

STEELDECKS

SOLUTION FOR HIGH HUMIDITY - AQUALTEO



WHAT IS HYGROMETRY?

Definition of hygrometry

Hygrometry characterises the quantity of moisture in the air, namely the quantity of water vapour present in the air (or in another gas in certain industrial applications) It does not take into account the water present in liquid or solid form.

In buildings, hygrometry is defined by two values used to analyse all types of buildings:



W: quantity of water vapour produced inside a building per hour (expressed in grams/hour)

n: the hourly air renewal rate in a building (expressed in metres³/hour)



Humidity in buildings

Each building can be characterised according to its hygrometry (the average during the colder months) using the W/n report. All buildings can this be classified into 4 categories:

- Low hygrometry buildings ($W/n \leq 2.5 \text{ g/m}^3$)

Buildings with controlled mechanical ventilation (extractor hoods, centralised mechanical ventilation, etc.).
E.g.: Residential buildings, offices, warehouses, etc.

2 - Medium hygrometry buildings ($2.5 \leq W/n \leq 5 \text{ g/m}^3$)

Buildings with proper heating and ventilation that are not over-occupied, and industrial manufacturing buildings whose production processes do not generate water vapour.
E.g.: School buildings, living areas with a water supply (kitchens, bathrooms, etc.), shopping centres, etc.

3 - High hygrometry buildings ($5 \leq W/n \leq 7.5 \text{ g/m}^3$)

Poorly ventilated buildings with a high concentration of people.
E.g.: Shower rooms, communal changing rooms, launderettes, etc.

4 - Very high hygrometry buildings ($W/n > 7.5 \text{ g/m}^3$)

Specific buildings where a high level of humidity must be maintained.
E.g.: Aquatic centres, industrial laundries, etc.



INSTALLATION ON BACACIER STEELDECKS

The AQUALTEO system allows you to construct insulated roofing in corrugated sheet metal with a waterproof coating. Roof structures built with this system, constituted from perforated web plates provide excellent sound absorption.

Installation

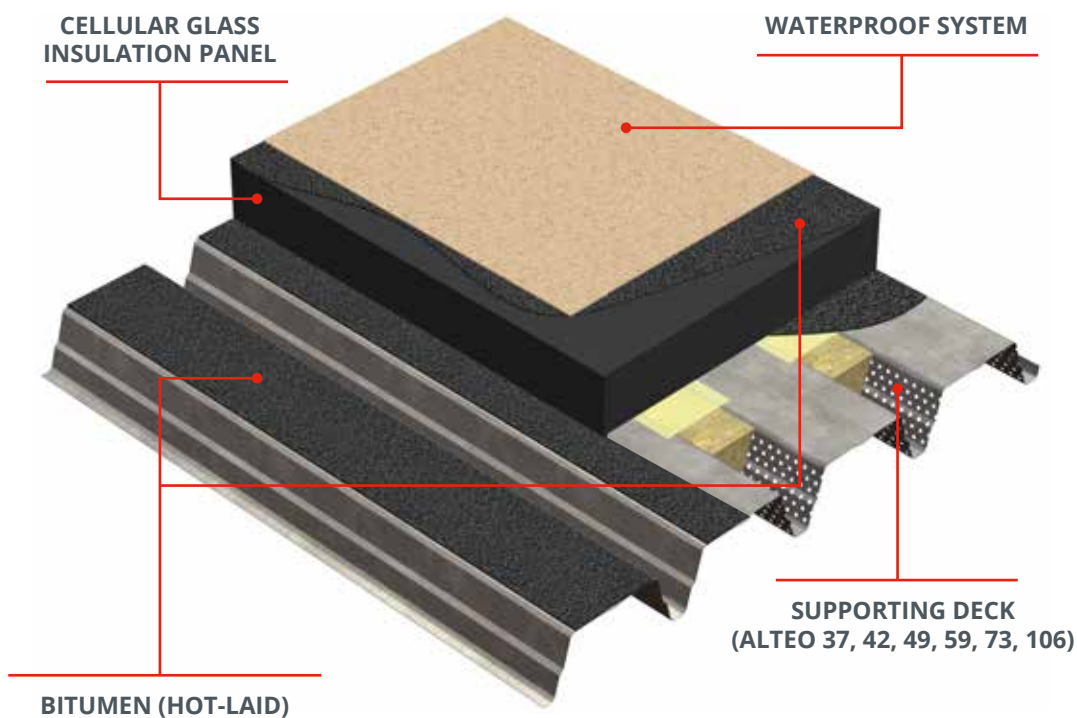
System under Alpha technical evaluation/Inspection no. 100-359-11-01



