

Technical Specification Sheet

ETERPAN® MD AS A BACKERBOARD FOR STONE CLADDING (100 KG/M²)

This specification sheet describes the basic guidelines for the installation stone tiles/brick slips on Eterpan MD as backerboard for exterior applications of tiling material exceeding 100 kg/m².

DESCRIPTION

ETERPAN® MD backerboard solutions comprise a supporting metal/ timber framework, to fix ETERPAN® MD boards, that will work as a substrate for façade cladding with stone tiles or brick slips. All the solution should work as an integral system where a structural engineer should validate the stability of whole building solution, including the extra cladding elements that should be applied as per the manufacturer's recommendations.

INSTALLATION PROCESS

Supporting structure installation. Section, thickness, spacing of metal profiles, plus the fibre cement board thickness and the distance of fixing screws should all be defined by the structural design validating the weight capacity and stability in function of the overall loads, wind loads, earthquake loads and other local/ geographical considerations. Local structural regulations should be followed for the maximum deflection values, which for this document is ($\Delta L/360$) and other recommendations given by the engineer responsible for the structural calculation.

Minimum web width of studs should be 40mm to allow adequate fastener penetration.



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Movement control joints should be set out each 4.880 x 4.880mm to alleviate structural tensions on the framing and the board installation.

Maximum stud spacing is 406mm and 800mm for transversal noggings. These distances should be validated by the structural engineer.

Notes:

- For calculations, key values from the mechanical and physical properties of Eterpan MD are Modulus of Rupture (MOR), Modulus of Elasticity (E-Mod) and Density:

Mechanical Properties

Property	Value	Unit	Standard
Modulus of Rupture			
- Longitudinal (Oven-Dry)	12.0	N/mm ²	ASTM C1185
- Transverse (Oven-Dry)	9.0	N/mm ²	
Modulus of Elasticity			
- Longitudinal (Oven-Dry)	7500	N/mm ²	ASTM C1185
- Transverse (Oven-Dry)	9500	N/mm ²	
Delamination Strength (Air-Dry)	1.0	N/mm ²	-

Physical Properties

Property	Value	Unit	Standard
Density	1300	kg/m ³	ASTM C1185
Moisture Content (at EMC)	10% by Weight	%	ASTM C1185
Water Absorption	33 ± 2 %	%	ASTM C1186
Moisture Movement			
- Normal to Oven Dry	0.80	mm/m	ASTM C1185
- Normal to Saturated	0.45	mm/m	
Thermal Expansion	5 x 10 ⁻⁶	m/mK	-

Boards layout. ETERPAN® MD boards should be installed in a lengthwise staggered layout perpendicular to the studs or profiles direction. This layout contributes to a higher stiffness of the whole surface, which should be working as a structural diaphragm.

Board should be installed with the back surface (rough surface) facing out for a better adhesion of the cladding solution. Minimum board thickness should be 9mm.

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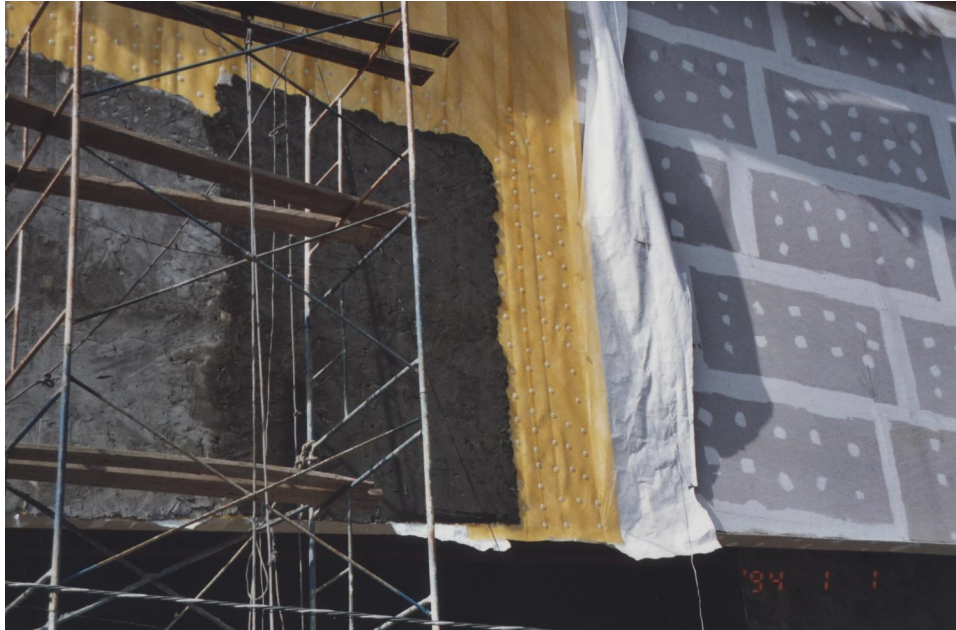
Humidity protection. Vapour permeable membrane is recommended as a layer between the metal frame and the boards installation to control the excessive humidity driven by the exterior pressure and the wind loads. In any case the back surface should always be protected against excessive water absorption to maintain the boards mechanically stable.

Fixing requirements. Boards are to be supported and fixed along the 4 edges to the structure. Fixing centres must not exceed 150mm. Do not place screws closer to 12mm from board edges. Do not place screws closer to 50mm horizontally and 150mm vertically from the board corners.

Board fasteners should be corrosion resistant, equivalent of 10g 60mm CSK stainless steel screws. Stainless steel screws to be used especially in coastal area for a better protection from salt water corrosion.

It is verified that the cladding fixing system based on 150mm fixing centres using 10g 60mm CSK stainless steel screws can meet the Structural Engineering Design of NZS3604 up to Extra High Wind zone (55 m/s wind speed) and Earthquake Zone 4 requirement.

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Waterproof membrane. This membrane should be applied after the installation of the boards to protect them from the permanent contact of the humidity on the façade and prior to the cladding components.

Fixing stone tiles/brick slips. For ceramic tiles or stone tiles exceeding 40kg/m² up to 100 kg/m², the use of a primer and a tile adhesive on the surface of the ETERPAN® MD backerboard, alone as the bonding agent of the two elements would be insufficient.

In the risk of falling off elements through the cohesive failure of both the adhesive and/ or the backerboard, mechanical anchorage must be considered to cater for the excessive deadweight which contributes to tensile pull-out (especially during wind suction).

Mechanical anchorage can be achieved through direct fixing of the stone tiles to the backerboard by drilling and screwing each cladding element.

Alternatively, mechanical anchorage can be achieved by an attachment system (two to four hooks depending on adequacy) of each stone tile piece to a supporting mesh placed all over the backerboard surface.

Firstly, place high resistant PVC mesh all over the backerboard surface, then, fixed it adequately with screws and plastic washers.

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Next, after the installation of the supporting mesh, a modified mortar is applied embedded into the PVC mesh and simultaneously, each stone tile is either screw or hook fixed to the mesh for more safety against strong vibrations, high wind loads and any other external factor.

The adequacy or the mechanical strength of the anchorage against the 100 kg/m² stone tiling application should be validated by the structural engineer.



Watertightness of the façade system. Whatever the cladding application, special attention should be given to the water management on the façade solution. ETERPAN[®] MD backerboard should be protected against the permanent humidity on the exposed surface but also on the unexposed side where any risk of condensation or ponded water should be avoided.

