

SURPRISING Solutions CREATING ARCHITECTURE

Since 1964

PROJECTS • PROPOSALS • PRODUCTS®

PANELS
elcom system
ITALY

Welcome in our world of Systems

Welcome in

index

TERMOPARETI®

	pag. 09
HIDDEN FIXING	10
HIDDEN FIXING OPTIONS	12
VISIBLE FIXING	13
FLAT	14
BUBBLE	18
RUGBY	22
CAOS	26
AEFFE ATHOS	30
AEFFE ATHOS TERMOFONISOL	31

TERMOCOPERTURE®

	pag. 33
TCP/C RP/ST 4G	34
ZOOTEC	36
ZOOTEC EAT	37
FLEX	38
SLIM	39
POLYOLEFIN	40
AEFFE OLYMPOS	42
AEFFE OLYMPOS TERMOFONISOL	43

ARCHITECTURAL FACADES

	pag. 45
SERBOND® system	46
Systems and special components with thermic cut	56

TRAPEZOIDAL SHEETS

	pag. 61
LG 454 ROOF - LG 450 WALL	62
STAMPED & CAMBERED SHEETS	63

SOLAC® STEEL DECKINGS

	pag. 64
SOLAC 55 - LG 550	64
SOLAC 75 - LG 750	65

Complementary Accessories – Finishings	66
Colour Chart	72
Classification Reports	73



our world of Systems

PANELS
elcom system S P A
ITALY



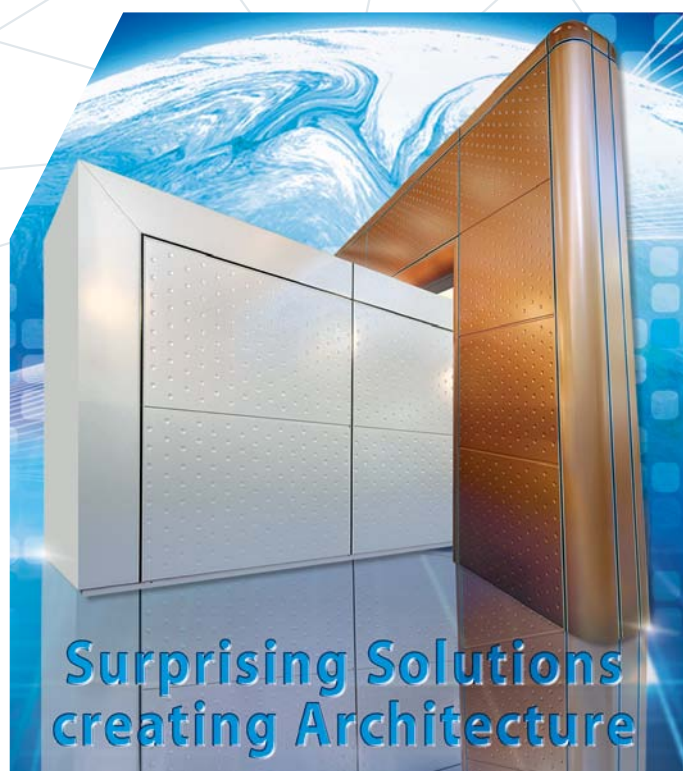
A fantastic entrepreneurial history started in 1920...



1920: Mariano Granieri starts a small carpenter shop to build farm carts



In the early fifties Luigi Granieri (Mariano's son) founds ILFE Serramenti



From the moment Luigi Granieri, launched **Elcom System Spa** in 1964 it has rapidly and successfully spread on the Italian and international markets. The company firmly established itself as a market leader in the prefabrication sector with a business philosophy dedicated to technological research and innovation. By constantly evaluating and incorporating current technological progress, Elcom System anticipates and responds to the changing needs and requirements of the market. It has earned its clients' trust by offering a wide range of products which are adapted to individual client's requirements and by being well disposed to offering guarantees to the designers, the technicians and the end user.

Elcom System Spa has its seat in the heart of "green Umbria", near the beautiful medieval town of Todi. The company site spans 85.000m², 27.000m² of which accommodate the high-tech production facilities where modular coordinate elements for the prefabrication sector are made. The well-known Termopareti® and Termocoperture® (patented), architectural wall claddings, trapezoidal sheets for roofs and walls, steel floors, special systems and components with thermic cut, spherical connections, profiles, finishings and fixing accessories are all produced here.

Our identity...our Ideas

Elcom System Spa is at the cutting-edge of the industrial building sector and it is producing panels fit for the 21st century, anticipating the ever increasing needs of society. Technological progress, harmonious balance with his fellow human beings and a solid tradition are the basic principles of the company.

Based on its long lasting experience **Elcom System Spa** relies on experimental and applied research to offer innovative solutions that take into account and respect enviromental needs of all kinds. Stability, safety, maximum comfort and a commitment to aesthetic values come as standard.

The uncompromising dedication of **Elcom System Spa** to technological research and innovation to face the new millennium, forms an essential part of its business philosophy, culminating in offering a comprehensive service rather than a simple product. A concrete response to the imperatives of the modern world. Every requirement is met with efficiency and utmost productivity with results that exceed all expectations of the diverse needs of both national and international clients.



With 33 Luigi Granieri makes ILFE Serramenti SpA a nationwide important industrial reality



1964: The new factory ILFE Serramenti



In 1968 Luigi Granieri (Knight of Labour) receives the "Gold Mercury" Award



"The Gold Mercury" awarded to Luigi Granieri



1974: Luigi Granieri's entrepreneurial genius conceives the well-known TERMOPARETI® and TERMOCOPERTURE®
1984: The vibrating platform invented by Luigi Granieri to test the buildings' stability during earthquakes.



Commendatore Luigi Granieri, founder of Elcom System (1927 - 2008)



Building the future



ELCOM SYSTEM is adding value to your projects with innovative solutions

Elcom System Spa strongly believes in developing and strengthening the synergy between research and production to create innovative and successful products.



ELCOM SYSTEM is...



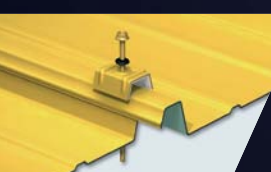
TERMOPARETI® the well-known monolithic sandwich panels researched and made by Elcom System Spa (certified UNI EN ISO 9001) to offer the best in the field of light prefabrication. They can be used to realize walls, claddings, internal partitions and ceilings.



TERMOCOPERTURE® the monolithic sandwich panels researched and made by Elcom System Spa (certified UNI EN ISO 9001) to offer the best in the field of light prefabrication. They can be used to realize roofings and ceilings.



SERBOND® The concept of the Serbond cladding has been developed to offer to the designers the possibility to create tailor-made projects, having not to refer to rigid standards or defined geometric rules. It is a particular versatile system, suitable for all type of structures.



TRAPEZOIDAL SHEETS The trapezoidal sheets have been studied to realize roofings, walls and floors. The possibility of particular ways of shaping, such as cambering and drawing allows for their use in every kind of building.

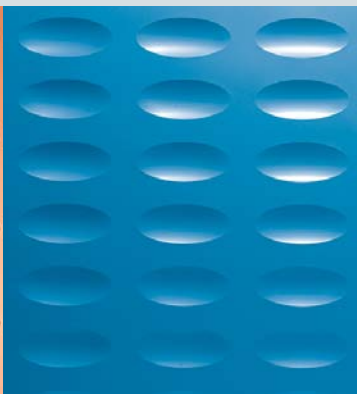




GEOMETRIES



PATENTED
elcom system



TERMOPARETI® **BUBBLE**

Studied to be used in industrial, commercial, residential building and public utilities and to create an original architectural design.

TERMOPARETI® **RUGBY**

They have been studied to create original architectural facades with an extraordinary and unusual innovative design almost ignored in the field of thermoinsulating panels in the past.

TERMOPARETI® **FLAT**

Monolithic panels developed to offer the best in the light prefabrication field. The panels can be used for walls, claddings, internal partitions and ceilings.

TERMOPARETI® **CAOS**

An ambitious project with a revolutionary concept, both aesthetic and architectural, being brand new in inspiration and design.

Surprising Solutions creating Architecture

GEOMETRIES





TERMOPARETI® TERMOCOPERTURE®

® registered trade name



Via s.s. Ex Tiberina 3 bis, 218
06059 - PANTALLA di TODI - PG

20 EN 14509

Metal faced insulating panel for use in building
Reference: TERMOPARETI® and TERMOCOPERTURE®
Insulation: PUR / PIR
Support facings: STEEL, ALUMINIUM, COPPER,
STAINLESS STEEL, COR-TEN
USE: ROOF and WALLS

Thermal transmittance

Mechanical resistance

- Tensile strength
- Shear strength
- Reduced long-term shear strength
- Shear modulus (core)
- Compressive strength (core)

Creep coefficient

Bending strength: span

- Positive bending
- Positive bending, high temperatures
- Negative bending
- Negative bending, high temperatures

Bending strength: internal support

- positive bending
- positive bending, high temperatures
- negative bending
- negative bending, high temperatures

Wrinkling stress (external face)

- in span
- in span, high temperatures
- with central support
- with central support, high temperatures

Wrinkling stress (internal face)

- in span
- with central support

Reaction to fire

Fire resistance

Behaviour to external fire

Water permeability

Air permeability

Steam permeability

Airborne sound insulation

Sound absorption

Durability

The insulating metal panels called **TERMOPARETI®** and **TERMOCOPERTURE®** (® registered trade name) are the well-known monolithic panels researched and made by **ELCOM SYSTEM S.p.A.** (certified **UNI EN ISO 9001**) to offer the best in the field of light pre-fabrication.

With the panels **TERMOPARETI®** - **TERMOCOPERTURE®** it's possible to realize roofings, walls, claddings, internal partitions, false-ceilings, shelters, canopies etc., and a wide range of little, medium and big pre-fabricated buildings in industrial, commercial, residential buildings, public utilities, agricultural and zootechnical field.

THE COMPANY PRODUCES ALSO THE PANELS CALLED BUBBLE WITH PRESSED SPHERICAL IMPRINTS, RUGBY WITH PRESSED ELLIPTIC IMPRINTS AND THE NEW CAOS, RESEARCHED FOR FACADES WITH ORIGINAL ARCHITECTURAL SOLUTIONS.

For tailor-made projects the company produces particular joints and special components such as spherical, right and curved connections with thermic cut, to be used to reach a high aesthetic standard.

TECHNICAL CHARACTERISTICS

External steel supports : they are obtained from cold profiling of coils of different material: **carbon steel** coated with zinc S 250GD according to UNI EN 10346 norms with mechanical characteristics as foreseen

in the D.M. of 14.01.2008 and tolerances as UNI EN 10143 norm; **aluminium** according to UNI EN 1396 norm, with a minimum breaking load of 150 MPa; **copper** according to UNI EN 1172; and **stainless steel** according to EN 10088-1 norms; **COR-TEN**.

The finishing of steel and aluminium supports consists of an organic coat obtained from a cycle of hot standard polyester prepainting, according to UNI EN 10169 norms. On request, different coatings such as **PVC alimentary** EAT or PVDF can be furnished.

It's possible to manufacture **TERMOCOPERTURE®** panels with bitumized feltpaper and/or centesimal aluminium on the internal side. Special roof panels for zootechny, called **ZOOTEC**, are manufactured with the internal support in fibreglass (opaline white). They are indicated for spaces with biological exhalations and they are resistant to bacteriums, urea and ammonia. The colours (as per enclosed colour chart) of the panels Termocoperture® and Termopareti® are obtained with pigments whose stability has been tested.

Insulation: expanded polyurethane (PUR), CFC free, according to UNI EN 13165 norm. On request foams with characteristics of fire-reaction class E can also be furnished. In case of particular needs, foams with a superior fire-reaction (PIR), can be produced. These panels with class Bs2d0 UNI EN 13501-1 have better performances as far as concerns fire reaction and fire resistance.

The main characteristics of the foams are:

- Density: ~ 40 kg/m³.
- compressive strength: 140 -150 KPa
- impermeability: 98% closed cells, (nonhygroscopic material)

Tolerances (according to the enclosed D UNI EN 14509):

- Thickness of panels (relative to the declared value)
 - D ≤ 100 mm ± 2 mm
 - D > 100 mm ± 2%
- Length of panels ± 5 mm.
- Flatness:
 - L = 200 mm l ≤ 0,6 mm
 - L = 400 mm l ≤ 1 mm

(L = distance between the points of measurement)

- Out of square on cut: s ≤ 0,6% of the useful width
- Rib span: ± 2 mm

Permissible loads: The values indicated in the tables, are calculated according to the ECCS and AIPPEG recommendations, and confirmed by experiments. For dimensions and test refer to the UNI EN 14509 norm, enclosed E.

Peculiar Characteristics: the panels **TERMOPARETI®** are equipped, in the female joint, with a special continuous PVC fixed-in profile, to increase the overall fixing stability of the panel and to avoid detachments of the supports from the insulation either during their handling or in the working phase (excluded thicknesses 120-150-180 mm).



The panels **TERMOPARETI®** and **TERMOCOPERTURE®** made by **ELCOM SYSTEM** with polyisocyanurate foam (PIR) have been certified **Bs2d0** according to the european norm EN13501-1 and **EI 20, EI 30** and **REI 20** according to the EN13501-2 Norm.

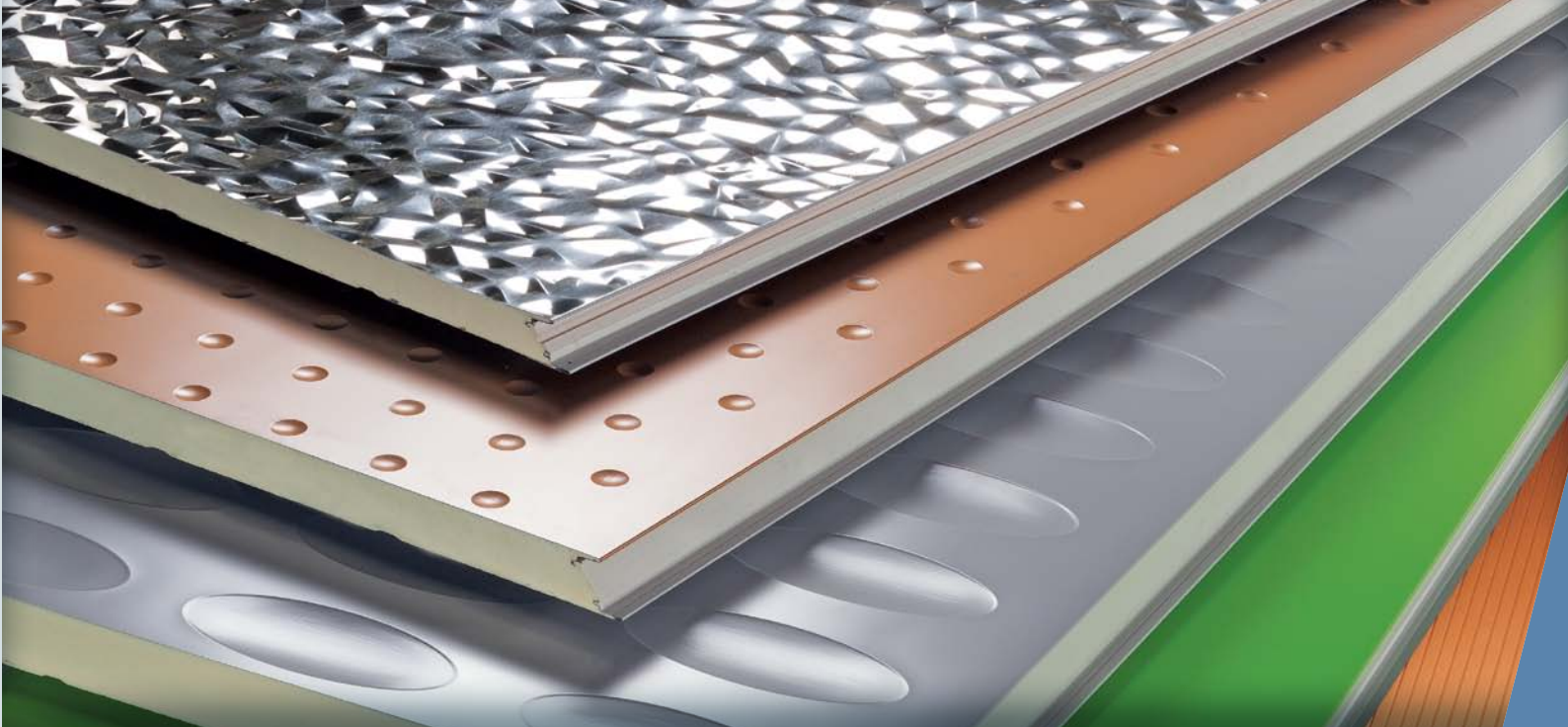
The PIR foam (polyisocyanurate) has the same insulation characteristics of the standard polyurethane, but has better performances as far as concerns fire reaction and fire resistance. PIR foam is the result of the reaction of polyol and a high proportion of isocyanate. This last reacts with itself to form a thermoset plastic; this reaction is called trimerization.

These PIR compounds that are typically cyclic, lend to the foam better performances as far as concerns fire reaction and fire resistance than the traditional PUR foam, in fact, when burning, there is less smoke production as shows also the classification assigned to the panels. i.e. **B-s2,d0**.

As soon as the CE marking and the new european classification according to the EUROCLASSES as per EN13501-1 came into force, it has been necessary an evolution in the performances of fire reaction







