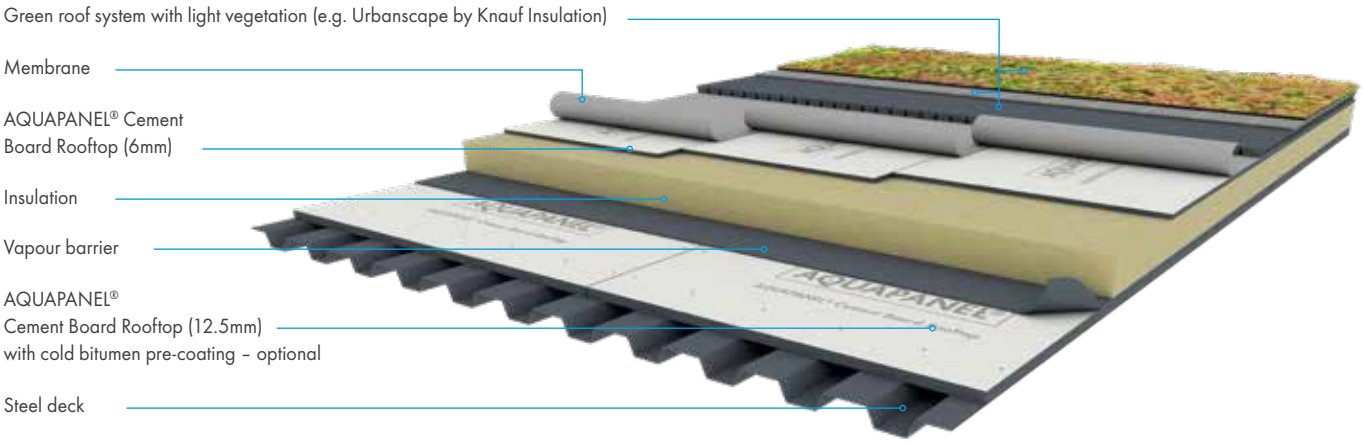


› Roof terraces

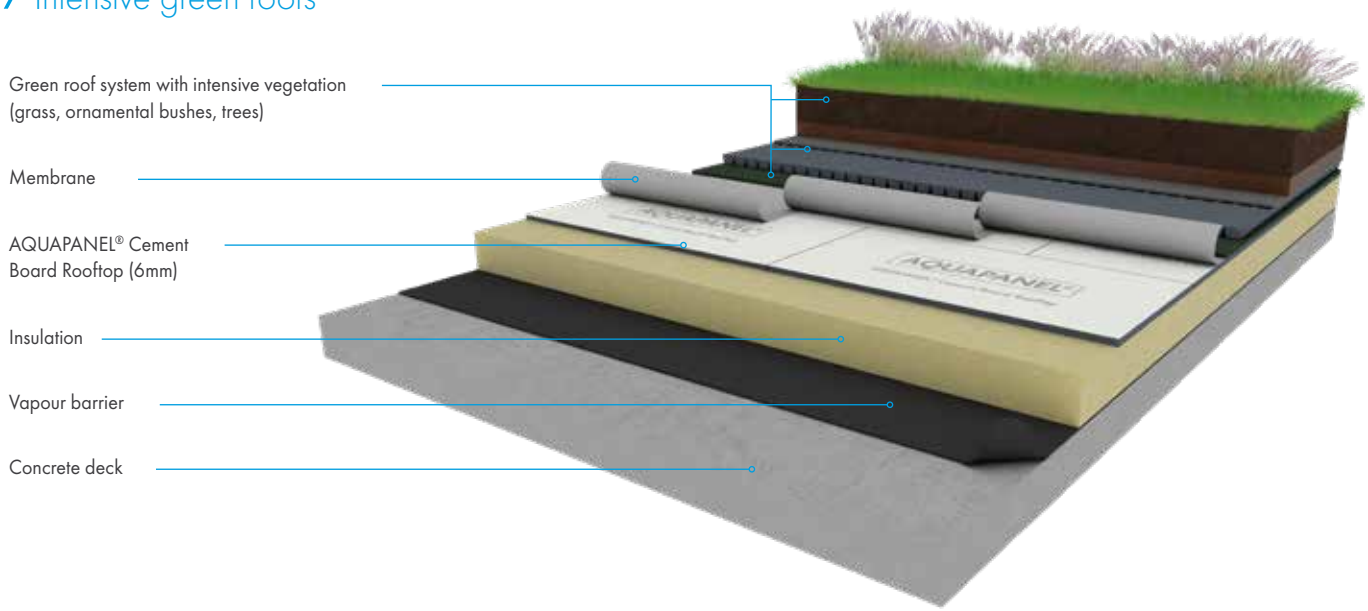


The sketch on this page is a simplification of reality. Details of the roof constuction (e.g. fasteners and adhesives) are not displayed.

› Extensive green roofs



› Intensive green roofs



The sketch on this page is a simplification of reality. Details of the roof constuction (e.g. fasteners and adhesives) are not displayed.

WHAT CUSTOMERS SAY ...

"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

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.

Split Airport (Resnik Airport)
Kaštela, Croatia

- Contractor: Kamgrad d.o.o.
- Architect: Ivan Vulić, VV PROJEKT ARHITEKTI
- Installers: Izolacija d.o.o.
- 2.200 m² AQUAPANEL® Cement Board Rooftop used as cover board
- Project time frame: January 2018

REFERENCE

2.200 m² AQUAPANEL® Cement Board Rooftop used as cover board

In 2017 Split Airport – also known as Resnik Airport – was the second busiest in Croatia, handling around 2.8 million passengers with more than 200 flights and 50,000 passengers on busiest weekends. It is a major destination for leisure flights during the European summer holiday season and an important hub for Croatia Airlines.

In order to meet all future requirements of rising passenger numbers the construction of a new terminal was started in the beginning of 2017. Phase one of the project, containing the new terminal building and the adjacent parking lot, is scheduled for completion by august 2019. The complete project, which also includes the restoration of the existing terminal, sums up to an investment value of 60 million Euros.

A public road separates the parking lot and terminal. Therefore the planners decided to build a closed pedestrian bridge, which prevents traffic obstructions and protects passengers from weather and airplane noise. The design of the flat roof was included in the consideration for a suitable construction, which should reliably prevent noise from entering the building.

Among all common insulation materials stone wool offers the best sound insulation. Therefore it was decided to use a system consisting of 2,200 m² AQUAPANEL® Cement Board Rooftop as a cover board combined with a stone wool insulation by Knauf Insulation.

Arguments for choosing AQUAPANEL® Cement Board Rooftop in investment decisions like this comprise – besides the reinforcing effect on sound insulation by bringing additional mass into the roof structure – also the guarantee of a long-time insulation performance and functionality of the whole roof structure. The cover board guarantees safe roof accessibility during construction and after completion by distributing point loads across a larger area, thus also preventing warping or subsiding of the insulation and puncturing or bursting of the membrane's joints (here: TPO).

Besides sound insulation there was a strong focus on fire protection as well. Also in that regard the combination of stone wool as insulation material and AQUAPANEL® Cement Board Rooftop was a logical choice for the airport's decision makers, as their non-combustibility highly contributes to sustainable people and asset protection.

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