CELLULAR GLASS
INSULATION PANEL



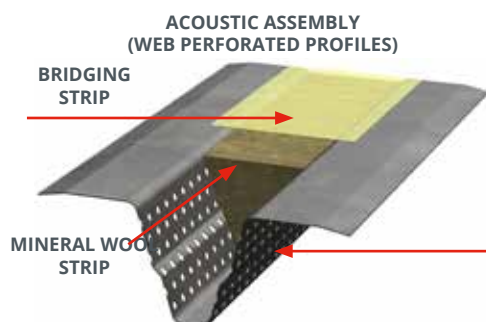
WATERPROOF SYSTEM



BITUMEN (HOT-LAID)

SUPPORTING DECK
(ALTEO 37, 42, 49, 59, 73, 106)

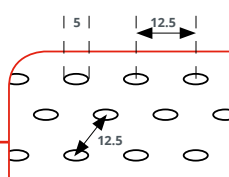
Assembly detail in decking ribs



BRIDGING
STRIP

MINERAL WOOL
STRIP

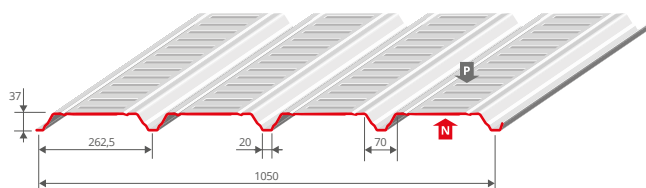
PERFORATION DETAIL
R5 T12.5 (15%)



SUPPORT DECKS

ALTEO 37.1050

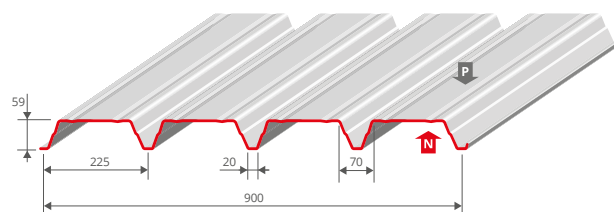
BUREAU VERITAS REPORT NO. **2127211/1A**



ALTEO 59.900

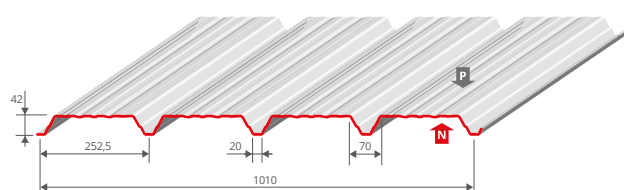
BUREAU VERITAS REPORT NO. **1841430/1C**

Perforated option ▶ web



ALTEO 42.1010

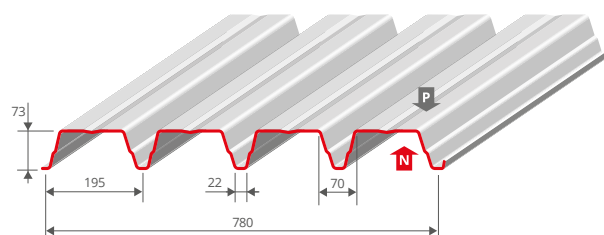
BUREAU VERITAS REPORT NO. **1085967/1A**



ALTEO 73.780

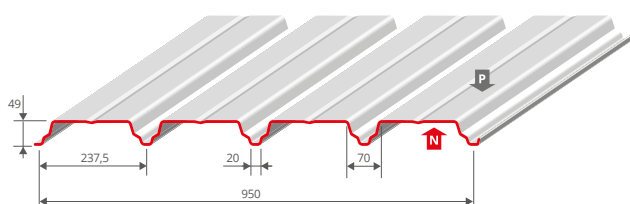
BUREAU VERITAS REPORT NO. **2461385/1A**

Perforated option ▶ web



ALTEO 49.950

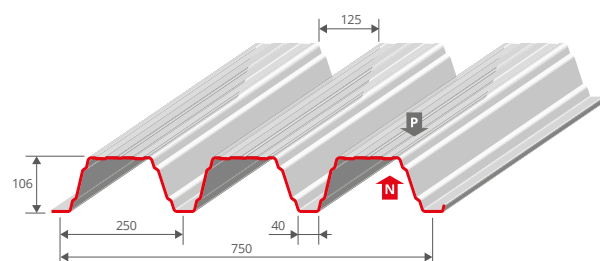
BUREAU VERITAS REPORT NO. **2409741/1A**



ALTEO 106.750

BUREAU VERITAS REPORT NO. **1628665/1D**

Perforated option ▶ web



Coatings and guarantees



The coating suitable for* for this type of structure is:
- GRANITE® HDX® : grained polyurethane, thickness of 55µm on Z 275






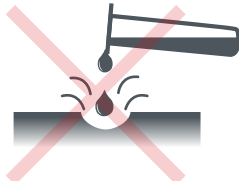


*For perforated ALTEO profiles, the coating must be on both sides.