TERMOPARETI®

® registered trade name

Surprising Solutions creating Architecture

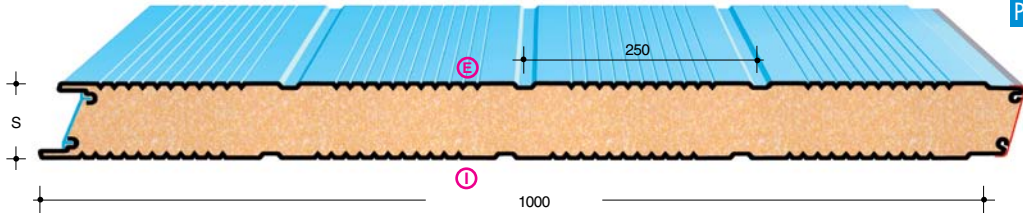


TERMOPARETI® HIDDEN FIXING

® registered trade name

TYPE WP/ST

S
Thickness mm.
35-40
50-60-80-100

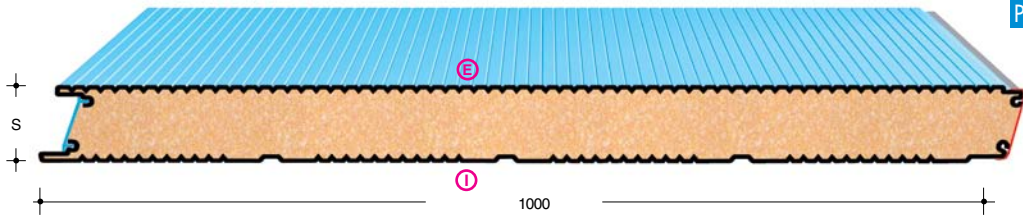


OPTION
PIR B-s2,d0



TYPE WPM/C-FN

S
Thickness mm.
35-40
50-60-80-100

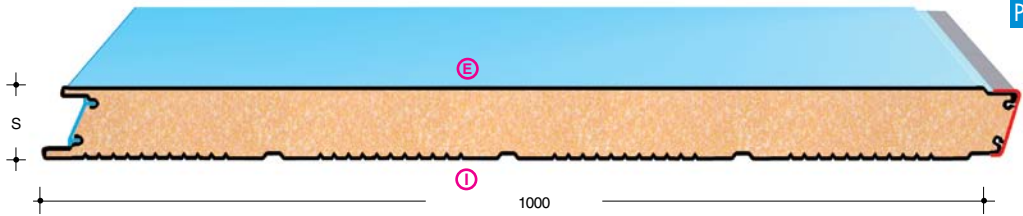


OPTION
PIR B-s2,d0



TYPE WP/ST FLAT

S
Thickness mm.
40-50
60-80-100

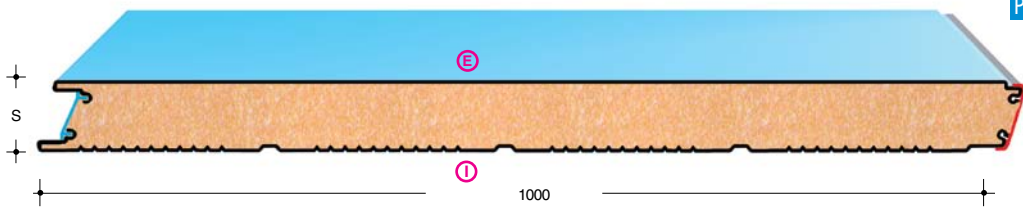


OPTION
PIR B-s2,d0



TYPE WPM/C-FN FLAT

S
Thickness mm.
40-50
60-80-100

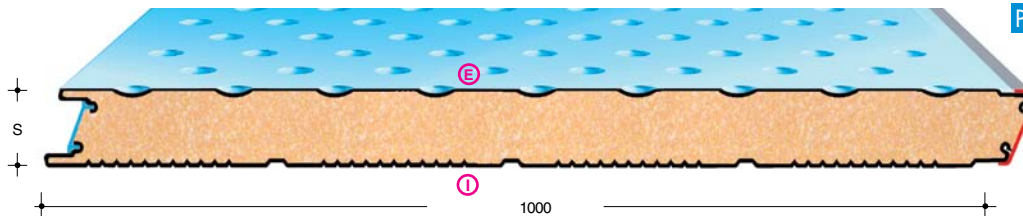


OPTION
PIR B-s2,d0



TYPE WP/ST BUBBLE

S
Thickness mm.
40-50
60-80-100

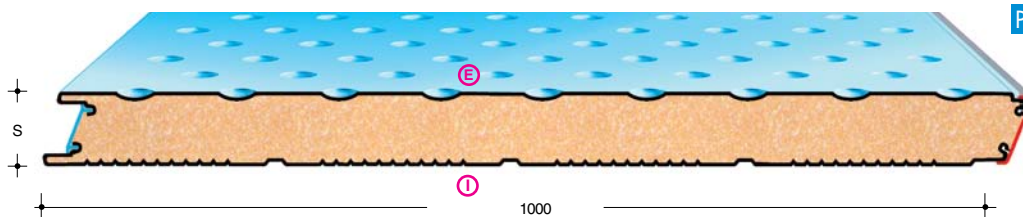


OPTION
PIR B-s2,d0



TYPE WPM/C-FN BUBBLE

S
Thickness mm.
40-50
60-80-100



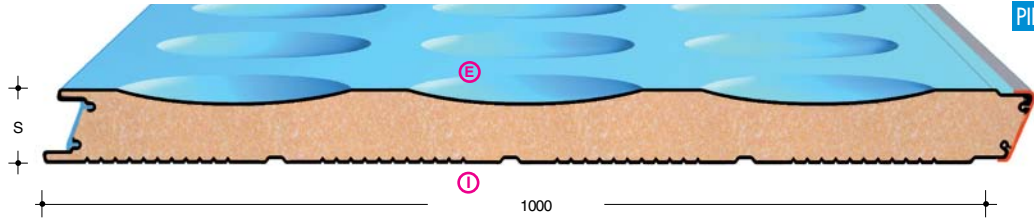
OPTION
PIR B-s2,d0



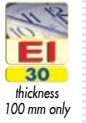


**TYPE
WP/ST
RUGBY**

S
Thickness mm.
40-50
60-80-100

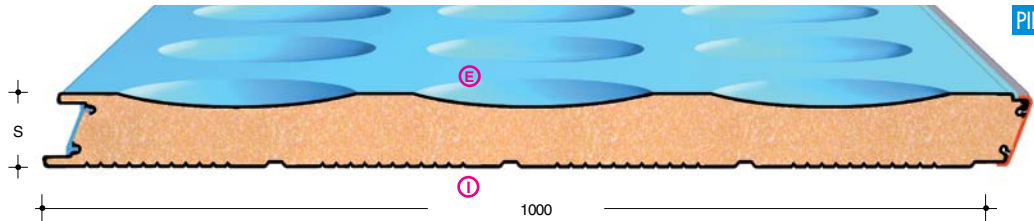


OPTION
PIR B-s2,d0

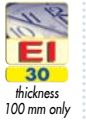


**TYPE
WPM/C-FN
RUGBY**

S
Thickness mm.
40-50
60-80-100

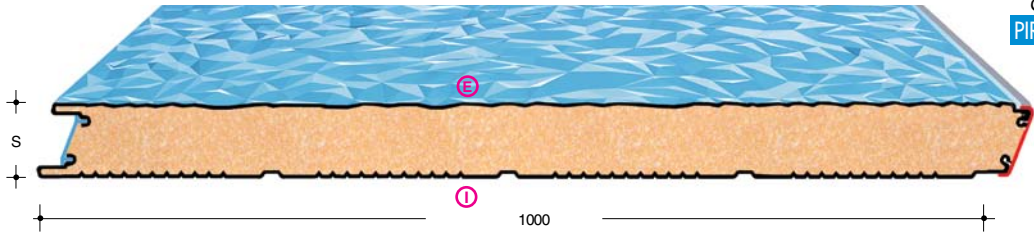


OPTION
PIR B-s2,d0



**TYPE
WPM/C-FN
CAOS**

S
Thickness mm.
40-50
60-80-100



OPTION
PIR B-s2,d0



THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²																																																																																																																																																																																																																																																																																										
S thickness mm	Kcal m ² ·h·°C	U	W m ² ·°C		weight Kg/m ²	SPAN IN m ℓ																																																																																																																																																																																																																																																																																									
						2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00																																																																																																																																																																																																																																																																																
25	0,711	0,827		9,58	Kg/m ²	125	85	60	50	40	130	95	70	60	50						KN/m ²	1,23	0,83	0,59	0,49	0,39	1,27	0,93	0,68	0,59	0,49	30	0,602	0,697		9,77	Kg/m ²	140	95	70	55	45	145	105	80	65	55						KN/m ²	1,37	0,94	0,69	0,54	0,44	1,42	1,03	0,78	0,64	0,54	35	0,522	0,607		9,96	Kg/m ²	145	100	80	60	50	155	115	90	70	60						KN/m ²	1,42	0,98	0,78	0,59	0,49	1,52	1,12	0,88	0,68	0,58	40	0,461	0,536		10,15	Kg/m ²	166	125	90	70	55	178	140	108	85	70						KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68	50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06
					KN/m ²	1,23	0,83	0,59	0,49	0,39	1,27	0,93	0,68	0,59	0,49	30	0,602	0,697		9,77	Kg/m ²	140	95	70	55	45	145	105	80	65	55						KN/m ²	1,37	0,94	0,69	0,54	0,44	1,42	1,03	0,78	0,64	0,54	35	0,522	0,607		9,96	Kg/m ²	145	100	80	60	50	155	115	90	70	60						KN/m ²	1,42	0,98	0,78	0,59	0,49	1,52	1,12	0,88	0,68	0,58	40	0,461	0,536		10,15	Kg/m ²	166	125	90	70	55	178	140	108	85	70						KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68	50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																
30	0,602	0,697		9,77	Kg/m ²	140	95	70	55	45	145	105	80	65	55						KN/m ²	1,37	0,94	0,69	0,54	0,44	1,42	1,03	0,78	0,64	0,54	35	0,522	0,607		9,96	Kg/m ²	145	100	80	60	50	155	115	90	70	60						KN/m ²	1,42	0,98	0,78	0,59	0,49	1,52	1,12	0,88	0,68	0,58	40	0,461	0,536		10,15	Kg/m ²	166	125	90	70	55	178	140	108	85	70						KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68	50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																
					KN/m ²	1,37	0,94	0,69	0,54	0,44	1,42	1,03	0,78	0,64	0,54	35	0,522	0,607		9,96	Kg/m ²	145	100	80	60	50	155	115	90	70	60						KN/m ²	1,42	0,98	0,78	0,59	0,49	1,52	1,12	0,88	0,68	0,58	40	0,461	0,536		10,15	Kg/m ²	166	125	90	70	55	178	140	108	85	70						KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68	50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																
35	0,522	0,607		9,96	Kg/m ²	145	100	80	60	50	155	115	90	70	60						KN/m ²	1,42	0,98	0,78	0,59	0,49	1,52	1,12	0,88	0,68	0,58	40	0,461	0,536		10,15	Kg/m ²	166	125	90	70	55	178	140	108	85	70						KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68	50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																
					KN/m ²	1,42	0,98	0,78	0,59	0,49	1,52	1,12	0,88	0,68	0,58	40	0,461	0,536		10,15	Kg/m ²	166	125	90	70	55	178	140	108	85	70						KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68	50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																
40	0,461	0,536		10,15	Kg/m ²	166	125	90	70	55	178	140	108	85	70						KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68	50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																
					KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68	50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																
50	0,372	0,433		10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90						KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																
					KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88	60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																
60	0,313	0,364		10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115						KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																																
					KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13	80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																																																
80	0,237	0,276		11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145						KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																																																																
					KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42	100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																																																																																
100	0,191	0,222		12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180						KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																																																																																																
					KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76	120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																																																																																																																
120	0,160	0,186		13,43	Kg/m ²	510	435	290	260	200	535	445	320	290	210						KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																																																																																																																																
					KN/m ²	4,99	4,26	2,84	2,55	1,96	5,24	4,36	3,13	2,84	2,06																																																																																																																																																																																																																																																																																

LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of **STEEL** supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **E** shows the required painted side.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²																																																																																																																																																																																										
S thickness mm	Kcal m ² ·h·°C	U	W m ² ·°C		weight Kg/m ²	SPAN IN m ℓ																																																																																																																																																																																									
						2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00																																																																																																																																																																																
40	0,461	0,536		5,16	Kg/m ²	108	64	41	27	19	149	95	64	44	32						KN/m ²	1,06	0,62	0,40	0,26	0,18	1,46	0,93	0,63	0,43	0,31	50	0,372	0,433		5,56	Kg/m ²	150	92	60	41	29	194	129	89	63	46						KN/m ²	1,47	0,90	0,58	0,40	0,28	1,90	1,26	0,87	0,61	0,45	60	0,313	0,364		5,96	Kg/m ²	191	121	81	56	40	237	162	114	83	62						KN/m ²	1,87	1,18	0,79	0,55	0,39	2,32	1,59	1,11	0,81	0,61	80	0,237	0,276		6,76	Kg/m ²	272	180	125	89	65	317	225	165	124	95						KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93	100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32
					KN/m ²	1,06	0,62	0,40	0,26	0,18	1,46	0,93	0,63	0,43	0,31	50	0,372	0,433		5,56	Kg/m ²	150	92	60	41	29	194	129	89	63	46						KN/m ²	1,47	0,90	0,58	0,40	0,28	1,90	1,26	0,87	0,61	0,45	60	0,313	0,364		5,96	Kg/m ²	191	121	81	56	40	237	162	114	83	62						KN/m ²	1,87	1,18	0,79	0,55	0,39	2,32	1,59	1,11	0,81	0,61	80	0,237	0,276		6,76	Kg/m ²	272	180	125	89	65	317	225	165	124	95						KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93	100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																
50	0,372	0,433		5,56	Kg/m ²	150	92	60	41	29	194	129	89	63	46						KN/m ²	1,47	0,90	0,58	0,40	0,28	1,90	1,26	0,87	0,61	0,45	60	0,313	0,364		5,96	Kg/m ²	191	121	81	56	40	237	162	114	83	62						KN/m ²	1,87	1,18	0,79	0,55	0,39	2,32	1,59	1,11	0,81	0,61	80	0,237	0,276		6,76	Kg/m ²	272	180	125	89	65	317	225	165	124	95						KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93	100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																
					KN/m ²	1,47	0,90	0,58	0,40	0,28	1,90	1,26	0,87	0,61	0,45	60	0,313	0,364		5,96	Kg/m ²	191	121	81	56	40	237	162	114	83	62						KN/m ²	1,87	1,18	0,79	0,55	0,39	2,32	1,59	1,11	0,81	0,61	80	0,237	0,276		6,76	Kg/m ²	272	180	125	89	65	317	225	165	124	95						KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93	100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																
60	0,313	0,364		5,96	Kg/m ²	191	121	81	56	40	237	162	114	83	62						KN/m ²	1,87	1,18	0,79	0,55	0,39	2,32	1,59	1,11	0,81	0,61	80	0,237	0,276		6,76	Kg/m ²	272	180	125	89	65	317	225	165	124	95						KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93	100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																																
					KN/m ²	1,87	1,18	0,79	0,55	0,39	2,32	1,59	1,11	0,81	0,61	80	0,237	0,276		6,76	Kg/m ²	272	180	125	89	65	317	225	165	124	95						KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93	100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																																																
80	0,237	0,276		6,76	Kg/m ²	272	180	125	89	65	317	225	165	124	95						KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93	100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																																																																
					KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93	100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																																																																																
100	0,191	0,222		7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100						KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																																																																																																
					KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98	120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																																																																																																																
120	0,160	0,186		8,36	Kg/m ²	315	270	210	185	110	340	295	240	195	135						KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																																																																																																																																
					KN/m ²	3,09	2,64	2,06	1,81	1,08	3,33	2,89	2,35	1,91	1,32																																																																																																																																																																																

LOAD CONDITIONS WITH ALUMINIUM SUPPORTS:

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of **ALUMINIUM** supports 0,6+0,6 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **E** shows the required painted side.



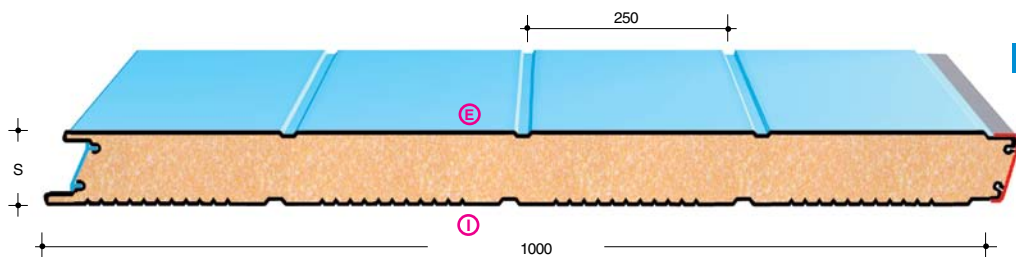
WP/ST ALTERNATIVE 1-2-3-4

The panels type WP/ST ALTERNATIVE 1-2-3-4 create visually a module of 250 and 500 mm width, both horizontally and vertically, obtaining thus original geometric shapes.



TYPE WP/ST ALT 1

S
Thickness mm.
40-50
60-80-100

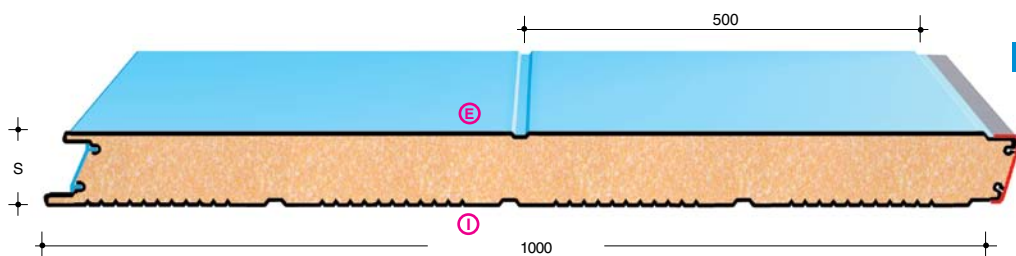


OPTION
PIR B-s2,d0



TYPE WP/ST ALT 2

S
Thickness mm.
40-50
60-80-100

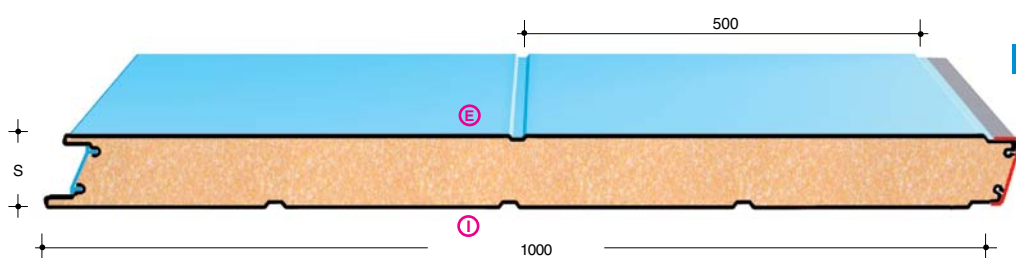


OPTION
PIR B-s2,d0



TYPE WP/ST ALT 3

S
Thickness mm.
40-50
60-80-100

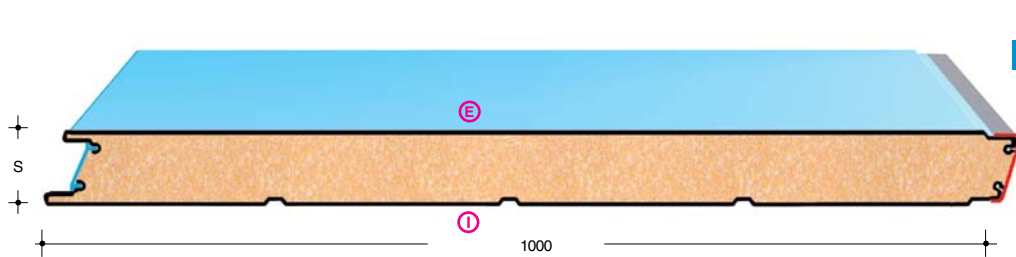


OPTION
PIR B-s2,d0

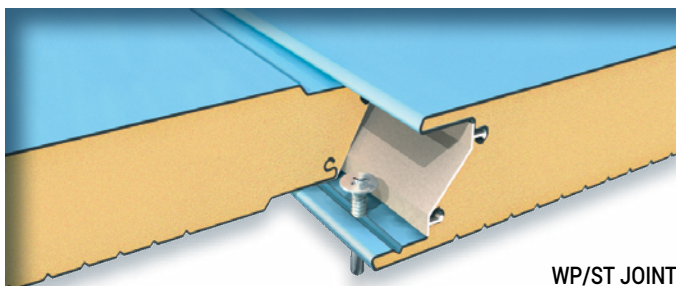


TYPE WP/ST ALT 4

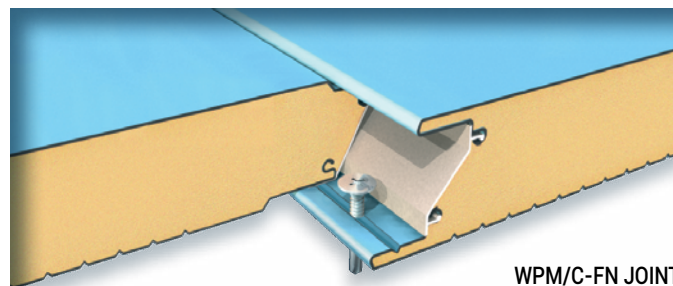
S
Thickness mm.
40-50
60-80-100



OPTION
PIR B-s2,d0



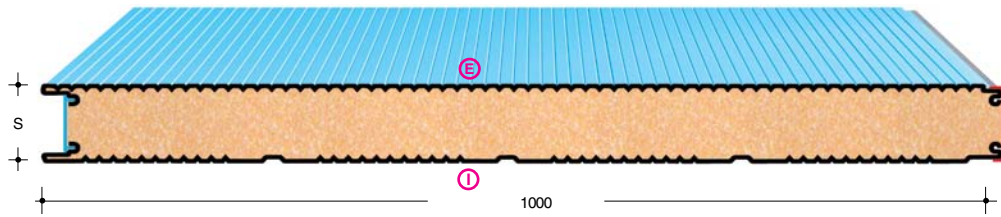
WP/ST JOINT



WPM/C-FN JOINT

TYPE
WPM/C

S
Thickness mm.
25-30-35-40
50-80-100-120

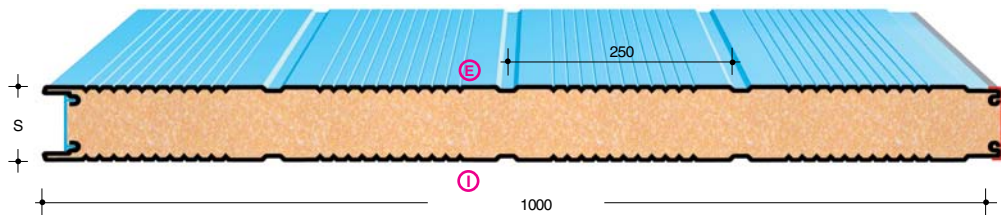


OPTION
PIR B-s2,d0



TYPE
TPG/C-ST

S
Thickness mm.
30-35-40-50
80-100-120

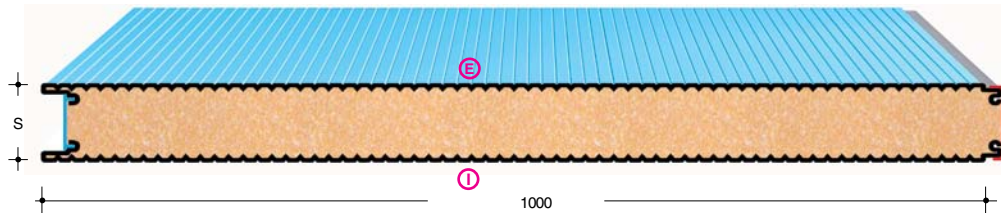


OPTION
PIR B-s2,d0

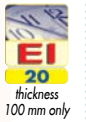


TYPE
TPM/C-ST

S
Thickness mm.
25-30-35-40
50-80-100-120

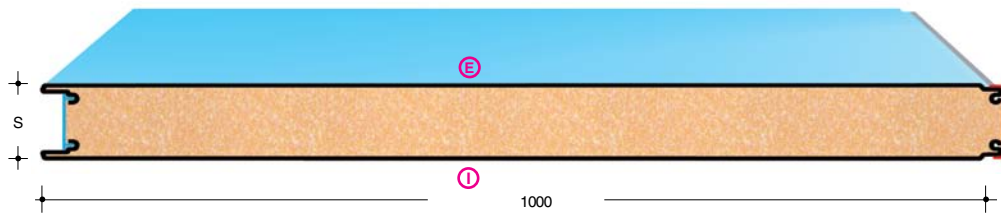


OPTION
PIR B-s2,d0



TYPE
TPL/C-ST

S
Thickness mm.
30-35-40-50
80-100-120

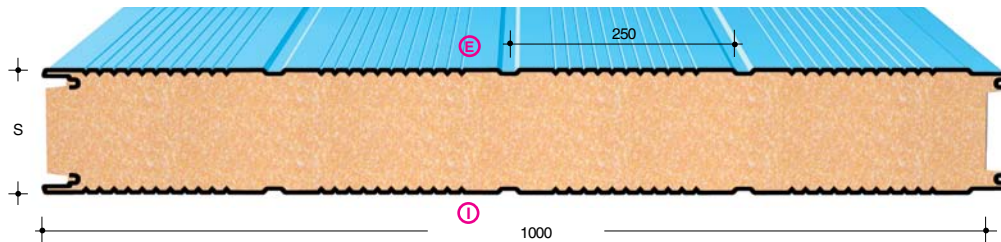


OPTION
PIR B-s2,d0



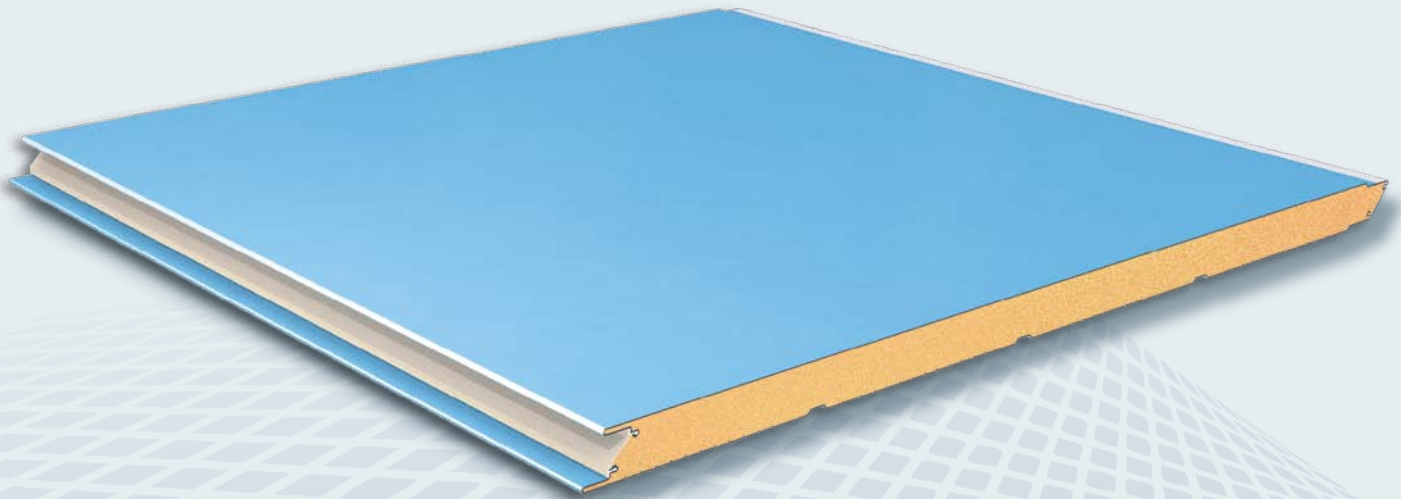
TYPE
TPG/C-LAB

S
Thickness mm.
150-180



OPTION
PIR B-s2,d0





Technical characteristics and performances:

Supports: **STEEL** - S 250 GD according UNI EN 10346 norm, mechanical characteristics as D.M. of 14/01/2008 and tolerances according UNI EN 10143 Norm
ALUMINIUM - UNI EN 1396 with minimum yielding limit 150 Mpa
COPPER - UNI EN 1172
COR-TEN
STAINLESS STEEL - According UNI EN 10088-1 Norm

Insulation: PUR Density ~ 40 Kg/m³

Thickness: mm. 40-50-60-80-100

Standard panel: Width mm. 1000

The panels **TERMOPARETI® FLAT** are available in different types and they have been studied to be used in industrial, commercial, residential building and public utilities for new buildings and renovations. The panels can be used for continuous and/or discontinuous external walls, internal partitions and ceilings. The product, thanks to its characteristics, can be widely employed and architects and designers have freedom of choice in a wide range of materials and colours. The panels can be used on any type of structure such as metallic, concrete and wood, and their installation can be vertical, horizontal or inclined. The panels are connected to each other by a joint and they are fixed with specific accessories. Elements with thermic cut such as rounded and right corners, edges and spherical connections are used to complete the **TERMOPARETI® FLAT** and reach a high aesthetic standard.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ									
	Kcal m ² -h-°C	W m ² -°C			2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	10,15	Kg/m ²	166	125	90	70	55	178	140	108	85	70
				KN/m ²	1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68
50	0,372	0,433	10,53	Kg/m ²	225	160	120	90	70	245	182	140	115	90
				KN/m ²	2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88
60	0,313	0,364	10,91	Kg/m ²	289	216	142	115	85	321	237	181	141	115
				KN/m ²	2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13
80	0,237	0,276	11,67	Kg/m ²	455	316	227	160	120	500	365	280	215	145
				KN/m ²	4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42
100	0,191	0,222	12,63	Kg/m ²	470	345	260	200	160	510	390	285	225	180
				KN/m ²	4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76

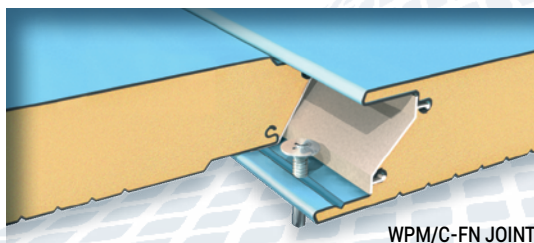
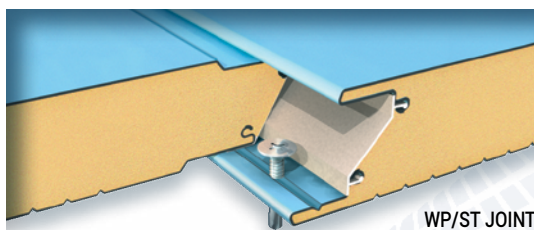
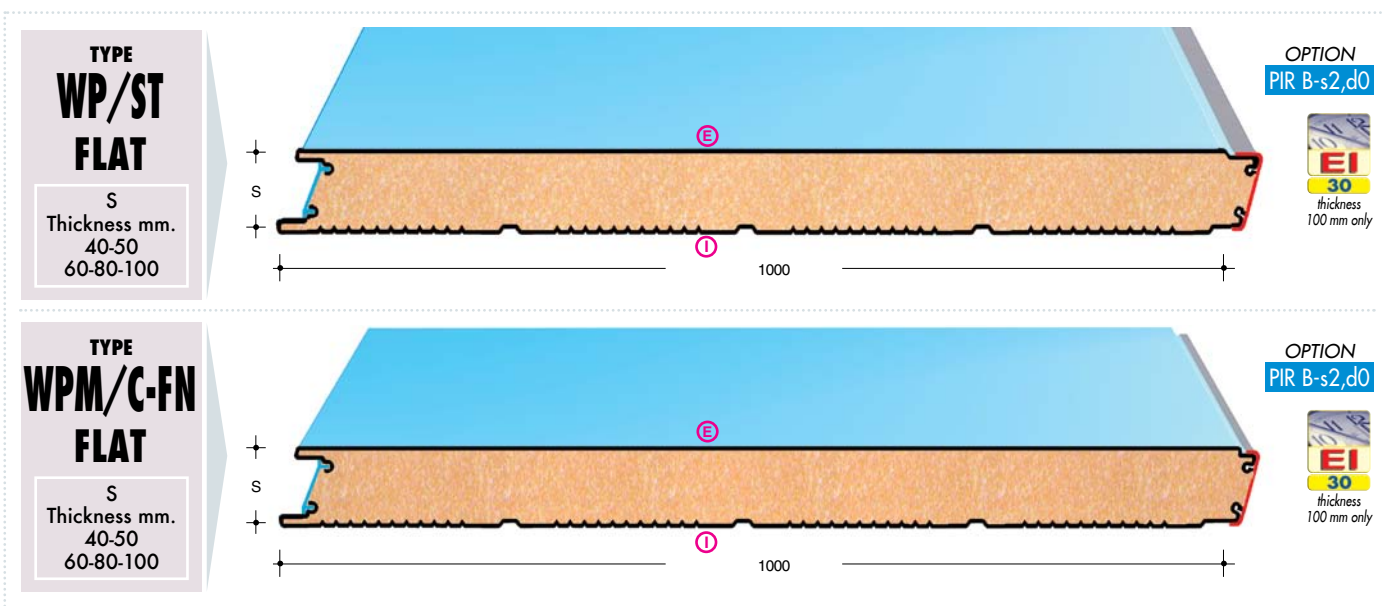
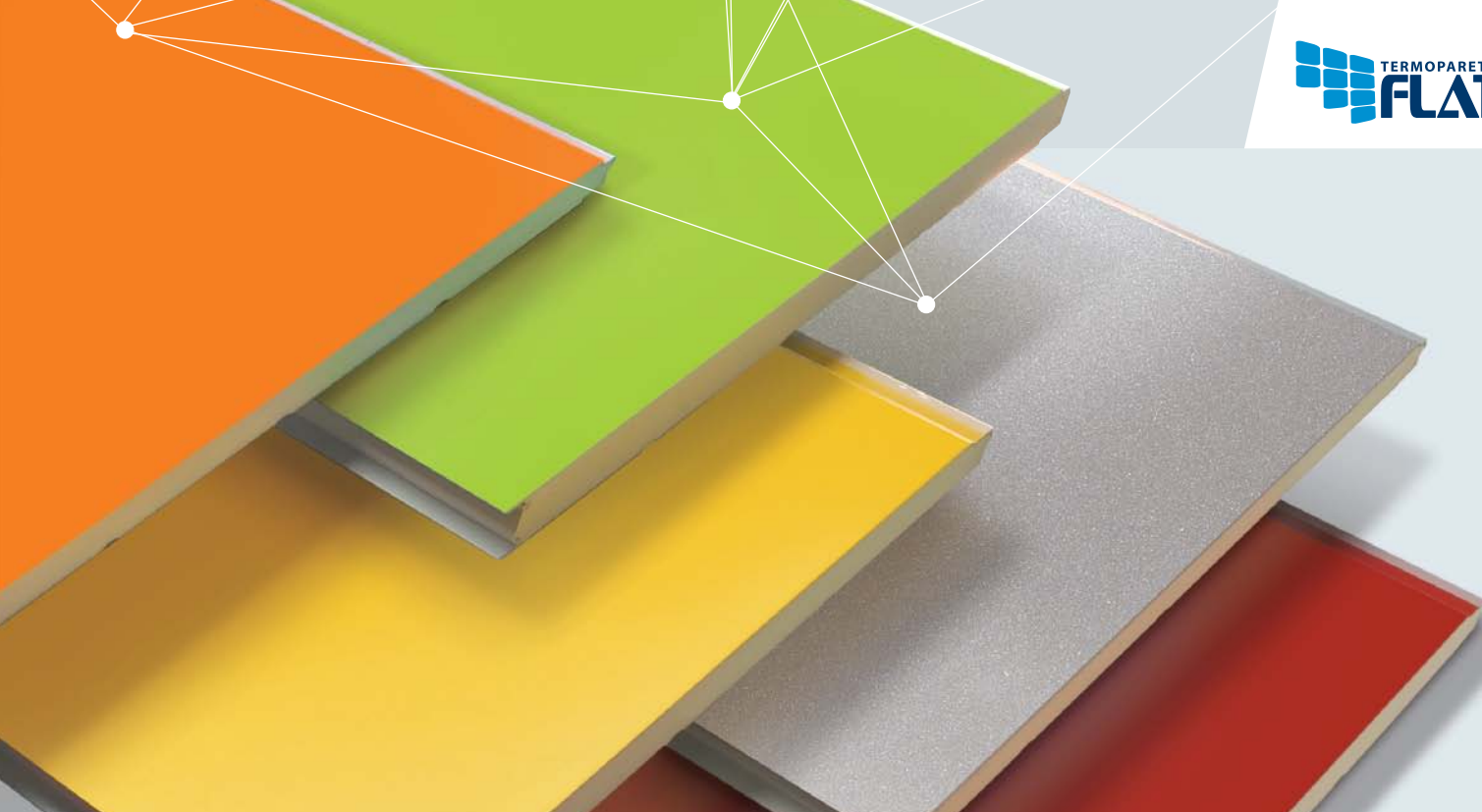
LOAD CONDITIONS WITH STEEL SUPPORTS:

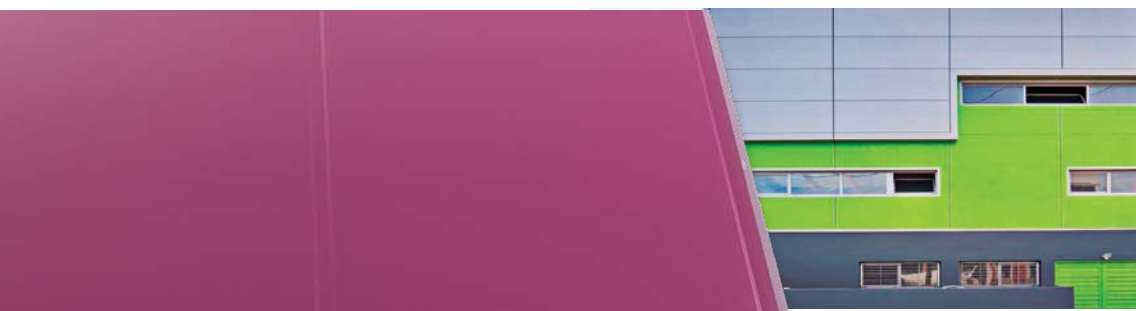
The values shown in the tables are indicative and referred to a deflection f_{s1}/200 of the span ℓ (m) for panels with thickness of **STEEL** supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ									
	Kcal m ² -h-°C	W m ² -°C			2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	5,16	Kg/m ²	108	64	41	27	19	149	95	64	44	32
				KN/m ²	1,06	0,62	0,40	0,26	0,18	1,46	0,93	0,63	0,43	0,31
50	0,372	0,433	5,56	Kg/m ²	150	92	60	41	29	194	129	89	63	46
				KN/m ²	1,47	0,90	0,58	0,40	0,28	1,90	1,26	0,87	0,61	0,45
60	0,313	0,364	5,96	Kg/m ²	191	121	81	56	40	237	162	114	83	62
				KN/m ²	1,87	1,18	0,79	0,55	0,39	2,32	1,59	1,11	0,81	0,61
80	0,237	0,276	6,76	Kg/m ²	272	180	125	89	65	317	225	165	124	95
				KN/m ²	2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93
100	0,191	0,222	7,56	Kg/m ²	290	235	180	110	90	310	255	190	135	100
				KN/m ²	2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98

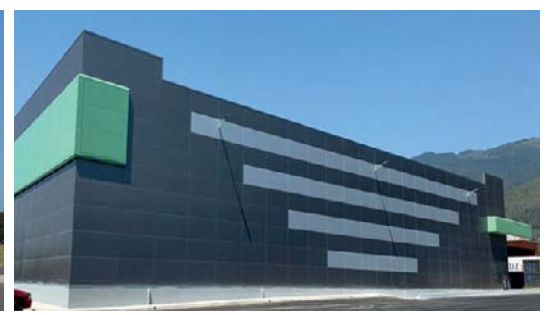
LOAD CONDITIONS WITH ALUMINIUM SUPPORTS:

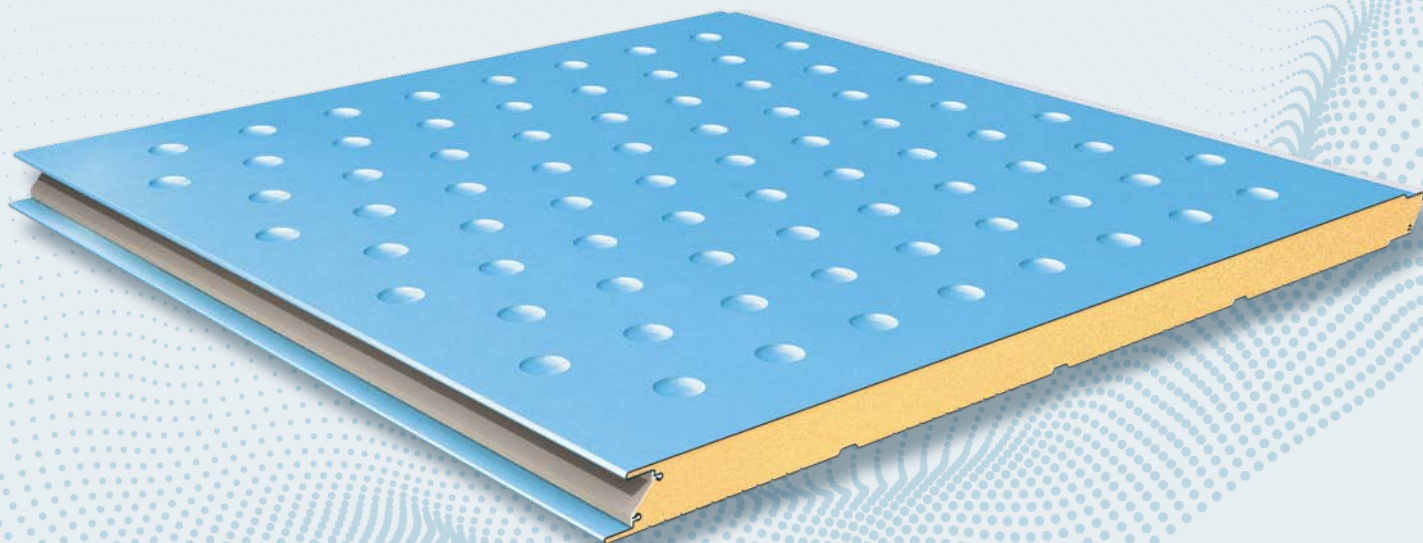
The values shown in the tables are indicative and referred to a deflection f_{s1}/200 of the span ℓ (m) for panels with thickness of **ALUMINIUM** supports 0,6+0,6 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.





The best value
add to your
architectural
projects.





Technical characteristics and performances:

Supports: **STEEL** - S 250 GD according UNI EN 10346 norm, mechanical characteristics as D.M. of 14/01/2008 and tolerances according UNI EN 10143 Norm
ALUMINIUM - UNI EN 1396 with minimum yielding limit 150 Mpa
COPPER - UNI EN 1172
COR-TEN
STAINLESS STEEL - According UNI EN 10088-1 Norm

Insulation: PUR Density ~ 40 Kg/m³
Thickness: mm. 40-50-60-80-100
Standard panel: Width mm. 1000

The panels **TERMOPARETI® BUBBLE (patented)** are available in different types and are unlike the traditional panels. In fact they have been studied to create original architectural impressions and they can be used in industrial, commercial, residential building and public utilities, for new buildings and renovations. The panels can be used for continuous and/or discontinuous external walls, internal partitions and ceilings. The product, thanks to its characteristics, can be widely employed and architects, designers and end users have freedom of choice in a wide range of materials and colours. The panels can be used on any type of structure such as metallic, concrete and wood, and their application can be vertical, horizontal or inclined. They are fixed with specific accessories.

The peculiarity of the **BUBBLE** panels is on the external surface: pressed spherical imprints on the steel that give an impressive architectural effect to the building. The imprints are negative respective the external side of the support and they can be realised on different materials such as galvanized and/or prepainted steel, aluminium, stainless steel and copper. Elements with thermic cut such as rounded and right corners, edges and spherical connections are used to complete the **TERMOPARETI® BUBBLE** and reach a high aesthetic standard.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ									
	Kcal m ² -h-°C	W m ² -°C			2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	10,15	Kg/m ² KN/m ²	166 1,63	125 1,22	90 0,88	70 0,68	55 0,54	178 1,74	140 1,37	108 1,05	85 0,83	70 0,68
50	0,372	0,433	10,53	Kg/m ² KN/m ²	225 2,21	160 1,57	120 1,18	90 0,88	70 0,68	245 2,41	182 1,78	140 1,37	115 1,13	90 0,88
60	0,313	0,364	10,91	Kg/m ² KN/m ²	289 2,83	216 2,12	142 1,39	115 1,13	85 0,83	321 3,15	237 2,32	181 1,77	141 1,38	115 1,13
80	0,237	0,276	11,67	Kg/m ² KN/m ²	455 4,46	316 3,09	227 2,22	160 1,57	120 1,18	500 4,91	365 3,58	280 2,74	215 2,11	145 1,42
100	0,191	0,222	12,63	Kg/m ² KN/m ²	470 4,60	345 3,38	260 2,55	200 1,96	160 1,57	510 4,99	390 3,82	285 2,79	225 2,20	180 1,76

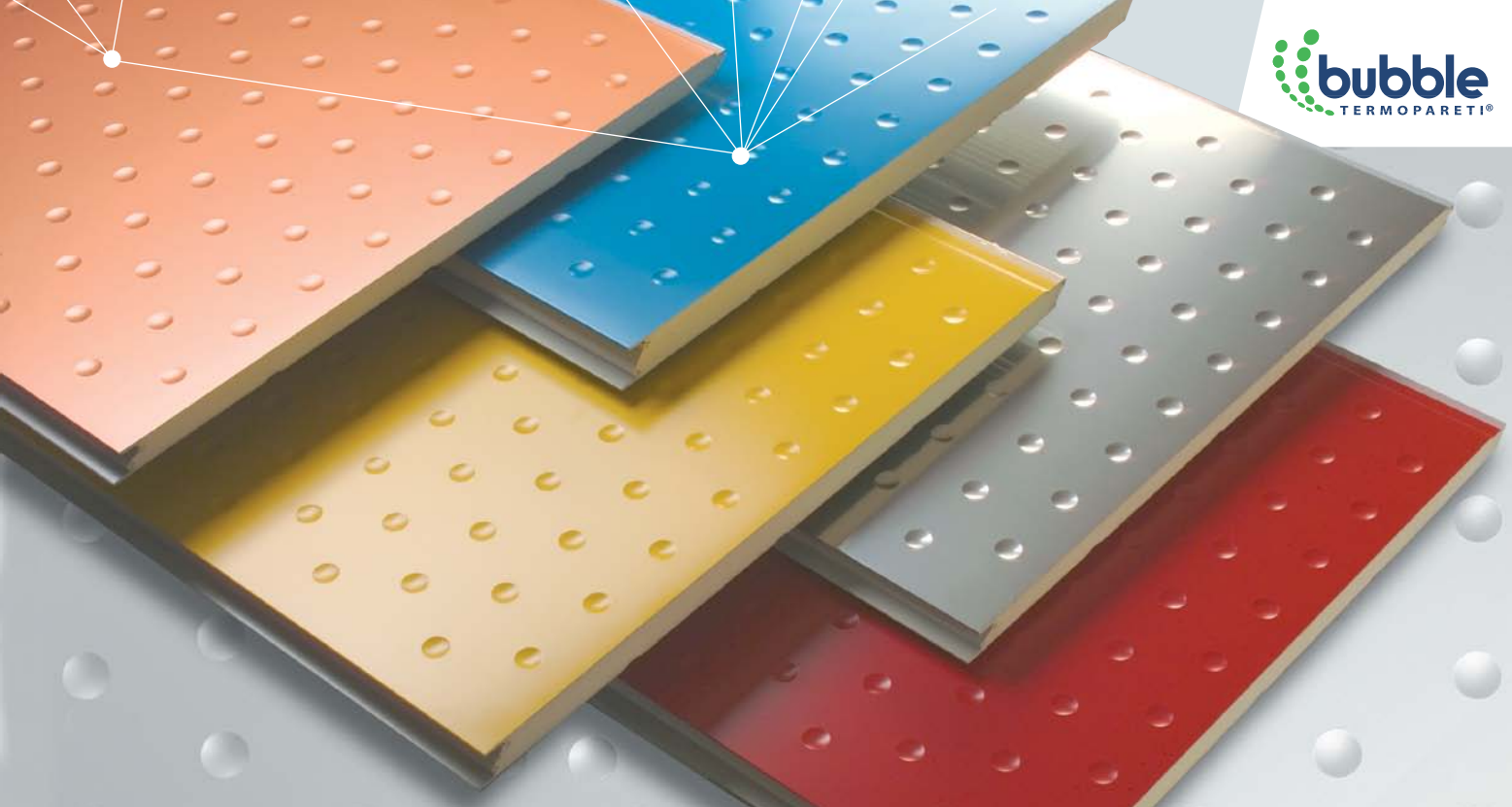
LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection f_{s1}/200 of the span ℓ (m) for panels with thickness of **STEEL** supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ									
	Kcal m ² -h-°C	W m ² -°C			2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	5,16	Kg/m ² KN/m ²	108 1,06	64 0,62	41 0,40	27 0,26	19 0,18	149 1,46	95 0,93	64 0,63	44 0,43	32 0,31
50	0,372	0,433	5,56	Kg/m ² KN/m ²	150 1,47	92 0,90	60 0,58	41 0,40	29 0,28	194 1,90	129 1,26	89 0,87	63 0,61	46 0,45
60	0,313	0,364	5,96	Kg/m ² KN/m ²	191 1,87	121 1,18	81 0,79	56 0,55	40 0,39	237 2,32	162 1,59	114 1,11	83 0,81	62 0,61
80	0,237	0,276	6,76	Kg/m ² KN/m ²	272 2,67	180 1,76	125 1,22	89 0,87	65 0,63	317 3,11	225 2,20	165 1,62	124 1,21	95 0,93
100	0,191	0,222	7,56	Kg/m ² KN/m ²	290 2,84	235 2,30	180 1,76	110 1,08	90 0,88	310 2,94	255 2,49	190 1,86	135 1,32	100 0,98

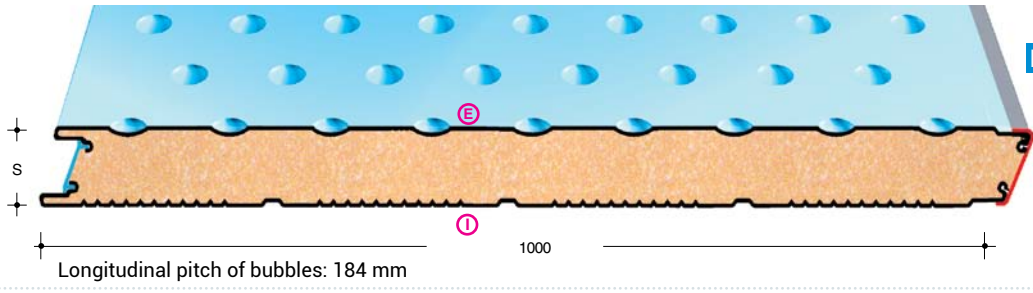
LOAD CONDITIONS WITH ALUMINIUM SUPPORTS:

The values shown in the tables are indicative and referred to a deflection f_{s1}/200 of the span ℓ (m) for panels with thickness of **ALUMINIUM** supports 0,6+0,6 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.