Please send us an environmental survey, available upon request, so we can advise you on the most suitable coating for your site.

** A 10-year guarantee may be issued on request after receipt of the environmental survey.

CHARACTERISTICS OF CELLULAR GLASS INSULATION

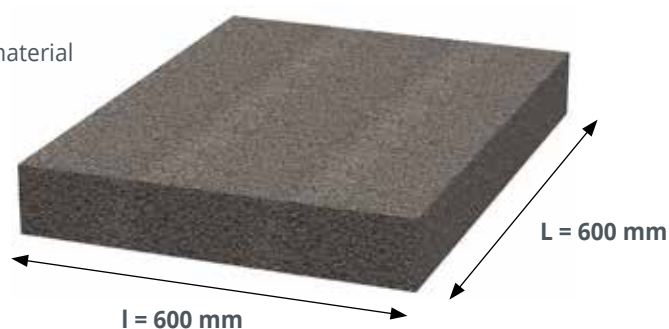
Advantages

	WATER RESISTANT		HIGH COMPRESSIVE STRENGTH
	IMPERVIOUS TO WATER VAPOUR		DIMENSIONALLY STABLE
	INCOMBUSTIBLE		RESISTANT TO ACIDS
	RESISTANT TO VERMIN		EASY TO CUT

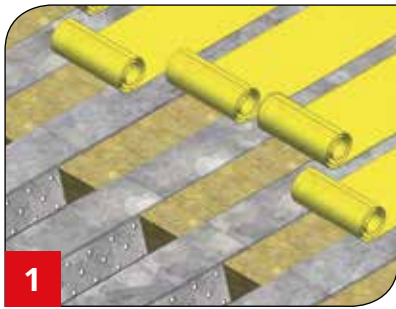
Material and dimensions

The insulation is composed of cellular glass. The raw material used is 100% recycled glass.

Thickness from 50mm to 180mm



LAYING INSTRUCTIONS



- 1** - If using perforated decks: Lay a sound absorbing material in the ribs of the ALTEO steeldecks (web perforation) and rib bridging using an adhesive strip.

Cold-laid mixture on galvanised steel deck, applied with a roller onto a clean and dry surface, consumption ~ 0.3 l/m² (unnecessary on pre-painted steel deck).



- 2** - Cellular glass sheets laid in hot bitumen, staggered, filled joints, consumption ~ 2.0 – 4.0 kg/m² according to thickness.

- 2 & 3** - Dip the 2 adjacent edges and underside of the cellular glass sheets in the bitumen dipping container and press against the already laid sheets.



- 4** - Hot bitumen surface coating, consumption ~ 2.0 kg/m². Pour the hot bitumen onto the surface and spread using a rubber scraper.

First waterproof layer heat-welded onto the bitumen coating. Waterproof variation possible: First waterproof layer fully bonded with hot bitumen with no cellular glass slab coating beforehand.



- 5** - Second layer heat-welded. Staggered, coated joints. (Other waterproof systems with bituminous or synthetic coatings are available).



Recommendations for installers

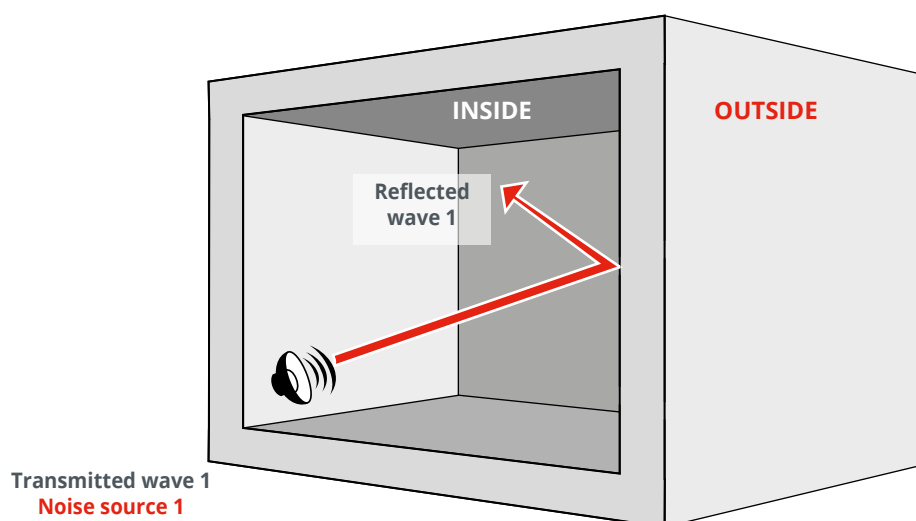
Minimum application temperature: +2 °C.