TYPE WP/ST BUBBLE

S
Thickness mm.
40-50
60-80-100

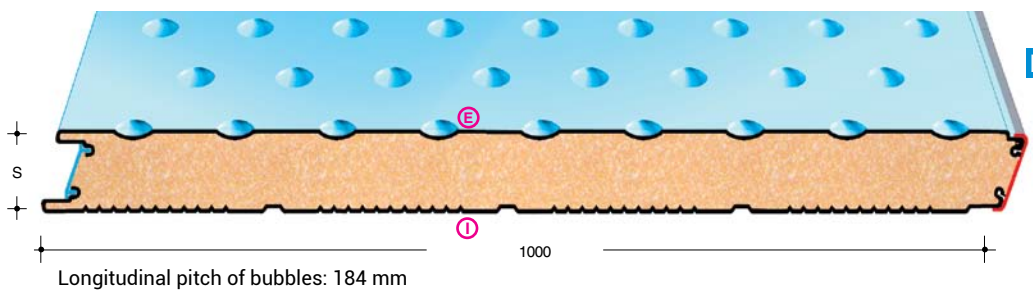


OPTION
PIR B-s2,d0

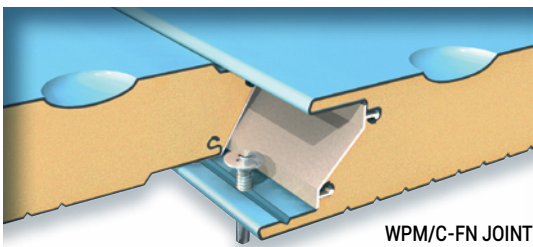
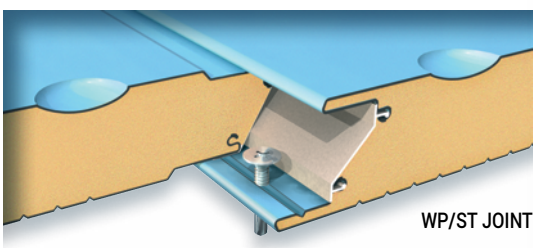


TYPE WPM/C-FN BUBBLE

S
Thickness mm.
40-50
60-80-100

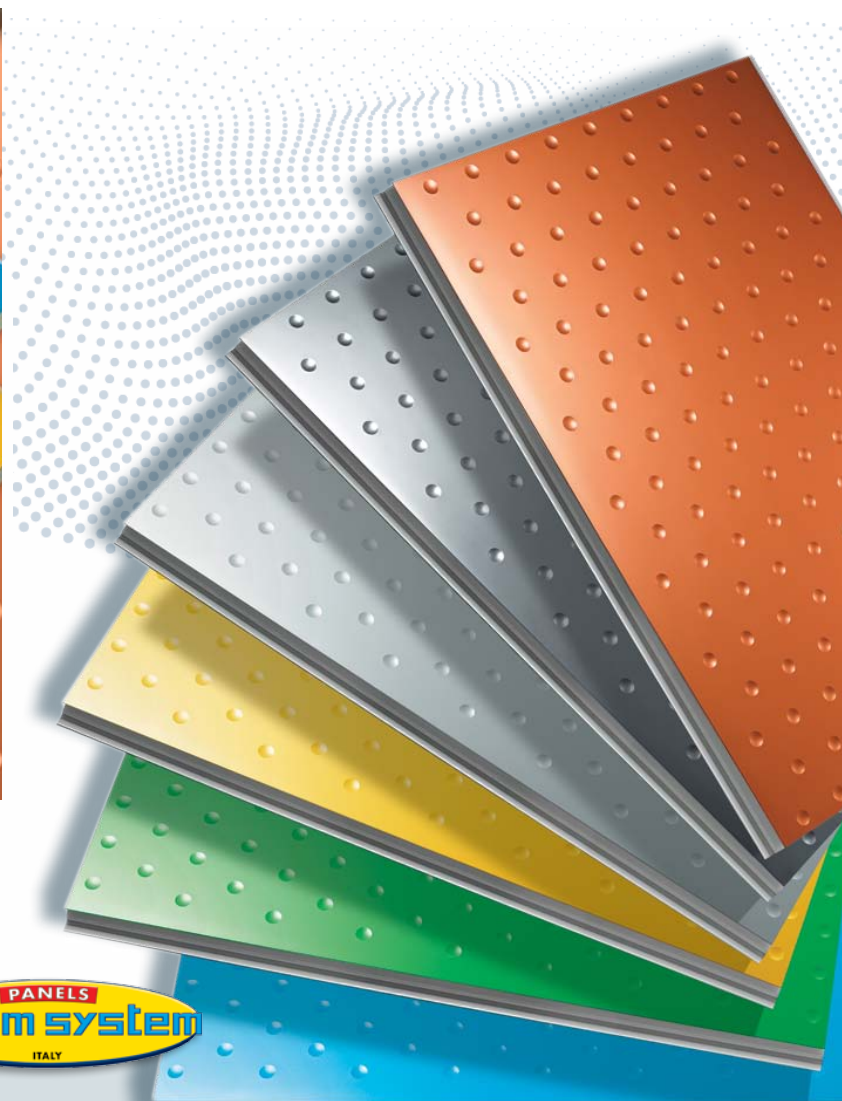
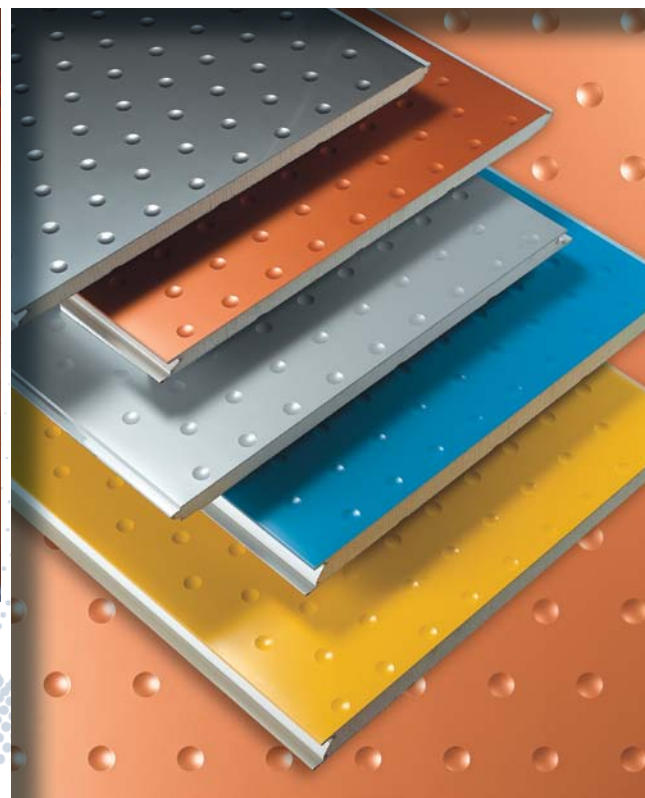


OPTION
PIR B-s2,d0

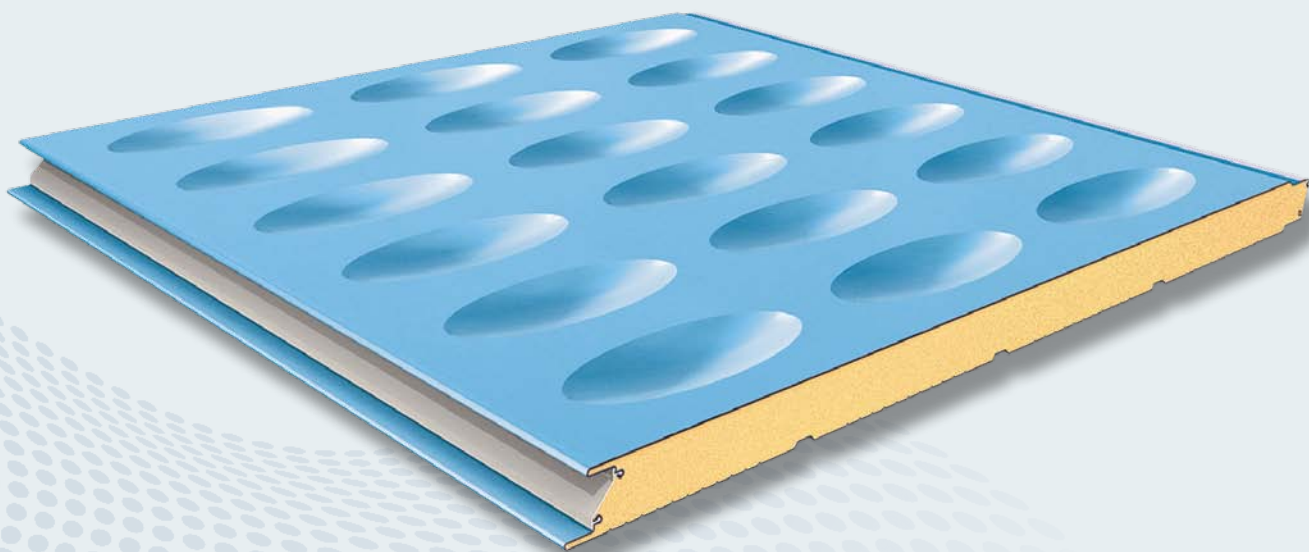




Original, unusual



...modern



Technical characteristics and performances:

Supports: **STEEL** - S 250 GD according UNI EN 10346 norm, mechanical characteristics as D.M. of 14/01/2008 and tolerances according UNI EN 10143 Norm
ALUMINIUM - UNI EN 1396 with minimum yielding limit 150 Mpa
COPPER - UNI EN 1172
COR-TEN
STAINLESS STEEL - According UNI EN 10088-1 Norm

Insulation: PUR Density ~ 40 Kg/m³

Thickness: mm. 40-50-60-80-100

Standard panel: Width mm. 1000

The panels **TERMOPARETI® RUGBY (patented)** have been studied to create original architectural facades with an extraordinary and unusual innovative design that was considered unimportant in the field of thermoinsulating panels in the past. The panels are available in different thicknesses and colours and they can be used in industrial, commercial, residential building and public utilities, for new buildings and renovations. Their special feature is on the external surface: important and significant elliptic imprints pressed on the steel that are negative respective the external side of the support and can be realized on all materials normally used for profiling such as pre-painted steel, aluminium, stainless steel and copper. Elements with thermic cut such as rounded and right corners, edges and spherical connections finish and increase the value of the **TERMOPARETI® RUGBY**

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ					SPAN IN m ℓ				
	Kcal m ² -h-°C	W m ² -°C			2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	10,15	Kg/m ² KN/m ²	166 1,63	125 1,22	90 0,88	70 0,68	55 0,54	178 1,74	140 1,37	108 1,05	85 0,83	70 0,68
50	0,372	0,433	10,53	Kg/m ² KN/m ²	225 2,21	160 1,57	120 1,18	90 0,88	70 0,68	245 2,41	182 1,78	140 1,37	115 1,13	90 0,88
60	0,313	0,364	10,91	Kg/m ² KN/m ²	289 2,83	216 2,12	142 1,39	115 1,13	85 0,83	321 3,15	237 2,32	181 1,77	141 1,38	115 1,13
80	0,237	0,276	11,67	Kg/m ² KN/m ²	455 4,46	316 3,09	227 2,22	160 1,57	120 1,18	500 4,91	365 3,58	280 2,74	215 2,11	145 1,42
100	0,191	0,222	12,63	Kg/m ² KN/m ²	470 4,60	345 3,38	260 2,55	200 1,96	160 1,57	510 4,99	390 3,82	285 2,79	225 2,20	180 1,76

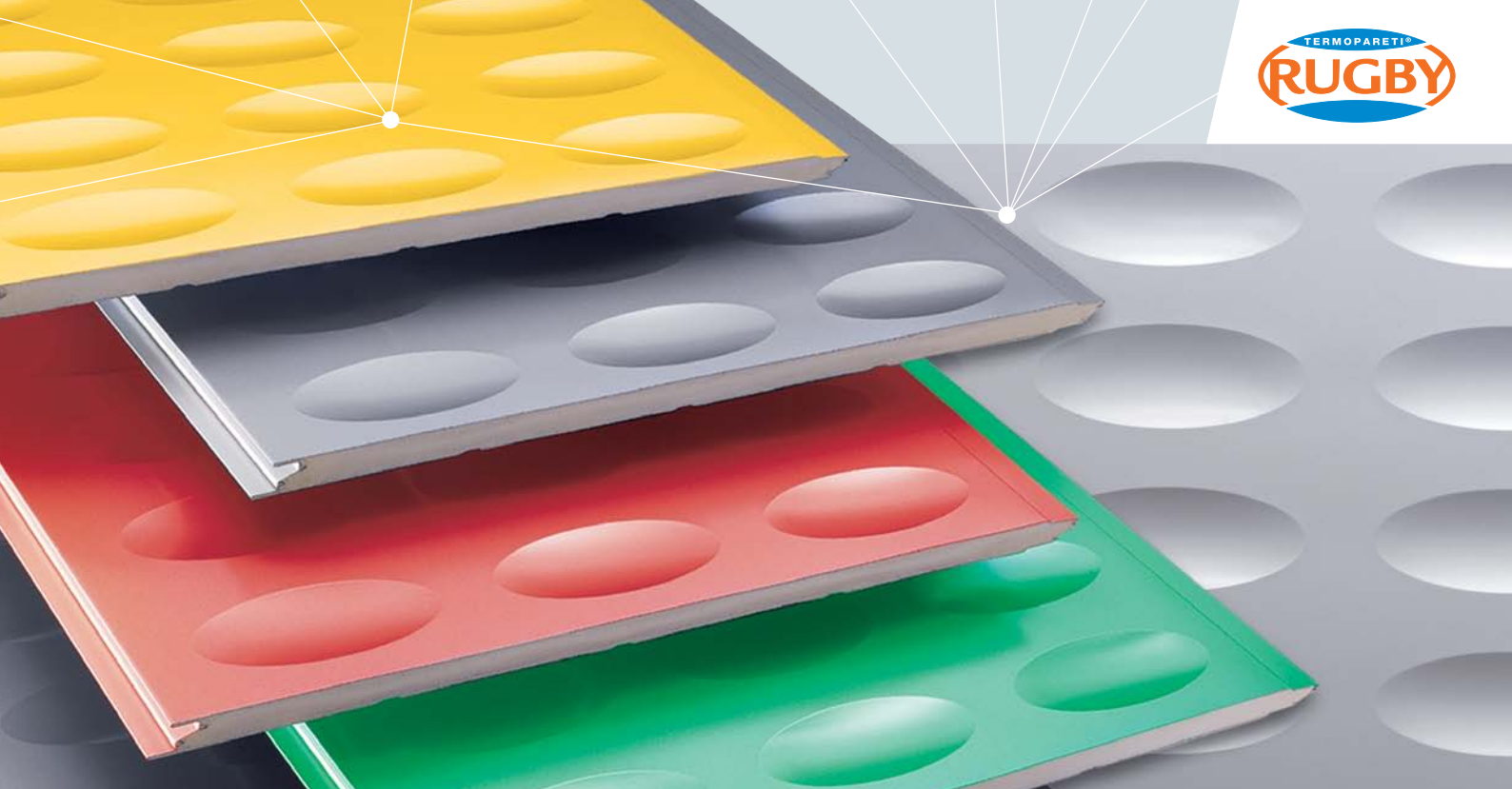
LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection f_{s1}/200 of the span ℓ (m) for panels with thickness of **STEEL** supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ					SPAN IN m ℓ				
	Kcal m ² -h-°C	W m ² -°C			2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	5,16	Kg/m ² KN/m ²	108 1,06	64 0,62	41 0,40	27 0,26	19 0,18	149 1,46	95 0,93	64 0,63	44 0,43	32 0,31
50	0,372	0,433	5,56	Kg/m ² KN/m ²	150 1,47	92 0,90	60 0,58	41 0,40	29 0,28	194 1,90	129 1,26	89 0,87	63 0,61	46 0,45
60	0,313	0,364	5,96	Kg/m ² KN/m ²	191 1,87	121 1,18	81 0,79	56 0,55	40 0,39	237 2,32	162 1,59	114 1,11	83 0,81	62 0,61
80	0,237	0,276	6,76	Kg/m ² KN/m ²	272 2,67	180 1,76	125 1,22	89 0,87	65 0,63	317 3,11	225 2,20	165 1,62	124 1,21	95 0,93
100	0,191	0,222	7,56	Kg/m ² KN/m ²	290 2,84	235 2,30	180 1,76	110 1,08	90 0,88	310 2,94	255 2,49	190 1,86	135 1,32	100 0,98

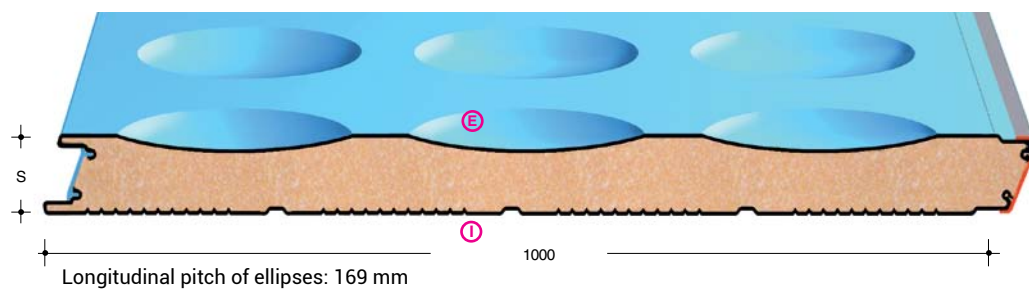
LOAD CONDITIONS WITH ALUMINIUM SUPPORTS:

The values shown in the tables are indicative and referred to a deflection f_{s1}/200 of the span ℓ (m) for panels with thickness of **ALUMINIUM** supports 0,6+0,6 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.



**TYPE
WP/ST
RUGBY**

S
Thickness mm.
40-50
60-80-100

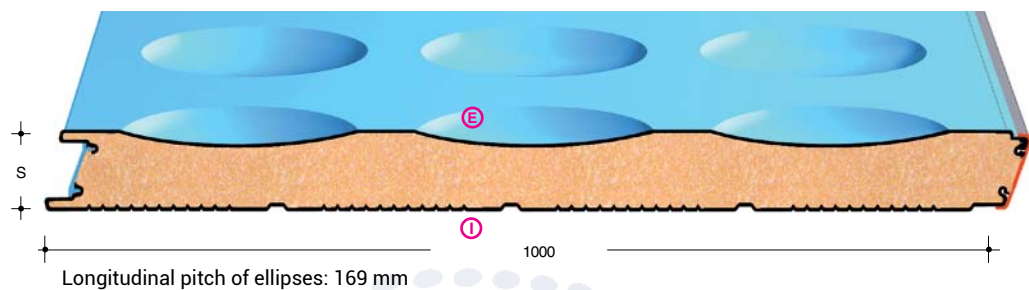


OPTION
PIR B-s2,d0

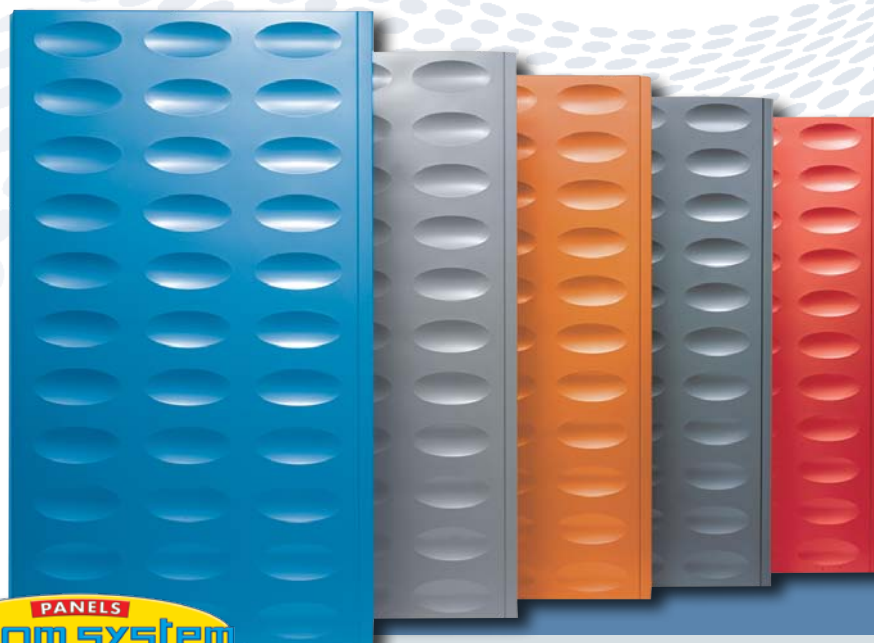
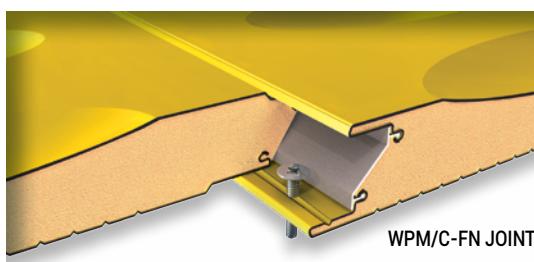
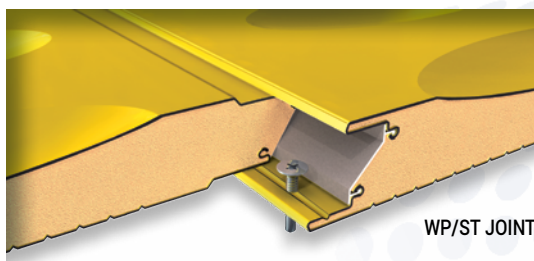


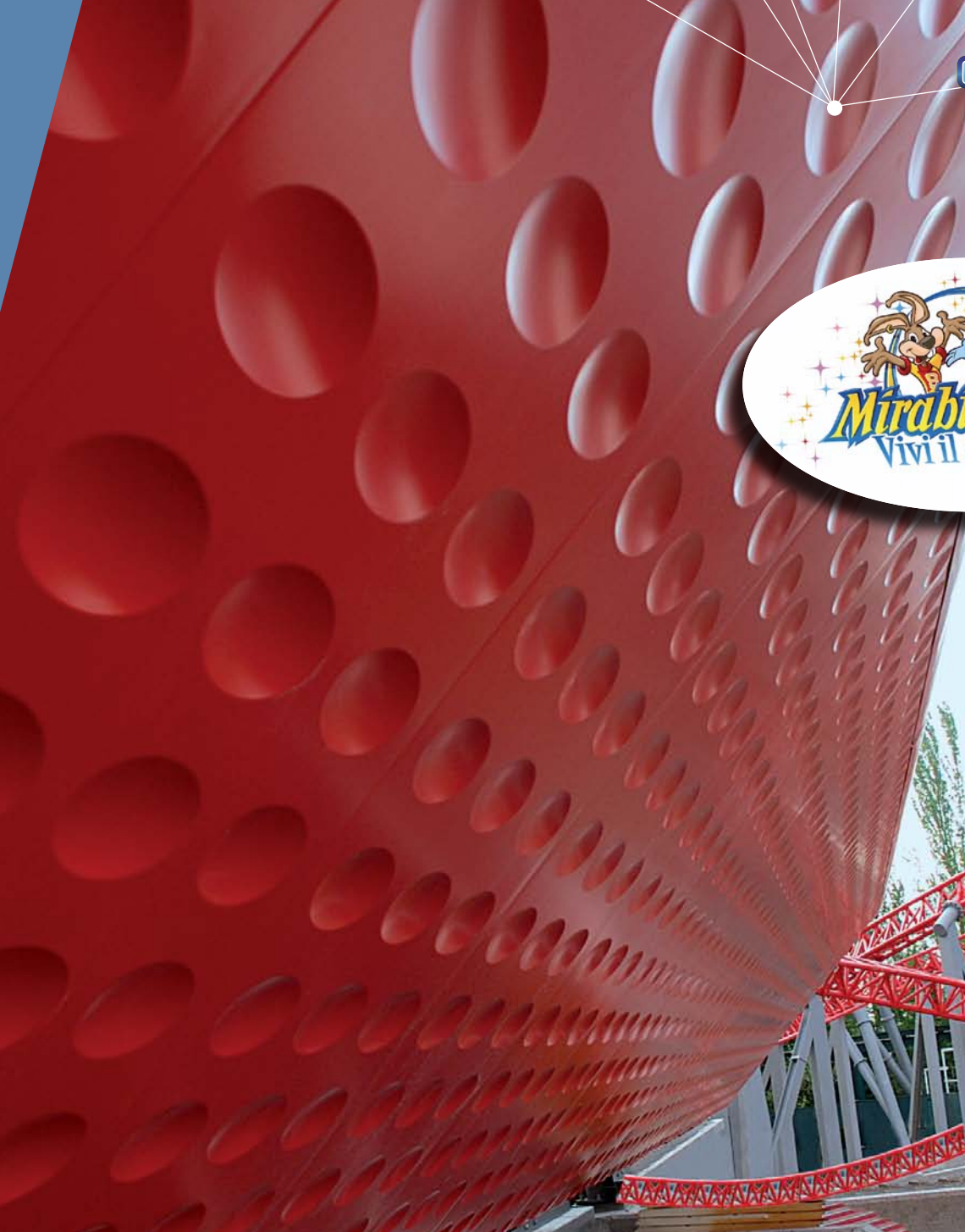
**TYPE
WPM/C-FN
RUGBY**

S
Thickness mm.
40-50
60-80-100

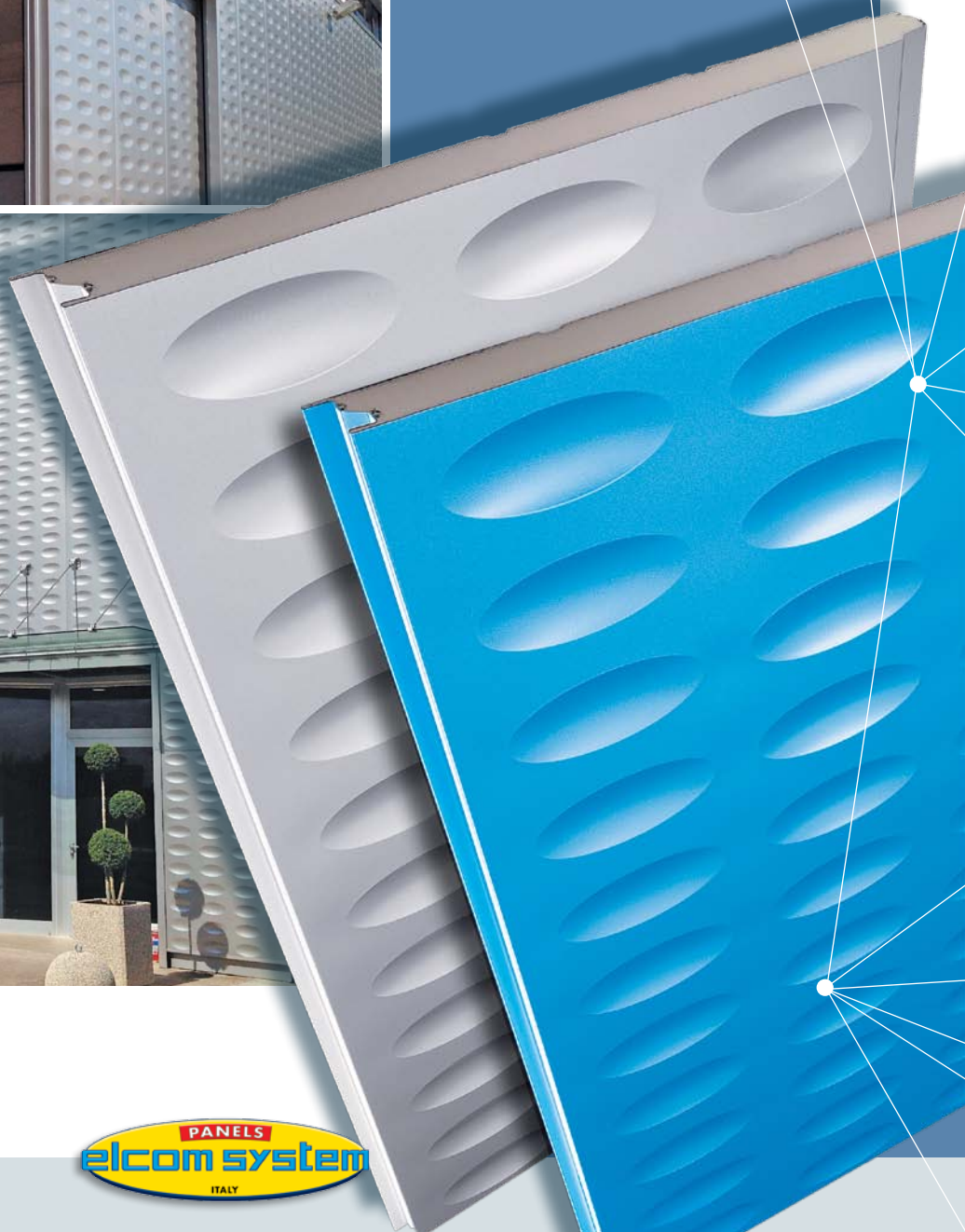
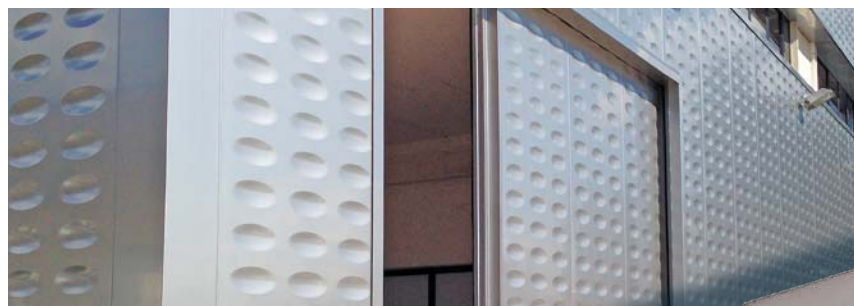
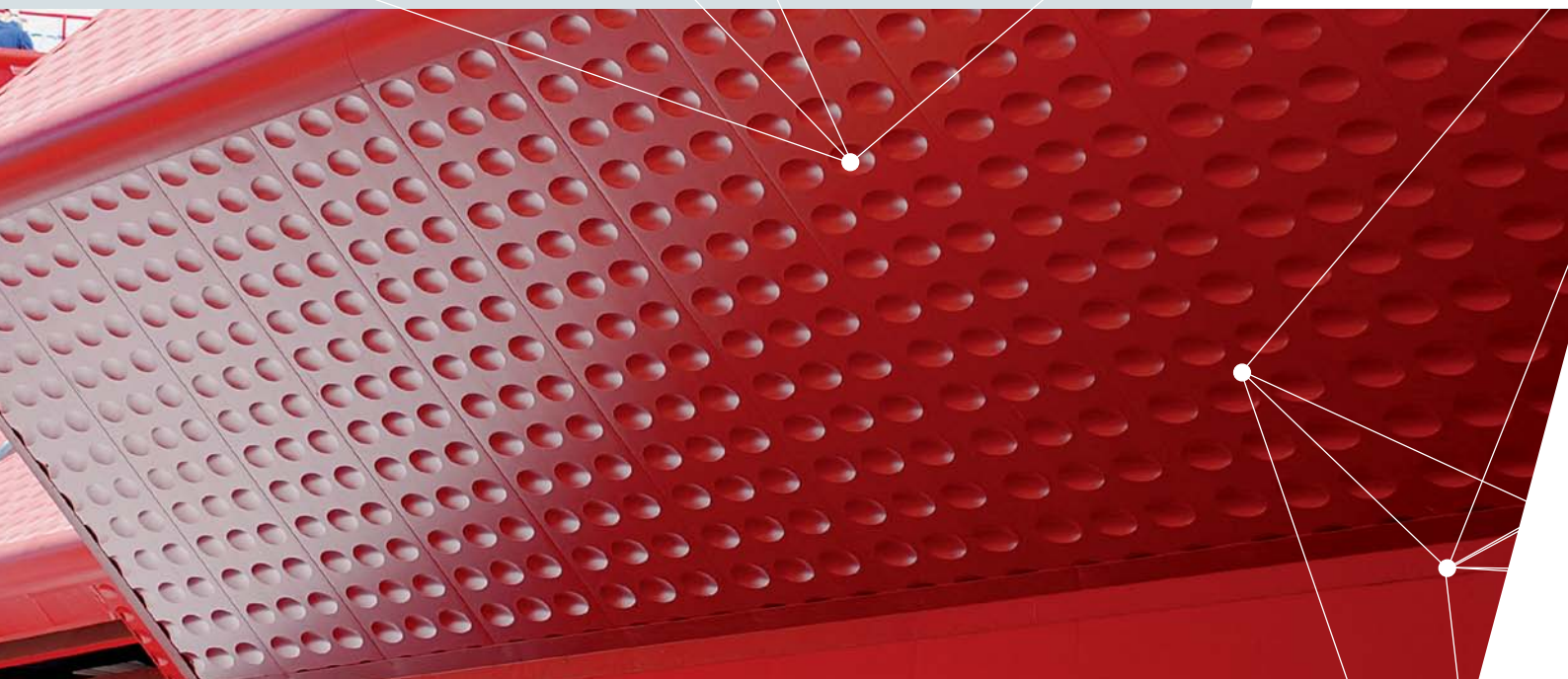


OPTION
PIR B-s2,d0





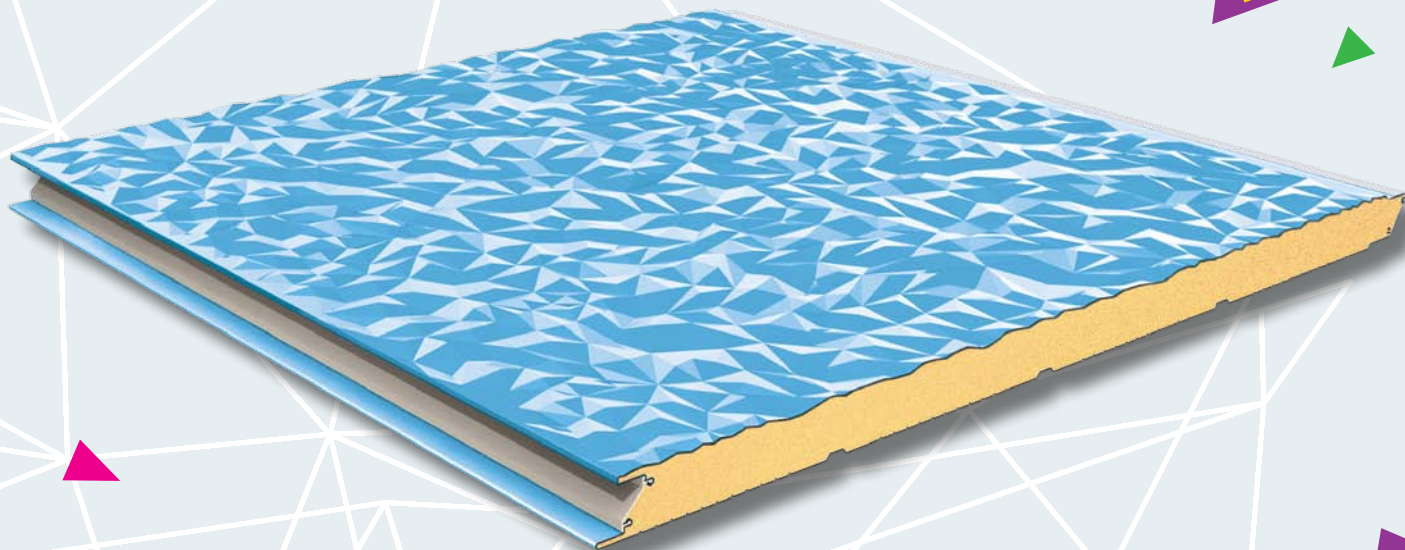
An innovative design for particular architectural impressions



TERMOPARETI® CAOS

® registered trade name

new



Technical characteristics and performances:

Supports: **STEEL** - S 250 GD according UNI EN 10346 norm, mechanical characteristics as D.M. of 14/01/2008 and tolerances according UNI EN 10143 Norm
ALUMINIUM - UNI EN 1396 with minimum yielding limit 150 Mpa
COPPER - UNI EN 1172
COR-TEN
STAINLESS STEEL - According UNI EN 10088-1 Norm

Insulation: PUR Density ~ 40 Kg/m³
Thickness: mm. 40-50-60-80-100
Standard panel: Width mm. 1000

The panels **TERMOPARETI® CAOS (patented)** have been studied to create original architectural impressions and can be used in industrial, commercial, residential building and public utilities, for new buildings and renovations. The **CAOS** panel can be used for continuous and/or discontinuous external walls, internal partitions and ceilings. Thanks to its characteristics, it can be widely employed where a high aesthetic standard is required and architects, designers and end users have freedom of choice in a wide range of materials and colours. The **CAOS** panels can be used on any type of structure such as metallic, concrete and wood, and their installation can be vertical, horizontal or inclined and they are fixed with specific accessories.

The peculiarity of the **CAOS** panels is on the external side: particular and different geometric shapes obtained from an innovative and unique system specifically developed by ELCOM SYSTEM S.p.A. to form the external surface, reaching an extremely dynamic effect never seen before on the market of metallic insulated panels. The imprints are positive respective the external side of the support and they can be realised on different materials such as galvanized and/or prepainted steel, aluminium, stainless steel and copper. Elements with thermic cut such as rounded and right corners, edges and spherical connections are used to complete and improve more and more the **TERMOPARETI® CAOS**.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ									
	Kcal m ² -h-°C	W m ² -°C			2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	10,15	Kg/m ² KN/m ²	166 1,63	125 1,22	90 0,88	70 0,68	55 0,54	178 1,74	140 1,37	108 1,05	85 0,83	70 0,68
50	0,372	0,433	10,53	Kg/m ² KN/m ²	225 2,21	160 1,57	120 1,18	90 0,88	70 0,68	245 2,41	182 1,78	140 1,37	115 1,13	90 0,88
60	0,313	0,364	10,91	Kg/m ² KN/m ²	289 2,83	216 2,12	142 1,39	115 1,13	85 0,83	321 3,15	237 2,32	181 1,77	141 1,38	115 1,13
80	0,237	0,276	11,67	Kg/m ² KN/m ²	455 4,46	316 3,09	227 2,22	160 1,57	120 1,18	500 4,91	365 3,58	280 2,74	215 2,11	145 1,42
100	0,191	0,222	12,63	Kg/m ² KN/m ²	470 4,60	345 3,38	260 2,55	200 1,96	160 1,57	510 4,99	390 3,82	285 2,79	225 2,20	180 1,76

LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection f_{s1}/200 of the span ℓ (m) for panels with thickness of **STEEL** supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ									
	Kcal m ² -h-°C	W m ² -°C			2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	5,16	Kg/m ² KN/m ²	108 1,06	64 0,62	41 0,40	27 0,26	19 0,18	149 1,46	95 0,93	64 0,63	44 0,43	32 0,31
50	0,372	0,433	5,56	Kg/m ² KN/m ²	150 1,47	92 0,90	60 0,58	41 0,40	29 0,28	194 1,90	129 1,26	89 0,87	63 0,61	46 0,45
60	0,313	0,364	5,96	Kg/m ² KN/m ²	191 1,87	121 1,18	81 0,79	56 0,55	40 0,39	237 2,32	162 1,59	114 1,11	83 0,81	62 0,61
80	0,237	0,276	6,76	Kg/m ² KN/m ²	272 2,67	180 1,76	125 1,22	89 0,87	65 0,63	317 3,11	225 2,20	165 1,62	124 1,21	95 0,93
100	0,191	0,222	7,56	Kg/m ² KN/m ²	290 2,84	235 2,30	180 1,76	110 1,08	90 0,88	310 2,94	255 2,49	190 1,86	135 1,32	100 0,98

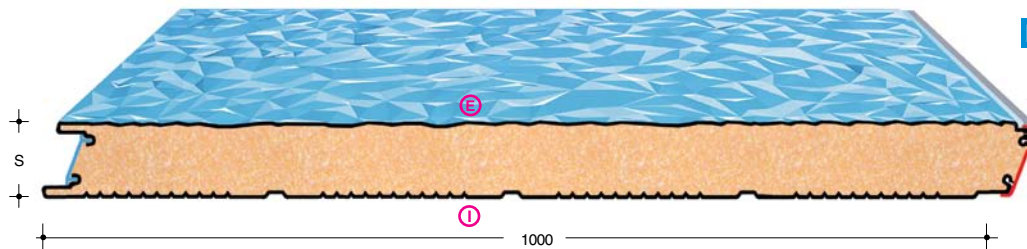
LOAD CONDITIONS WITH ALUMINIUM SUPPORTS:

The values shown in the tables are indicative and referred to a deflection f_{s1}/200 of the span ℓ (m) for panels with thickness of **ALUMINIUM** supports 0,6+0,6 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.

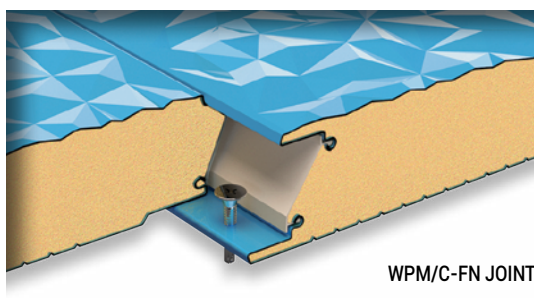
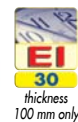


TYPE
WPM/C-FN
CAOS

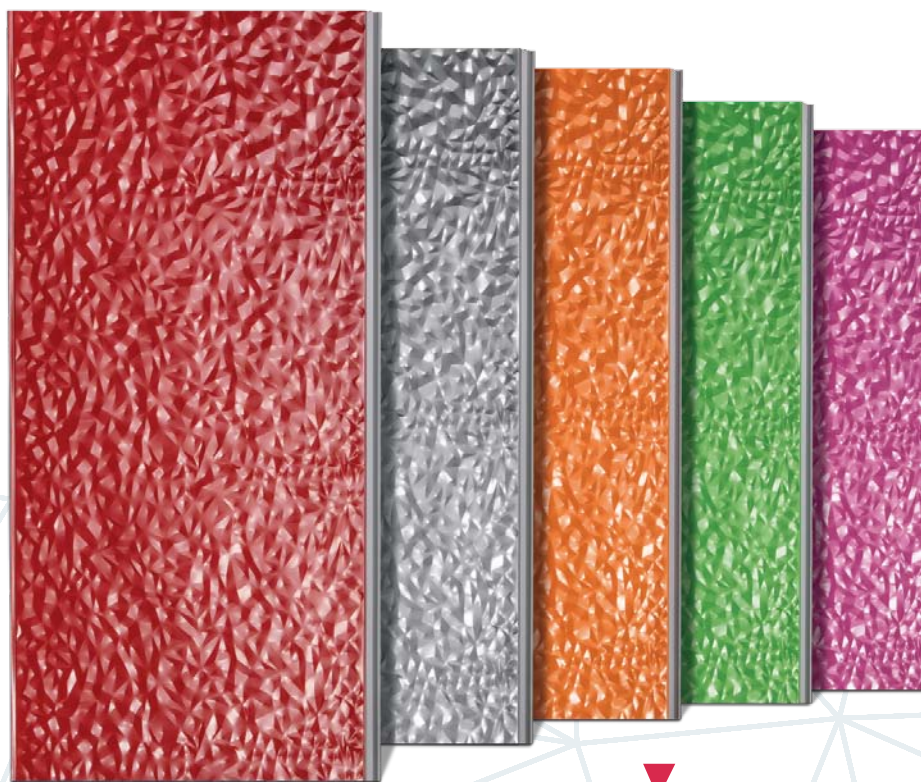
S
Thickness mm.
40-50
60-80-100

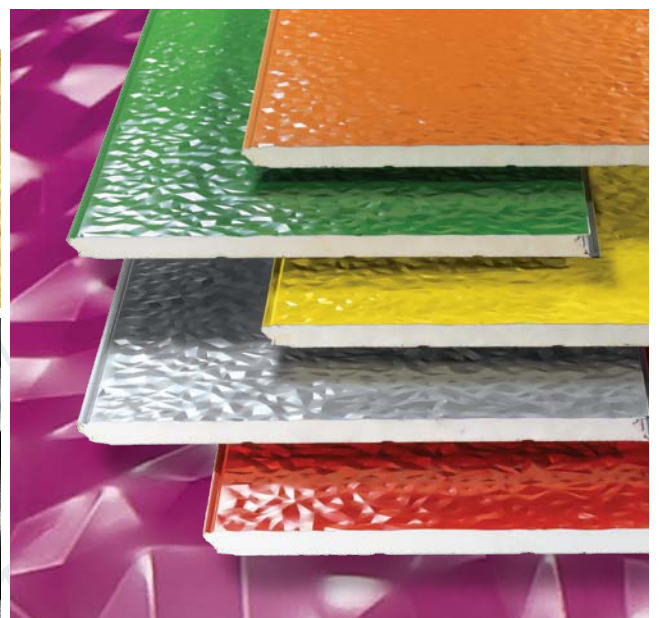
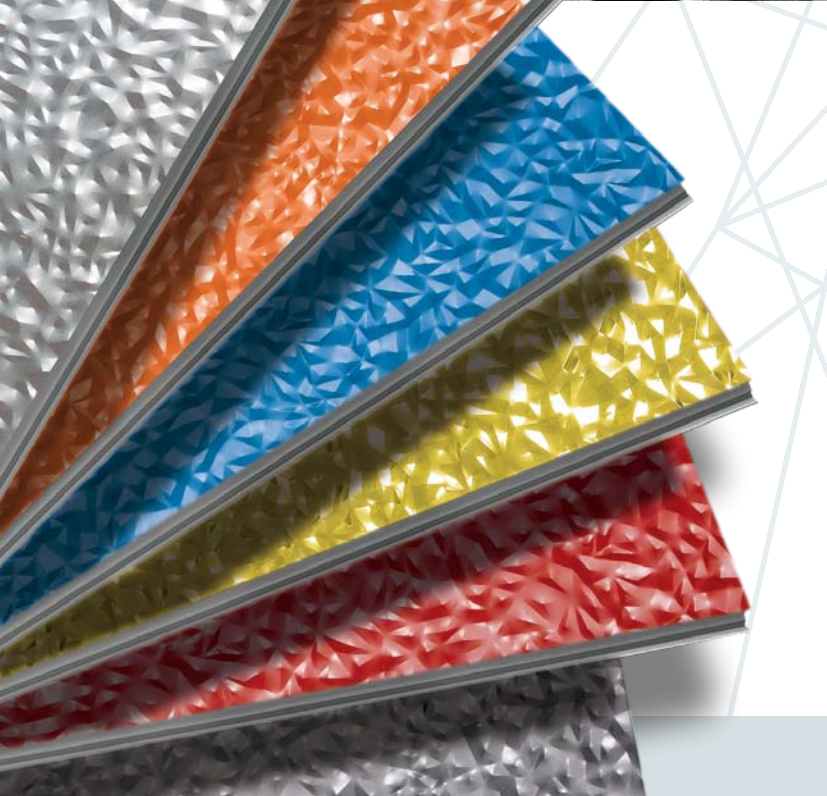
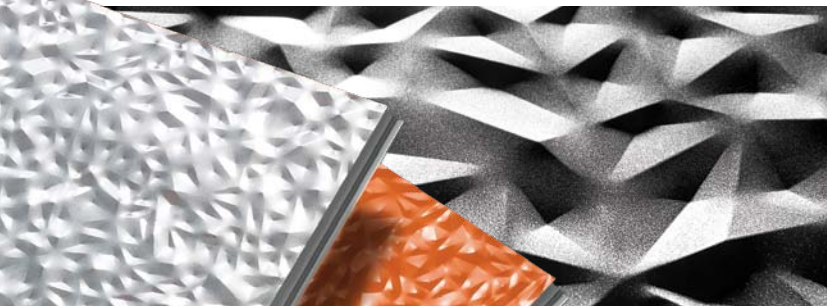