Waterproof coating, the first layer of which must be applied in advance. The remaining surfaces should be covered with a hot bituminous coating.

Heavy traffic areas should be protected as well as the parts that are sensitive to heat.

ACOUSTIC COMFORT

Noise sources and treating noise using absorption



Depending on the objective to be reached, the composition of the wall should be adapted. Each wall is characterised by "The absorption coefficient" (α_w).

This coefficient corresponds to the difference between the transmitted and reflected wave. It functions as follows:

"The greater the α_w , the lower the reflected wave in relation to the transmitted wave".

Example: $\alpha_w=0.9$ >>> 90% of sounds are absorbed

Note: α_w is a value obtained in a test laboratory

The role of mineral wool

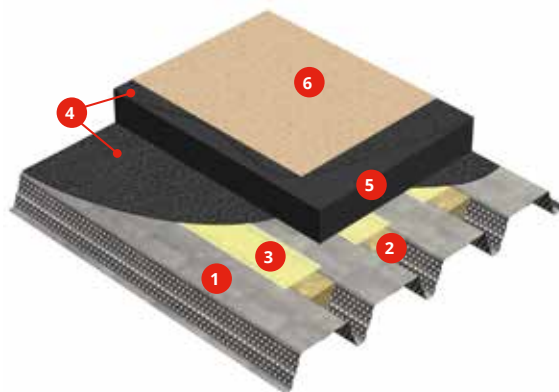
Mineral wool is used as an absorbent and represents a good sound insulation solution. Thanks to its porous open cell structure (due to the entanglement of fibres), mineral wool easily traps sound waves.



ACOUSTIC AND THERMAL PERFORMANCES

OUR ACOUSTIC PERFORMANCES - ABSORPTION

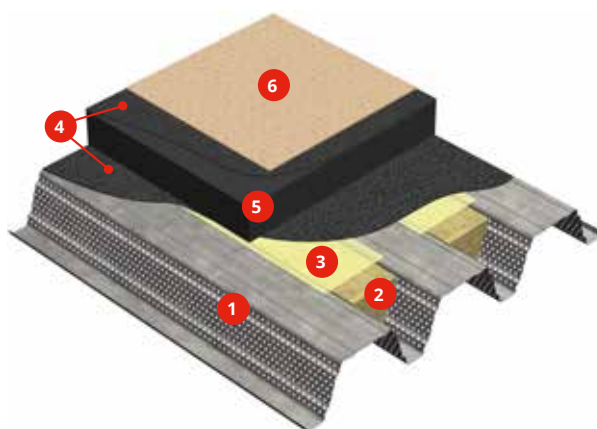
AQUALTEO 73.780 PA



1. ALTEO 73.780 PA
2. Mineral wool strip
3. Bridging strip
4. Hot-laid mixture
5. Cellular glass panel
6. Bituminous waterproofing

System	α per octave (test conversion in 1/3 octave band)						α_w	Weight (Kg/m ²)	Overall height	Tests
	125	250	500	1000	2000	4000				
AQUALTEO 73.780 PA	0.18	0.3	0.65	0.75	0.61	0.41	0.55	34.83	201mm	FCBA 404/13/198/2

AQUALTEO 106.750 PA



1. ALTEO 106.750 PA
2. Mineral wool strip
3. Bridging strip
4. Hot-laid mixture
5. Cellular glass panel
6. Bituminous waterproofing

System	α per octave (test conversion in 1/3 octave band)						α_w	Weight (Kg/m ²)	Overall height	Tests
	125	250	500	1000	2000	4000				
AQUALTEO 106.750 PA	0.26	0.53	0.84	0.82	0.62	0.44	0.65	37.12	234mm	FCBA 404/13/198/1

OUR THERMAL PERFORMANCES

Insulation thickness	mm	60	70	80	90	100	120	140	160	180
Thermal transmittance coefficient (Up)	W/m ² .K	0.61	0.53	0.47	0.43	0.39	0.33	0.28	0.25	0.23

Regardless of the steeldeck used, the thermal performances stated above are valid.
The thermal calculations are made assuming a thermal conductivity of the insulating material $\lambda = 0.042$ W/m.K



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