OPTION
PIR B-s2,d0

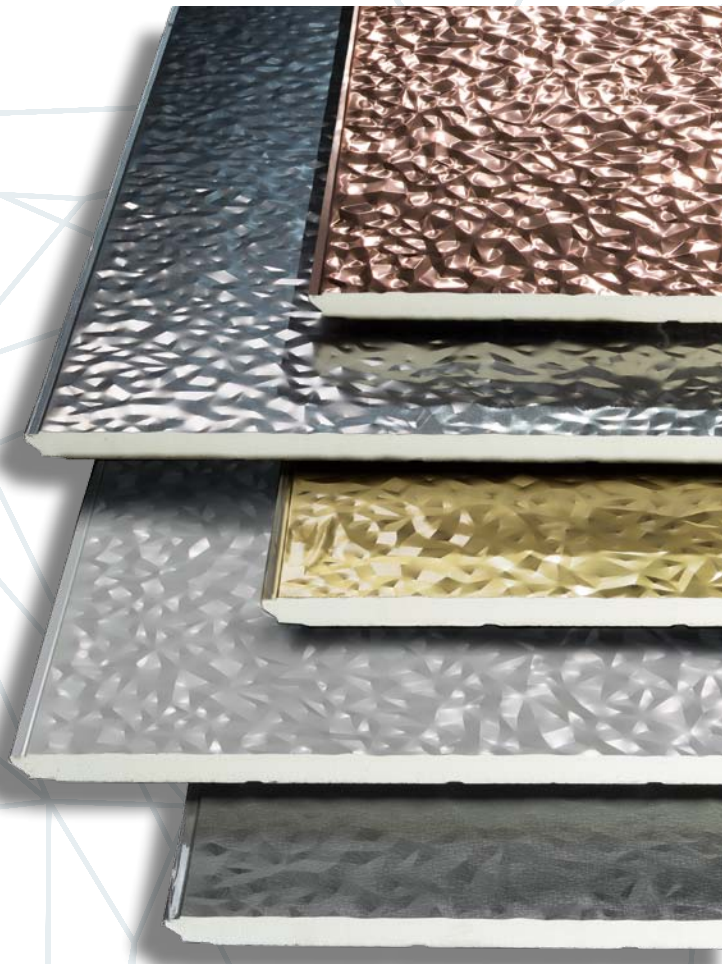
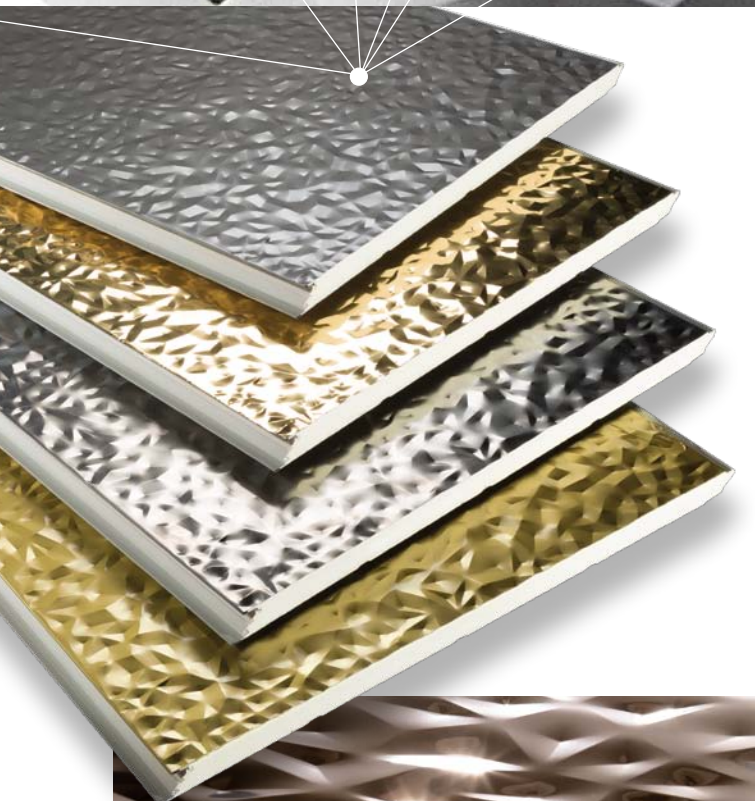


WPM/C-FN JOINT



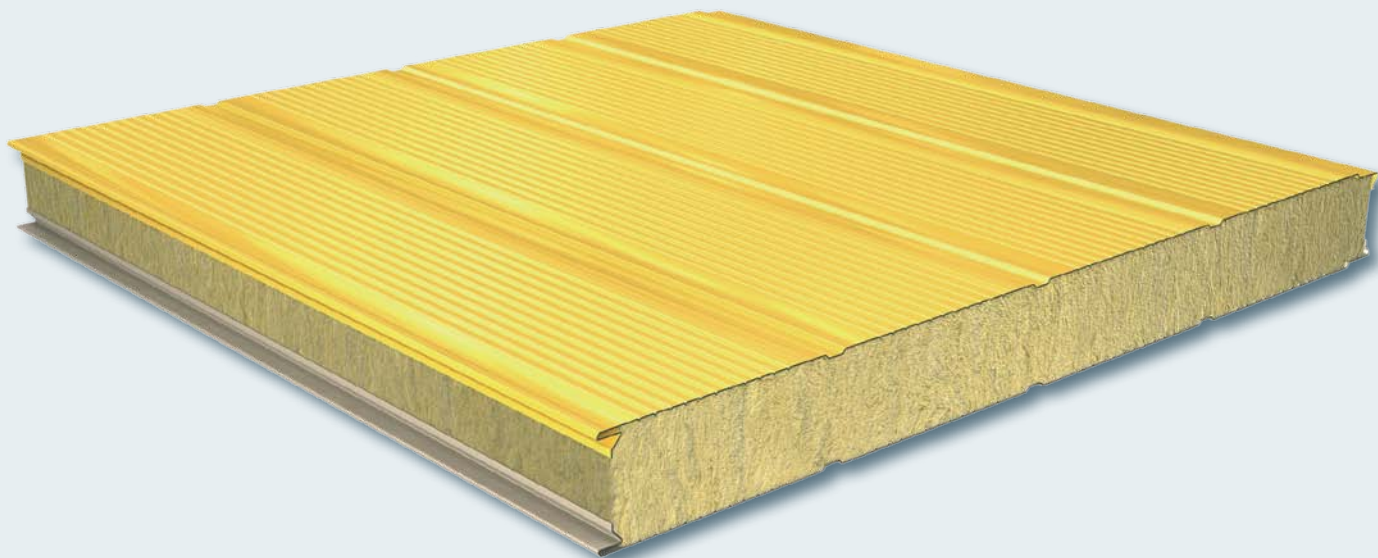


**Out of the schemes,
new interpretation of
space... rising CAOS**

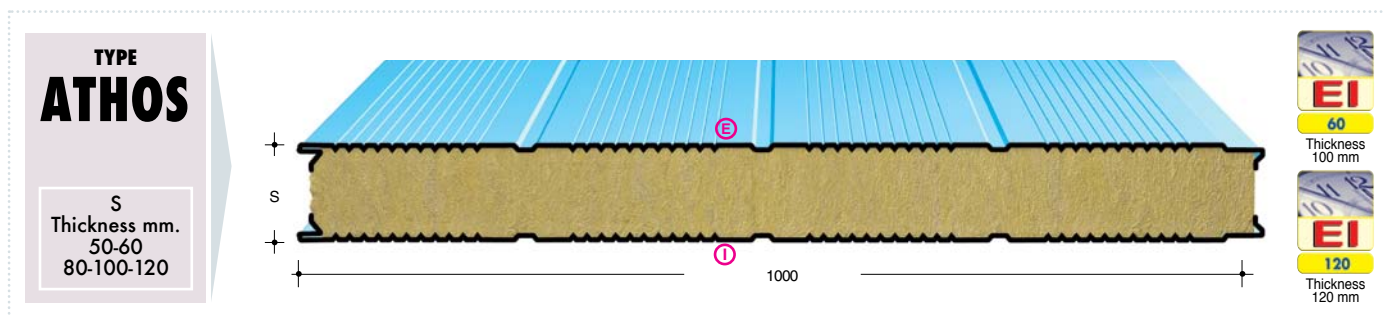


TERMOPARETI® AEFPE ATHOS

® registered trade name



AEFFE ATHOS



THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²											
S thickness mm	U		weight Kg/m ²		SPAN IN m ℓ											
	Kcal m ² ·h·°C	W m ² ·°C			1,50 2,00 2,50 3,00 3,50 4,00						1,50 2,00 2,50 3,00 3,50 4,00					
50	0,65	0,75	14,00	Kg/m ²	145	117	95	73	60	49	130	103	82	62	52	45
				KN/m ²	1,42	1,15	0,93	0,72	0,59	0,48	1,28	1,01	0,80	0,61	0,51	0,44
60	0,55	0,64	14,90	Kg/m ²	182	146	117	95	73	60	168	133	104	84	65	57
				KN/m ²	1,79	1,43	1,15	0,93	0,72	0,59	1,65	1,30	1,02	0,82	0,64	0,56
80	0,42	0,49	16,70	Kg/m ²	230	183	152	125	100	82	216	170	139	114	93	77
				KN/m ²	2,26	1,80	1,49	1,23	0,98	0,80	2,12	1,67	1,36	1,12	0,91	0,76
100	0,34	0,40	18,50	Kg/m ²	310	253	207	165	134	104	296	240	194	154	125	100
				KN/m ²	3,04	2,48	2,03	1,62	1,32	1,02	2,90	2,35	1,90	1,51	1,23	0,98
120	0,30	0,35	20,40	Kg/m ²	340	280	215	180	150	110	325	265	195	167	137	106
				KN/m ²	3,33	2,74	2,11	1,76	1,47	1,08	3,19	2,60	1,91	1,64	1,34	1,04

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of STEEL supports 0,5+0,6 mm. The letter \textcircled{E} shows the required painted side.
Average density of rockwool: 100 Kg/m³ - minimum guaranteed values obtained from tests carried out by the University of Studies of Perugia, Faculty of Engineering, Industrial Engineering Department (experimental tests institute).

The product. The panels AEFPE, type ATHOS are obtained by sticking in continuous two metallic supports with a rock wool layer. Their use is necessary when a high soundproofing and a good heat insulation, together with incombustibility and a high fire resistance, are requested.

External Supports materials. They are generally obtained from hot-dip galvanized steel coils S 250GD according to UNI EN 10346 norms and/or with an organic coating having characteristics according to UNI EN 10169 cold profiling.

On request can also be furnished stainless steel supports according to EN 10088-1 norms or in aluminium according to UNI EN 1396 norm.

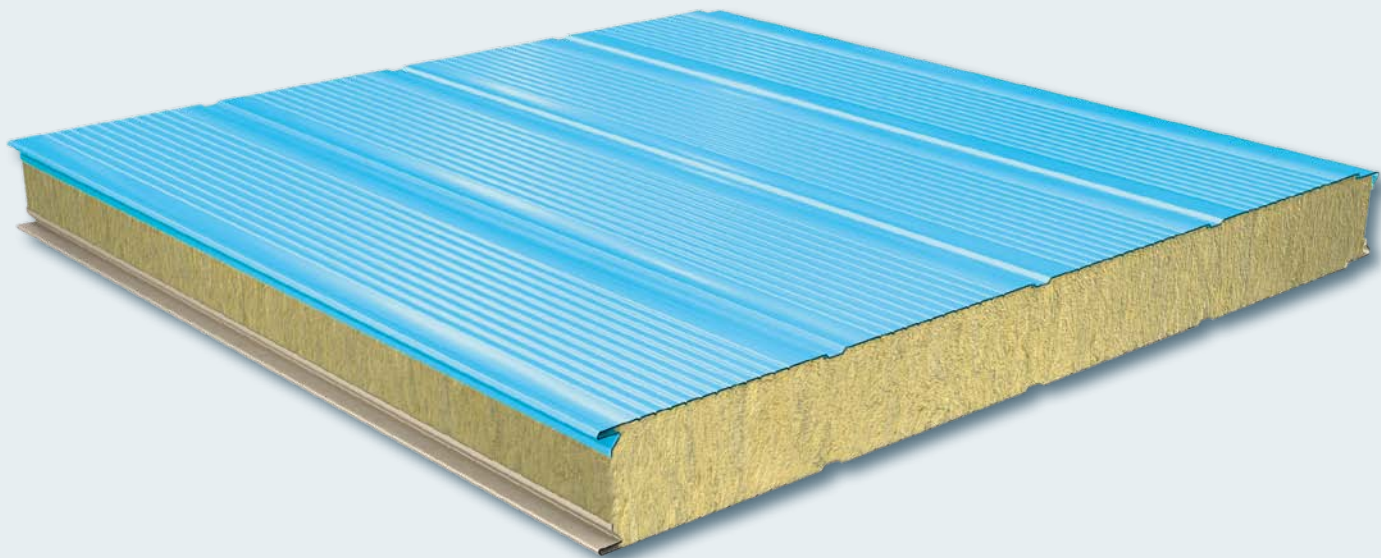
Insulation. The core consists of an orientated rock wool layer (100 kg/m³) put perpendicularly to the supports, in order to give a higher stability to the panel and improve its mechanical performances. Thermal conductivity coefficient of rock wool: $\lambda = 0,041 \div 0,045$ W/mK. The use of orientated rock wool gives to the panel excellent characteristics of acoustic insulation on a wide frequency spectrum, in particular if a microdrilled support is placed towards the source of the noise.

Mechanical performances. The values indicated in the tables have been calculated according to CNR 10022/87 and ECCS instructions and are supported by several tests about uniformly distributed loads carried out by the Faculty of Engineering of the University of Perugia, Industrial Engineering Department (Experimental Tests Institute).



TERMOPARETI® AEFPE ATHOS TERMOFONISOL

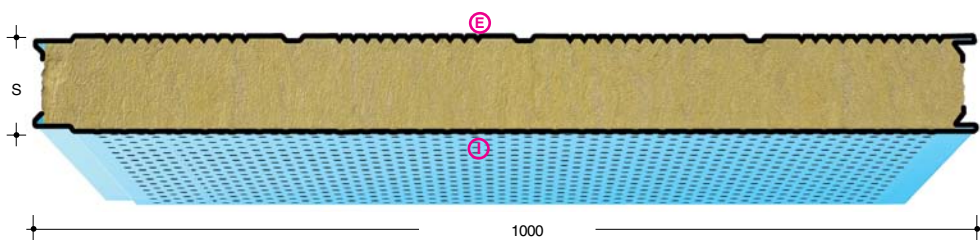
® registered trade name



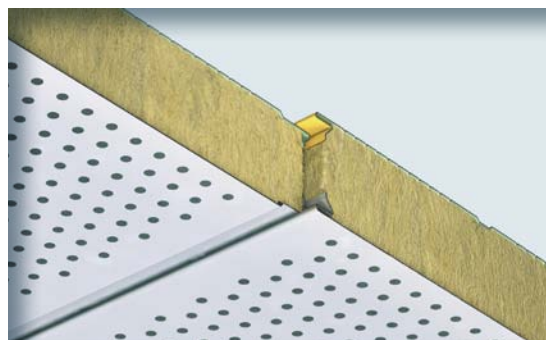
AEFFE ATHOS TERMOFONISOL

TYPE
ATHOS
TERMOFONISOL

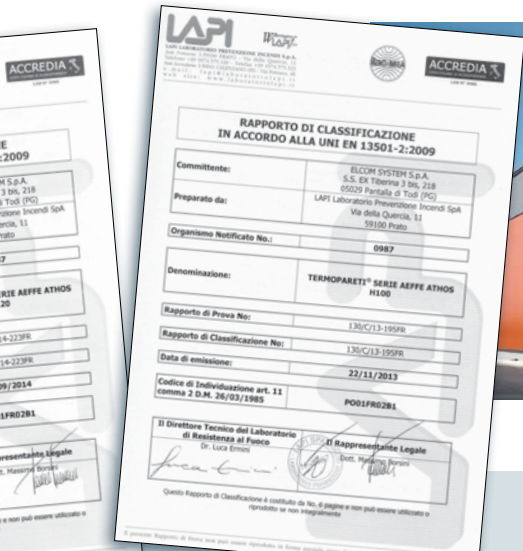
S
Thickness mm.
50-60
80-100-120

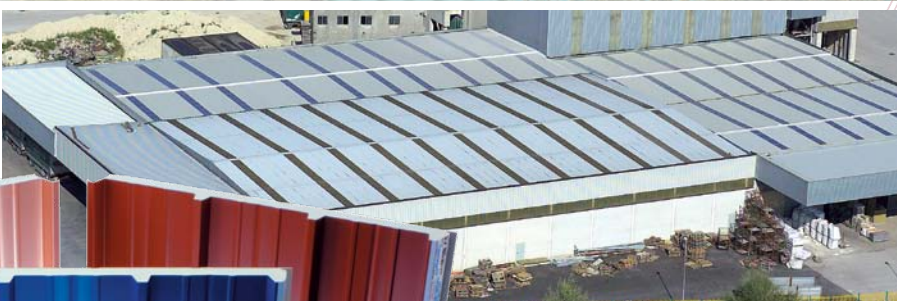
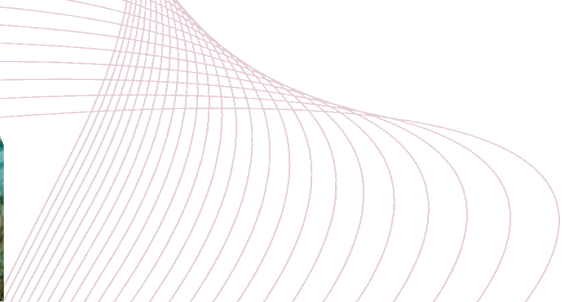


S thickness mm	THERMIC INSULATION		weight Kg/m ²	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²			
	U				SPAN IN m ℓ			
	Kcal m ² ·h·°C	W m ² ·°C			1,50	2,00	2,50	3,00
50	0,65	0,75	12,10	Kg/m ²	90	63	38	22
				KN/m ²	0,88	0,62	0,37	0,22
60	0,55	0,64	13,00	Kg/m ²	113	78	47	28
				KN/m ²	1,11	0,76	0,46	0,27
80	0,42	0,49	14,80	Kg/m ²	143	99	61	38
				KN/m ²	1,40	0,97	0,60	0,37
100	0,34	0,40	16,60	Kg/m ²	160	115	75	48
				KN/m ²	1,57	1,13	0,74	0,47
120	0,30	0,35	18,50	Kg/m ²	175	130	90	60
				KN/m ²	1,72	1,27	0,88	0,59



The values shown in the tables are indicative and referred to a deflection $f_s/200$ of the span ℓ (m) for panels with thickness of STEEL supports 0,5+0,6 mm. The letter \textcircled{I} \textcircled{E} shows the required painted side.
Average density of rockwool: 100 Kg/m³ - minimum guaranteed values obtained from tests carried out by the University of Studies of Perugia, Faculty of Engineering, Industrial Engineering Department (experimental tests institute).







TERMOCOPERTURE®

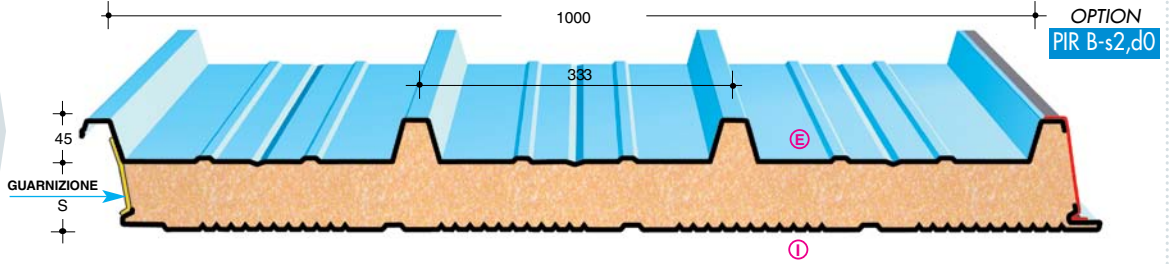
® registered trade name

TERMOCOPERTURE®

® registered trade name

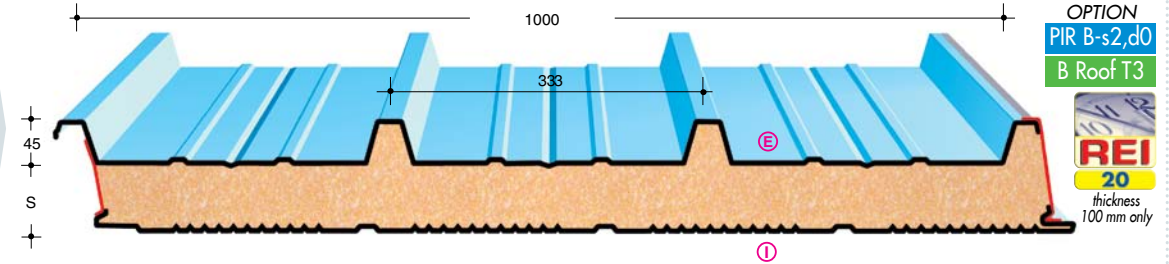
TYPE TCP/C

S
Thickness mm.
30-40-50
60-80-100-120



TYPE RP/ST 4G

S
Thickness mm.
30-40-50
60-80-100-120



TCP/C
RP/ST 4G

S thickness mm	THERMIC INSULATION		weight Kg/m ²	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ² SINGLE SPAN IN m ℓ				
	Kcal m ² ·h·°C	U W m ² ·°C			2,00	2,50	3,00	3,50	4,00
30	0,602	0,700	7,93	Kg/m ² KN/m ²	211 2,08	121 1,19	75 0,74	48 0,47	32 0,31
40	0,461	0,536	8,31	Kg/m ² KN/m ²	257 2,53	154 1,51	98 0,97	65 0,65	45 0,44
50	0,372	0,433	8,68	Kg/m ² KN/m ²	305 3,00	189 1,85	124 1,22	85 0,84	60 0,59
60	0,313	0,364	9,06	Kg/m ² KN/m ²	355 3,49	225 2,21	152 1,49	106 1,04	76 0,75
80	0,237	0,276	9,82	Kg/m ² KN/m ²	457 4,49	302 2,96	210 2,07	152 1,49	112 1,10
100	0,191	0,222	10,57	Kg/m ² KN/m ²	562 5,52	382 3,75	273 2,68	201 1,98	151 1,49
120	0,166	0,193	11,33	Kg/m ² KN/m ²	669 6,56	463 4,55	337 3,31	253 2,49	194 1,90

LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of **STEEL** supports 0,4+0,4 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **⓪** **ⓔ** shows the required painted side.

TCP/C
RP/ST 4G

S thickness mm	THERMIC INSULATION		weight Kg/m ²	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ² SINGLE SPAN IN m ℓ				
	Kcal m ² ·h·°C	U W m ² ·°C			2,00	2,50	3,00	3,50	4,00
30	0,602	0,700	10,76	Kg/m ² KN/m ²	278 2,73	160 1,58	99 0,98	65 0,64	43 0,42
40	0,461	0,536	11,13	Kg/m ² KN/m ²	333 3,27	200 1,96	129 1,27	87 0,86	60 0,59
50	0,372	0,433	11,51	Kg/m ² KN/m ²	390 3,83	242 2,38	161 1,58	111 1,09	79 0,78
60	0,313	0,364	11,89	Kg/m ² KN/m ²	448 4,40	285 2,80	194 1,91	137 1,35	99 0,98
80	0,237	0,276	12,64	Kg/m ² KN/m ²	567 5,57	376 3,69	265 2,60	193 1,90	144 1,42
100	0,191	0,222	13,40	Kg/m ² KN/m ²	688 6,76	469 4,61	339 3,33	253 2,49	193 1,90
120	0,166	0,193	14,15	Kg/m ² KN/m ²	811 7,96	565 5,54	415 4,08	315 3,09	244 2,40

LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of **STEEL** supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **⓪** **ⓔ** shows the required painted side.








ALUMINIUM

S thickness mm	THERMIC INSULATION		weight Kg/m ²	U.M. Kg/m ² KN/m ²	Useful loads uniformly distributed in KG/m ² – KN/m ²										
	U Kcal m ² ·h·°C	W m ² ·°C			SPAN IN m ℓ					SPAN IN m ℓ					
					1,50	2,00	2,50	3,00	3,50	weight Kg/m ²	1,50	2,00	2,50	3,00	3,50
30	0,602	0,700	7,5	Kg/m ² KN/m ²	285 2,81	185 1,81	120 1,18	70 0,69	40 0,39	5,0	265 2,60	165 1,62	101 1,00	58 0,57	30 0,30
40	0,461	0,536	7,9	Kg/m ² KN/m ²	355 3,50	230 2,25	160 1,57	96 0,94	60 0,59	5,4	315 3,10	203 2,00	132 1,30	76 0,75	48 0,48
50	0,372	0,433	8,3	Kg/m ² KN/m ²	417 4,10	278 2,72	197 1,93	125 1,22	80 0,78	5,8	365 3,60	244 2,40	168 1,65	101 1,00	63 0,62
60	0,313	0,364	8,7	Kg/m ² KN/m ²	468 4,60	325 3,18	237 2,32	157 1,54	104 1,02	6,2	428 4,20	285 2,80	203 2,00	127 1,25	83 0,82
80	0,237	0,276	9,5	Kg/m ² KN/m ²	509 5,00	430 4,21	315 3,09	225 2,20	155 1,52	7,0	489 4,80	387 3,80	275 2,70	183 1,80	117 1,15
100	0,191	0,222	10,3	Kg/m ² KN/m ²	565 5,53	452 4,43	342 3,35	286 2,80	215 2,11	7,8	540 5,29	431 4,23	316 3,01	262 2,57	195 1,91
120	0,166	0,193	11,0	Kg/m ² KN/m ²	635 6,23	525 5,15	415 4,02	330 3,24	260 2,55	8,6	612 6,01	510 5,01	398 3,90	306 3,03	238 2,33

LOAD CONDITIONS:

WITH  ALUMINIUM SUPPORT 0,6 mm  STEEL 0,5 mm

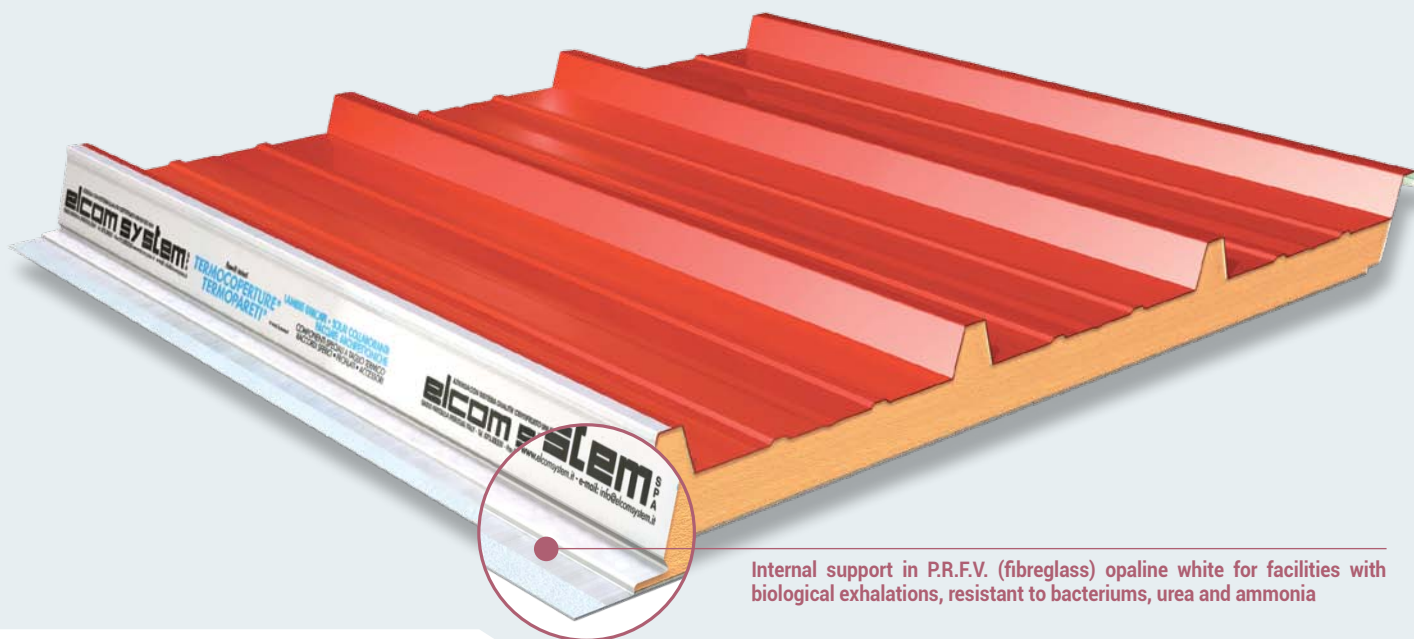
WITH  ALUMINIUM SUPPORT 0,6 mm  ALUMINIUM 0,6 mm

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m). For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CÉ certification. The letter   shows the required painted side.



TERMOCOPERTURE® ZOOTEK

® registered trade name



Internal support in P.R.F.V. (fibreglass) opaline white for facilities with biological exhalations, resistant to bacteria, urea and ammonia

ZOOTEK

Technical characteristics:

External metallic supports: they are obtained from cold profiling of coils of different materials: **carbon steel** coated with hot dip zinc; **aluminium**; **copper**; **stainless steel**. The finishing of steel and aluminium supports consists of an organic coat obtained from a cycle of hot standard polyester prepainting. On request different coats as PVC alimentary or PVDF can be furnished.

Internal support: fibreglass sheet (polyester resins reinforced with fibreglass opaline white)

Insulation: expanded polyurethane (PUR), CFC free.

Main characteristics:

- compressive strength: 140-150 Kpa

- impermeability: 98% closed cells (non hygroscopic material)

Permissible Loads: the values shown in the tables have been calculated according to the ECCS and AIPPEG recommendations and supported by experimental tests.

THE IDEAL PANEL FOR ZOOTECHNY

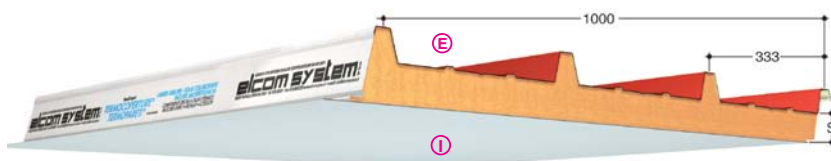
THERMAL with high insulating capacity and special polyurethane foams

LONG-LASTING time leaves no sign

RESISTANT in facilities with biological exhalations, (bacteria, urea and ammonia).

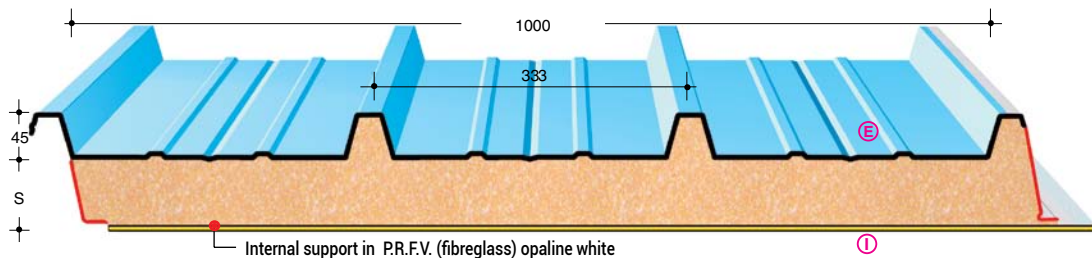
LIGHTWEIGHT with only 8,00 kg/m²

VERSATILE suitable for any type of new or existing structure



TYPE ZOOTEK

S
Thickness mm.
30-40-50
60-80-100-120



Internal support in P.R.F.V. (fibreglass) opaline white

THERMIC INSULATION			STEEL thickness mm	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²													
S thickness mm	Kcal m ² -h-°C	U W m ² -°C			SPAN IN m ℓ													
					1,00	1,50	2,00	2,50	3,00	3,50	4,00	1,00	1,50	2,00	2,50	3,00	3,50	4,00
30	0,602	0,700	0,5	Kg/m ²	431	187	101	62	-	-	-	510	222	121	75	49	-	-
					KN/m ²	4,23	1,83	0,99	0,61	-	-	-	5,00	2,17	1,18	0,73	0,45	-
40	0,461	0,536	0,6	Kg/m ²	526	229	125	76	41	-	-	620	270	148	91	61	42	-
					KN/m ²	5,16	2,25	1,23	0,75	0,40	-	-	6,08	2,64	1,45	0,89	0,59	0,41
50	0,372	0,433	0,8	Kg/m ²	702	306	167	103	56	-	-	843	368	202	125	84	58	42
					KN/m ²	6,89	3,00	1,64	1,01	0,55	-	-	8,26	3,61	1,98	1,22	0,82	0,56
60	0,313	0,364	1,0	Kg/m ²	878	383	210	129	71	40	-	1067	467	257	160	107	75	54
					KN/m ²	8,61	3,76	2,06	1,27	0,70	0,39	-	10,46	4,58	2,52	1,57	1,05	0,74
80	0,237	0,276																
100	0,191	0,222																
120	0,166	0,193																



LOAD CONDITIONS:

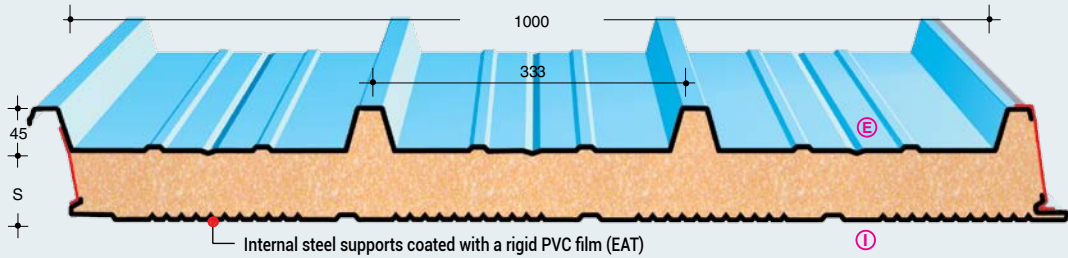
The values shown in the tables are referred to a deflection $f \leq 1/200$ of the span ℓ (m). The letter E shows the required painted side.

TERMOCOPERTURE® ZOOTECH EAT

® registered trade name

TYPE
**ZOOTECH
EAT**

S
Thickness mm.
30-40-50
60-80-100-120



Flat surface - Internal side



Microribbed surface - Internal side



ZOOTECH EAT

THE DEVELOPMENT
OF THE PANEL FOR ZOOTECHNY

The panel **ZOOTECH EAT**, with an internal side clad with a 120 micron PVC film, has been studied to offer **TERMOCOPERTURE®** able to grant high mechanical performances and an excellent resistance in facilities with aggressive biological exhalations and chemical products used for cleaning.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²				
S thickness mm	Kcal m ² ·h·°C	U W m ² ·°C	weight Kg/m ²		SINGLE SPAN IN m ℓ				
					2,00	2,50	3,00	3,50	4,00
30	0,602	0,700	7,93	Kg/m ² KN/m ²	211 2,08	121 1,19	75 0,74	48 0,47	32 0,31
40	0,461	0,536	8,31	Kg/m ² KN/m ²	257 2,53	154 1,51	98 0,97	65 0,65	45 0,44
50	0,372	0,433	8,68	Kg/m ² KN/m ²	305 3,00	189 1,85	124 1,22	85 0,84	60 0,59
60	0,313	0,364	9,06	Kg/m ² KN/m ²	355 3,49	225 2,21	152 1,49	106 1,04	76 0,75
80	0,237	0,276	9,82	Kg/m ² KN/m ²	457 4,49	302 2,96	210 2,07	152 1,49	112 1,10
100	0,191	0,222	10,57	Kg/m ² KN/m ²	562 5,52	382 3,75	273 2,68	201 1,98	151 1,49
120	0,166	0,193	11,33	Kg/m ² KN/m ²	669 6,56	463 4,55	337 3,31	253 2,49	194 1,90

LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of **STEEL** supports 0,4+0,4 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²				
S thickness mm	Kcal m ² ·h·°C	U W m ² ·°C	weight Kg/m ²		SINGLE SPAN IN m ℓ				
					2,00	2,50	3,00	3,50	4,00
30	0,602	0,700	10,76	Kg/m ² KN/m ²	278 2,73	160 1,58	99 0,98	65 0,64	43 0,42
40	0,461	0,536	11,13	Kg/m ² KN/m ²	333 3,27	200 1,96	129 1,27	87 0,86	60 0,59
50	0,372	0,433	11,51	Kg/m ² KN/m ²	390 3,83	242 2,38	161 1,58	111 1,09	79 0,78
60	0,313	0,364	11,89	Kg/m ² KN/m ²	448 4,40	285 2,80	194 1,91	137 1,35	99 0,98
80	0,237	0,276	12,64	Kg/m ² KN/m ²	567 5,57	376 3,69	265 2,60	193 1,90	144 1,42
100	0,191	0,222	13,40	Kg/m ² KN/m ²	688 6,76	469 4,61	339 3,33	253 2,49	193 1,90
120	0,166	0,193	14,15	Kg/m ² KN/m ²	811 7,96	565 5,54	415 4,08	315 3,09	244 2,40

LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of **STEEL** supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter **Ⓢ** shows the required painted side.

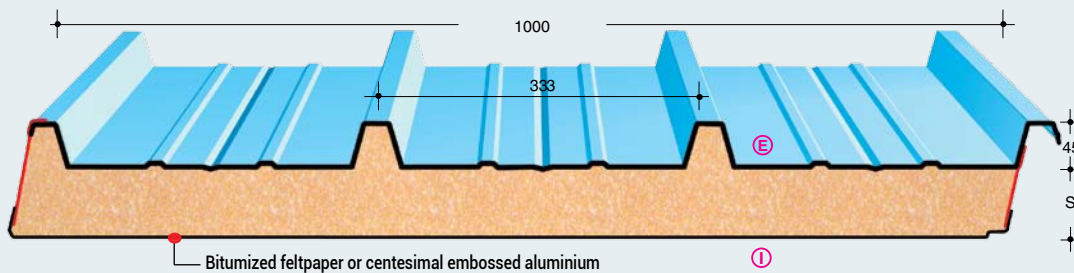
TERMOCOPERTURE® FLEX

® registered trade name

TYPE RP/ST FLEX-AC/CB

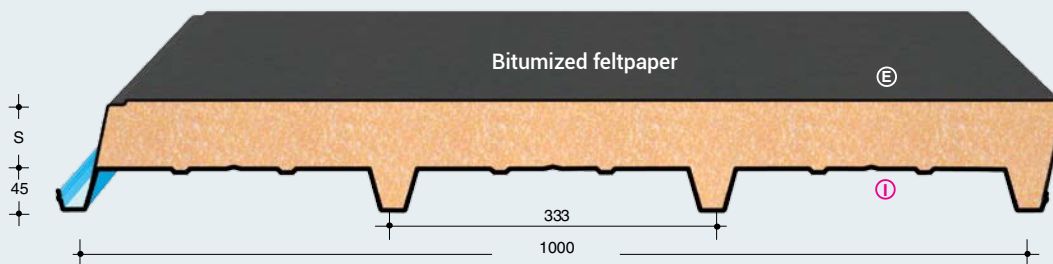
AC = Centesimal Aluminium
CB = Bitumized Feltpaper

S=Thickness
mm. 30-40-50
60-80-100-120



TYPE RP/ST FLEX-DECK

S
Thickness mm.
30-40-50
60-80-100-120



FLEX



THERMIC INSULATION			STEEL thickness mm	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²													
S thickness mm	Kcal m ⁻² ·h·°C	U W m ⁻² ·°C			SPAN IN m ℓ						SPAN IN m ℓ							
30	0,602	0,700	0,5	Kg/m ²	431	187	101	62	-	-	-	510	222	121	75	49	-	-
				KN/m ²	4,23	1,83	0,99	0,61	-	-	-	5,00	2,17	1,18	0,73	0,45	-	-
40	0,461	0,536	0,6	Kg/m ²	526	229	125	76	41	-	-	620	270	148	91	61	42	-
				KN/m ²	5,16	2,25	1,23	0,75	0,40	-	-	6,08	2,64	1,45	0,89	0,59	0,41	-
50	0,372	0,433	0,8	Kg/m ²	702	306	167	103	56	-	-	843	368	202	125	84	58	42
				KN/m ²	6,89	3,00	1,64	1,01	0,55	-	-	8,26	3,61	1,98	1,22	0,82	0,56	0,41
60	0,313	0,364	1,0	Kg/m ²	878	383	210	129	71	40	-	1067	467	257	160	107	75	54
				KN/m ²	8,61	3,76	2,06	1,27	0,70	0,39	-	10,46	4,58	2,52	1,57	1,05	0,74	0,53
80	0,237	0,276																
100	0,191	0,222																
120	0,166	0,193																

LOAD CONDITIONS (RP/ST FLEX AC/CB):
The values shown in the tables are referred to a deflection $f \leq 1/200$ of the span ℓ (m). The letter **E** shows the required painted side.

THERMIC INSULATION			STEEL thickness mm	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²													
S thickness mm	Kcal m ⁻² ·h·°C	U W m ⁻² ·°C			SPAN IN m ℓ						SPAN IN m ℓ							
30	0,602	0,700	0,5	Kg/m ²	407	176	95	56	-	-	-	541	236	129	80	53	36	-
				KN/m ²	3,99	1,73	0,93	0,55	-	-	-	5,31	2,31	1,26	0,78	0,52	0,35	-
40	0,461	0,536	0,6	Kg/m ²	494	215	117	71	37	-	-	660	288	158	98	65	45	-
				KN/m ²	4,85	2,11	1,15	0,70	0,36	-	-	6,47	2,83	1,55	0,96	0,64	0,44	-
50	0,372	0,433	0,8	Kg/m ²	672	292	160	98	54	-	-	881	385	212	131	88	62	41
				KN/m ²	6,59	2,86	1,57	0,96	0,53	-	-	8,64	3,78	2,08	1,28	0,86	0,61	0,40
60	0,313	0,364	1,0	Kg/m ²	851	371	203	125	70	39	-	1101	482	265	165	111	78	53
				KN/m ²	8,35	3,64	1,99	1,23	0,69	0,38	-	10,80	4,73	2,60	1,62	1,09	0,76	0,52
80	0,237	0,276																
100	0,191	0,222																
120	0,166	0,193																

LOAD CONDITIONS (RP/ST FLEX-DECK):
The values shown in the tables are referred to a deflection $f \leq 1/200$ of the span ℓ (m). The letter **E** shows the required painted side.

TERMOCOPERTURE® SLIM

® registered trade name



SLIM

Technical characteristics:

External metallic supports: they are obtained from cold profiling of coils of different materials: **carbon steel** coated with hot dip zinc; **aluminium**, **copper**, **stainless steel**. The finishing of steel and aluminium supports consists of an organic coat obtained from a cycle of hot standard polyester prepainting. On request different coatings can be furnished.

Internal supports: centesimal embossed aluminium or bitumized feltpaper

Insulation: PUR foam (the two ribs in the center are without foam).

Main characteristics:

- density: 45 kg/m³
- Thermal conductivity coefficient: $\lambda = 0,022 \text{ W/m}^{\circ}\text{K}$
- compressive strength: 140-150 Kpa
- impermeability: 98% closed cells (non hygroscopic material)

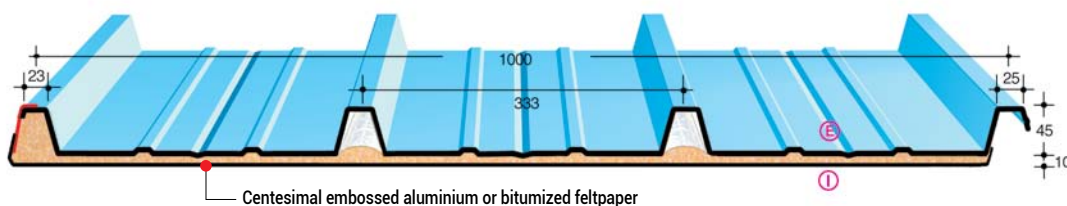
Permissible loads: the values shown in the tables, comparable to the ones of the trapezoidal sheets, are calculated according to the ECCS and AIPPEG recommendations and confirmed by tests.

THERMAL – LONGLASTING
AVOIDS CONDENSATION PHENOMENON
REDUCES THE NOISE OF WEATHER EVENTS
LIGHTWEIGHT - VERSATILE



TYPE
SLIM
AC/CB

S
Thickness
mm.10



Centesimal embossed aluminium or bitumized feltpaper

THERMIC INSULATION		
S	U	
thickness mm	Kcal m ² ·h·°C	W m ² ·°C
10	2,44	2,84

STEEL thickness mm	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²													
		SPAN IN m ℓ													
		1,00	1,50	2,00	2,50	3,00	3,50	4,00	1,00	1,50	2,00	2,50	3,00	3,50	4,00
0,5	Kg/m ²	431	187	101	62	-	-	-	510	222	121	75	49	-	-
	KN/m ²	4,23	1,83	0,99	0,61	-	-	-	5,00	2,17	1,18	0,73	0,45	-	-
0,6	Kg/m ²	526	229	125	76	41	-	-	620	270	148	91	61	42	-
	KN/m ²	5,16	2,25	1,23	0,75	0,40	-	-	6,08	2,64	1,45	0,89	0,59	0,41	-
0,8	Kg/m ²	702	306	167	103	56	-	-	843	368	202	125	84	58	42
	KN/m ²	6,89	3,00	1,64	1,01	0,55	-	-	8,26	3,61	1,98	1,22	0,82	0,56	0,41

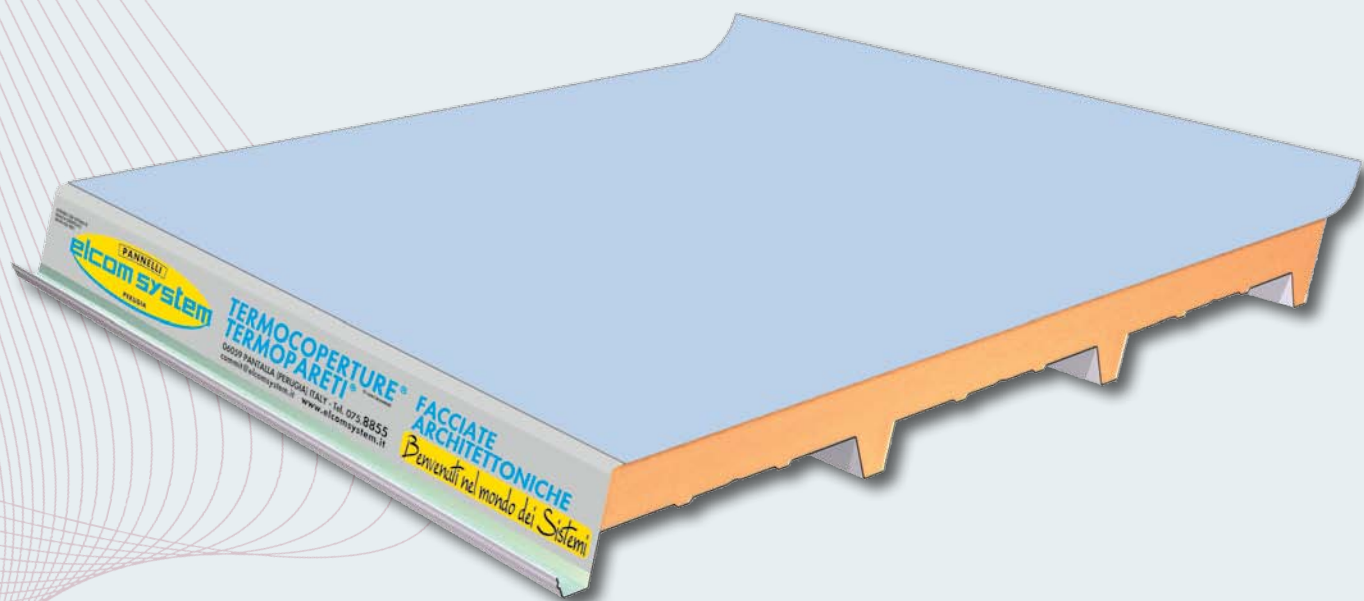
LOAD CONDITIONS (SLIM AC/CB):

The values shown in the tables are referred to a deflection $f \leq 1/200$ of the span ℓ (m). The letter **E** shows the required painted side.



TERMOCOPERTURE® POLIOLEFINE

® registered trade name



POLIOLEFINE

The TERMOCOPERTURE® type RP/ST MANTO, with single or double steel sheets, having externally a polyolefin (TPO) membrane, are used for flat or low slope roof, offering numerous advantages compared to the bitumen membranes or other traditional techniques.



Technical characteristics:

External metallic supports: the internal metallic supports (RP/ST MANTO single sheet) and external/internal (RP/ST MANTO double sheets) are obtained from cold profiling of carbon steel coils coated with hot dip zinc type S250GD according to UNI EN 10346 with mechanical characteristics as foreseen in the D.M. of 14.01.2008 and tolerances as per UNI EN 10143 norm.

The finishing of the steel supports (side "I" and side "E") consists of an organic coat obtained from a cycle of hot standard polyester prepainting according to EN 10169.

Thermal insulation: expanded polyurethane CFC free, according to UNI EN 13165 norm.

Main characteristics:

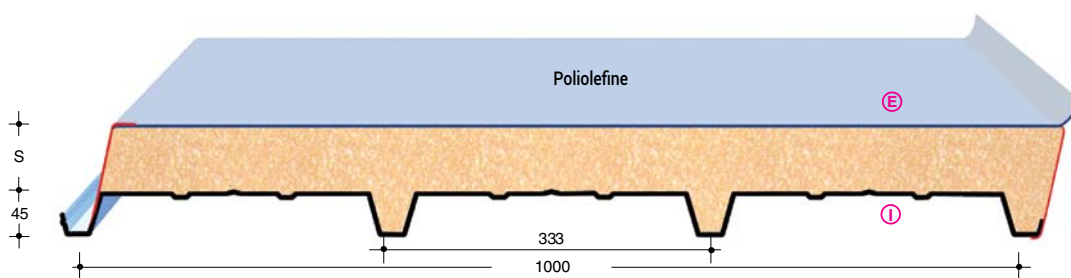
- density: 40 kg/m³
- thermal conductivity coefficient: $\lambda = 0,022 \text{ W/m}^2\text{K}$
- compressive strength: 140-150 Kpa
- impermeability: 98% closed cells (non hygroscopic material)

Polyolefine waterproofing membrane, 1,5 mm thick

Synthetic waterproofing membrane (polyolefin) produced by coextruding a uniform UV resistant elastomerized (TPO/FPA) thermoplastic olefin and polypropylene alloy, coupled to a non woven polyester material on the internal surface. On the RP/ST Manto double sheet, the membrane is applied in continuous on the steel support side E and stuck with special resins to ensure a perfect adhesion and flatness. The panel joint of the polyolefin membrane is made on site with a hot-air gun without using any adhesive or other materials.

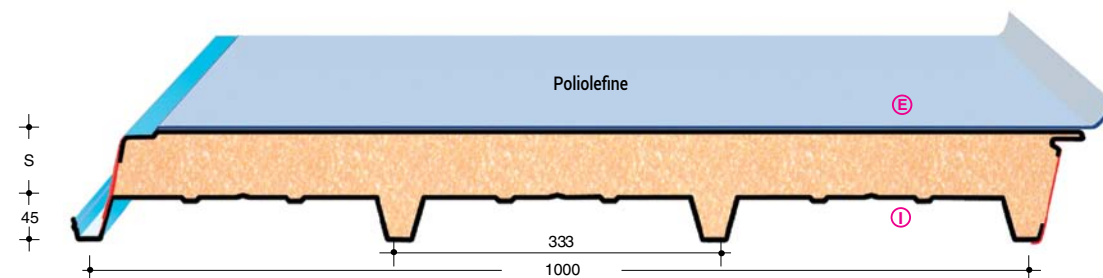
TYPE RP/ST MANTO SINGLE SHEET

S
Thickness mm.
60-80
100-120



TYPE RP/ST MANTO DOUBLE SHEET

S
Thickness mm.
60-80
100-120





THERMIC INSULATION			STEEL thickness mm	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²													
S thickness mm	U Kcal m ⁻² ·h·°C	W m ⁻² ·°C			SPAN IN m ℓ													
30	0,602	0,700	0,5	Kg/m ²	407	176	95	56	-	-	-	541	236	129	80	53	36	-
				KN/m ²	3,99	1,73	0,93	0,55	-	-	-	5,31	2,31	1,26	0,78	0,52	0,35	-
40	0,461	0,536	0,6	Kg/m ²	494	215	117	71	37	-	-	660	288	158	98	65	45	-
				KN/m ²	4,85	2,11	1,15	0,70	0,36	-	-	6,47	2,83	1,55	0,96	0,64	0,44	-
50	0,372	0,433	0,8	Kg/m ²	672	292	160	98	54	-	-	881	385	212	131	88	62	41
				KN/m ²	6,59	2,86	1,57	0,96	0,53	-	-	8,64	3,78	2,08	1,28	0,86	0,61	0,40
60	0,313	0,364	1,0	Kg/m ²	851	371	203	125	70	39	-	1101	482	265	165	111	78	53
				KN/m ²	8,35	3,64	1,99	1,23	0,69	0,38	-	10,80	4,73	2,60	1,62	1,09	0,76	0,52
80	0,237	0,276																
100	0,191	0,222																
120	0,166	0,193																

LOAD CONDITIONS (RP/ST MANTO SINGLE SHEETS):
The values shown in the tables are referred to a deflection $f \leq 1/200$ of the span ℓ (m). The letter ⓪ Ⓜ shows the required painted side.

THERMIC INSULATION				U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²								
S thickness mm	U Kcal m ⁻² ·h·°C	W m ⁻² ·°C	weight Kg/m ²		SINGLE SPAN IN m ℓ								
30	0,602	0,700	10,76	Kg/m ²	278	160	99	65	43	29	19	12	7
				KN/m ²	2,73	1,58	0,98	0,64	0,42	0,29	0,19	0,12	0,08
40	0,461	0,536	11,13	Kg/m ²	333	200	129	87	60	42	29	20	14
				KN/m ²	3,27	1,96	1,27	0,86	0,59	0,41	0,29	0,20	0,14
50	0,372	0,433	11,51	Kg/m ²	390	242	161	111	79	57	41	30	22
				KN/m ²	3,83	2,38	1,58	1,09	0,78	0,56	0,41	0,30	0,22
60	0,313	0,364	11,89	Kg/m ²	448	285	194	137	99	73	54	41	30
				KN/m ²	4,40	2,80	1,91	1,35	0,98	0,72	0,54	0,40	0,30
80	0,237	0,276	12,64	Kg/m ²	567	376	265	193	144	109	84	65	50
				KN/m ²	5,57	3,69	2,60	1,90	1,42	1,08	0,83	0,64	0,50
100	0,191	0,222	13,40	Kg/m ²	688	469	339	253	193	149	117	92	73
				KN/m ²	6,76	4,61	3,33	2,49	1,90	1,47	1,15	0,91	0,72
120	0,166	0,193	14,15	Kg/m ²	811	565	415	315	244	192	153	122	99
				KN/m ²	7,96	5,54	4,08	3,09	2,40	1,89	1,50	1,20	0,97

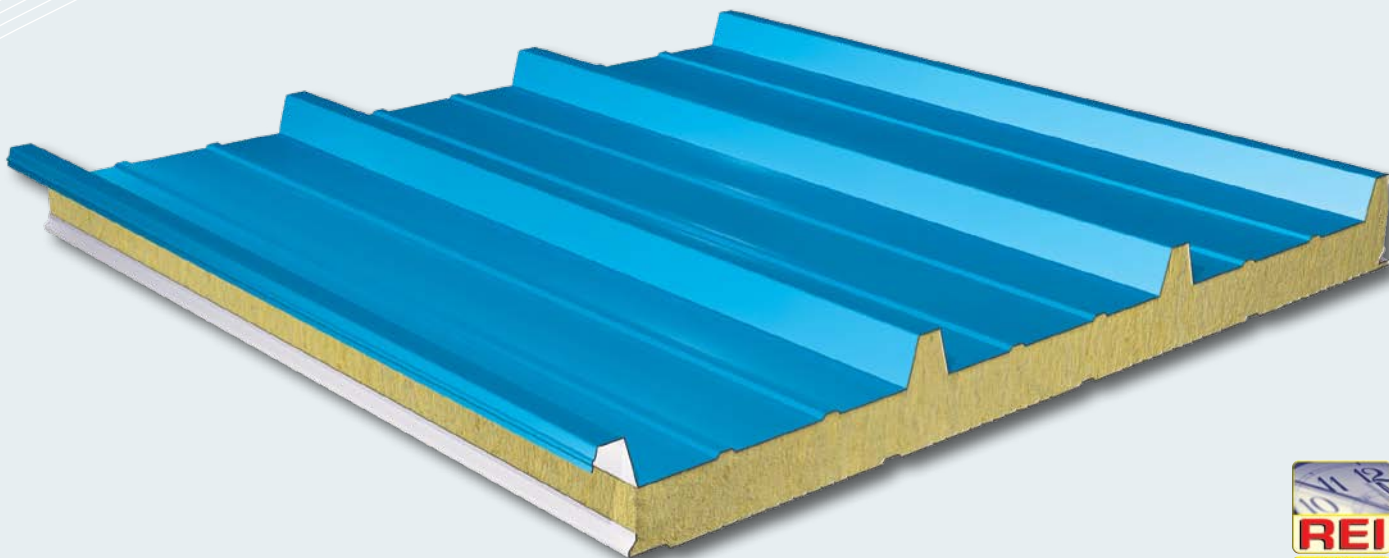
LOAD CONDITIONS WITH STEEL SUPPORTS (MANTO DOUBLE SHEETS):

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of STEEL supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter ⓪ Ⓜ shows the required painted side.



TERMOCOPERTURE® AEFPE OLYMPOS

® registered trade name

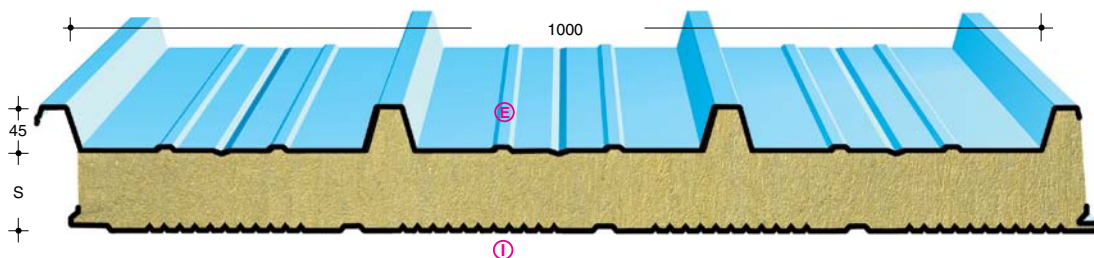


Thickness 100 mm

AEFFE OLYMPOS

TYPE
OLYMPOS

S
Thickness mm.
50-60
80-100



S thickness mm	THERMIC INSULATION			U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²											
	U		weight Kg/m ²		SPAN IN m ℓ											
	Kcal m ² ·h·°C	W m ² ·°C			1,50	2,00	2,50	3,00	3,50	4,00	1,50	2,00	2,50	3,00	3,50	4,00
50	0,61	0,71	15,21	Kg/m ²	185	154	127	102	85	70	167	136	106	88	57	61
				KN/m ²	1,82	1,51	1,25	1,00	0,84	0,69	1,64	1,33	1,04	0,86	0,56	0,60
60	0,52	0,61	16,21	Kg/m ²	235	192	158	131	105	88	215	173	138	116	94	82
				KN/m ²	2,30	1,88	1,55	1,29	1,03	0,86	2,11	1,70	1,35	1,14	0,92	0,80
80	0,41	0,47	18,21	Kg/m ²	296	241	211	174	143	118	276	222	182	159	133	112
				KN/m ²	2,90	2,36	2,07	1,71	1,40	1,16	2,71	2,18	1,78	1,56	1,30	1,10
100	0,33	0,39	20,21	Kg/m ²	397	333	279	229	192	151	378	314	254	214	204	143
				KN/m ²	3,89	3,26	2,74	2,25	1,88	1,48	3,71	3,08	2,49	2,10	2,00	1,40

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of STEEL supports 0,5+0,6 mm. The letter \textcircled{E} shows the required painted side.
Average density of rockwool: 100 Kg/m³ - minimum guaranteed values obtained from tests carried out by the University of Studies of Perugia, Faculty of Engineering, Industrial Engineering Department (experimental tests institute).

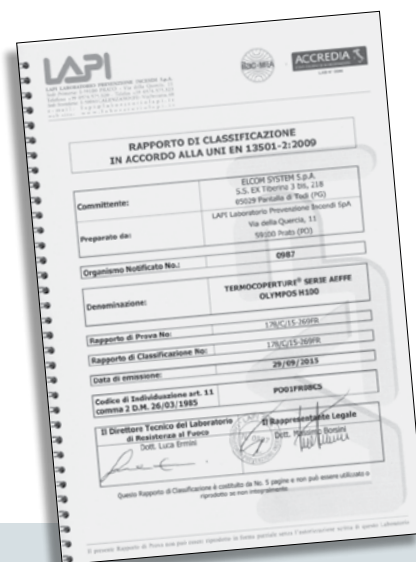
The product. The panels AEFPE, type OLYMPOS, are obtained by sticking in continuous two metallic supports with a rock wool layer. Their use is necessary when a high soundproofing and a good heat insulation, together with incombustibility and a high fire resistance, are requested for roofs.

Supporting materials. They are generally obtained from hot-dip galvanized steel coils S250GD according to UNI EN 10346 norms and/or with an organic coating having characteristics according to UNI EN 10169 cold profiling. On request can also be furnished steel supports in stainless steel according to EN 10088-1 norms or in aluminium according to UNI EN 1396.

Insulation. The core consists of an orientated rock wool layer (100 kg/m³) put perpendicularly to the supports in order to give a higher stability to the panel and improve its mechanical performances.
Thermal conductivity coefficient of rock wool: $\lambda = 0,041 \div 0,045$ W/mK.

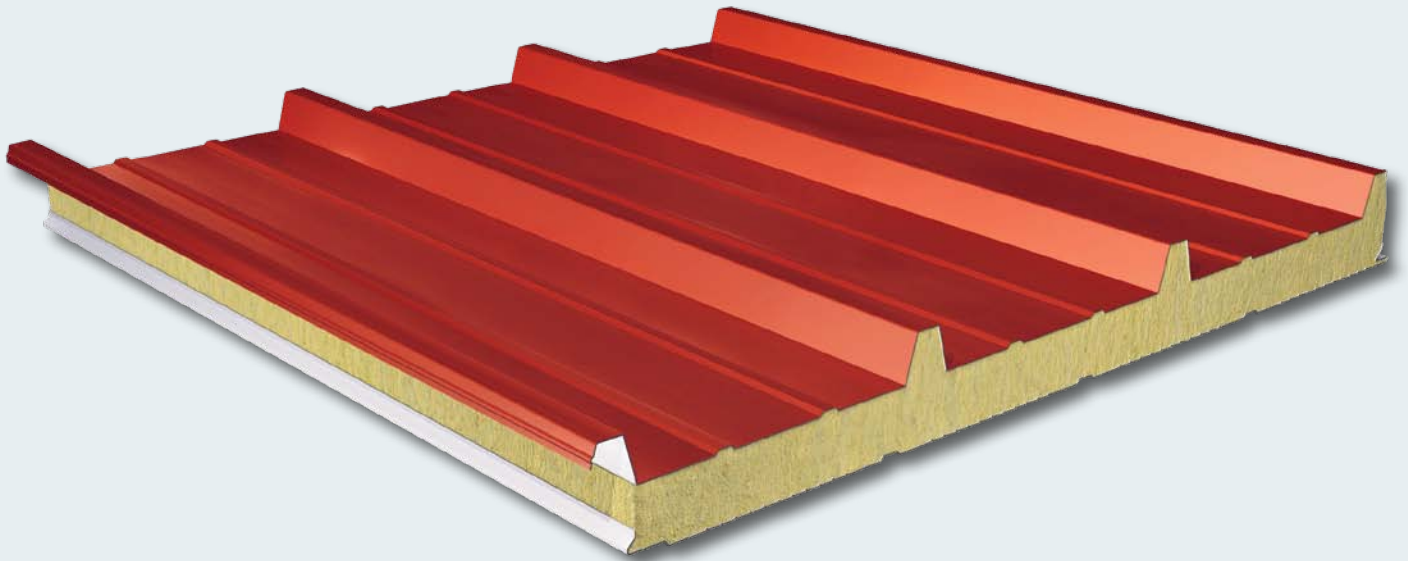
The use of orientated rock wool gives to the panel excellent characteristics of acoustic insulation on a wide frequency spectrum, in particular if a microdrilled support is placed towards the source of the noise. In fact the noise produced, for instance, by the rain and the hail on the roof will be reduced considerably.

Mechanical performances. The values indicated in the tables have been calculated according to CNR 10022/87 and ECCS instructions and are supported by several tests about uniformly distributed loads executed by the Faculty of Engineering of the University of Perugia, Industrial Engineering Department (Experimental Tests Institute).



TERMOCOPERTURE® AEF FE OLYMPOS TERMOFONISOL

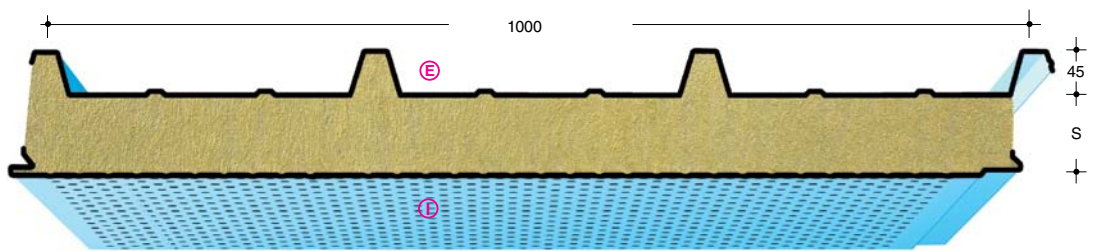
® registered trade name



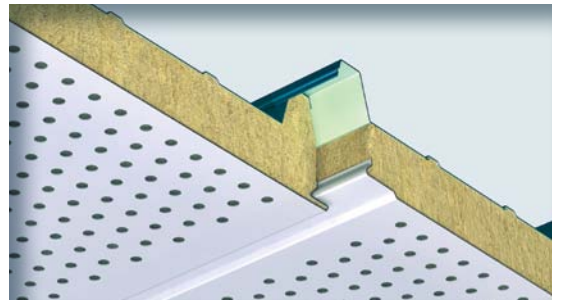
AEFFE OLYMPOS TERMOFONISOL

TYPE
OLYMPOS
TERMOFONISOL

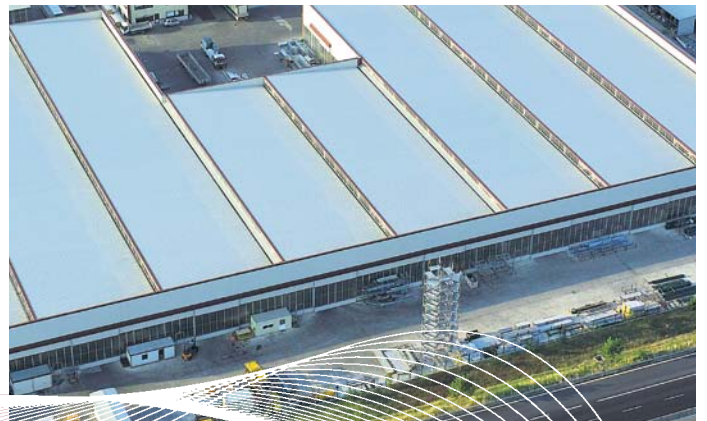
S
Thickness mm.
50-60
80-100



S thickness mm	THERMIC INSULATION		weight Kg/m ²	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²			
	cal m ² ·h·°C	W m ² ·°C			SPAN IN m ℓ			
					1,50	2,00	2,50	3,00
50	0,61	0,71	13,55	Kg/m ²	116	86	-	-
				KN/m ²	1,14	0,84	-	-
60	0,52	0,61	14,55	Kg/m ²	147	106	77	58
				KN/m ²	1,44	1,04	0,76	0,57
80	0,41	0,47	16,55	Kg/m ²	184	133	104	76
				KN/m ²	1,81	1,31	1,02	0,75
100	0,33	0,39	18,55	Kg/m ²	191	141	112	85
				KN/m ²	1,87	1,38	1,10	0,83



The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of STEEL supports 0,5+0,6 mm. The letter (E) shows the required painted side.
Average density of rockwool: 100 Kg/m³ - minimum guaranteed values obtained from tests carried out by the University of Studies of Perugia, Faculty of Engineering, Industrial Engineering Department (experimental tests institute).







ARCHITECTURAL FACADES

Surprising Solutions creating Architecture



SERBOND®

ARCHITECTURAL FACADES

ARCHITECTURAL WALL CLADDINGS FOR NEW BUILDINGS, FOR RENOVATIONS AND ENERGY-UPGRADING

Technical characteristics and performances:

Supports: **STEEL** - S 250 GD according UNI EN 10346 norm, mechanical characteristics as D.M. of 14/01/2008 and tolerances according UNI EN 10143 Norm
ALUMINIUM - UNI EN 1396 with minimum yielding limit 150 Mpa
COPPER - UNI EN 1172
COR-TEN

STAINLESS STEEL - According UNI EN 10088-1 Norm

Insulation: PUR Density ~ 40 Kg/m³

Thickness: mm. 40-50-60-80-100

Standard panel: Width mm. 1000

The flexibility of the system gives the possibility to realize panels with different developments.

COORDINATED SYSTEMS FOR MODULAR CLADDINGS

The concept of the **SERBOND®** cladding has been developed to offer to the designers the possibility to create tailor-made projects, having not to refer to rigid standards or defined geometric rules. This particular facing system is mainly directed towards commercial, residential building and public utilities. It can be used both for new buildings and for renovations.

The versatile system has different types of accessories that work with different types of structure such as concrete, traditional masonry, steel and wood.

The installation of the panels, supported by our technical assistance during the planning phase, is easy and doesn't require the use of special site vehicles / equipments.

The system includes **FLAT**, **BUBBLE** and **RUGBY** (with pressed spherical/elliptic imprints on the external surface) and the new **CAOS panels** and many adaptable elements in a wide range of developments and colours that exalt the original architectural standard. The **SERBOND®** is made of a light substructure in galvanized steel, anchored to the bearing structure of the building. The monolithic sandwich panels with stabilized flatness, with thermic cut joint and hidden fixing are planned to be finished with special profiles in extruded aluminium; the panels can have both a vertical and a horizontal development. The system offers a particularly rich range of components and elements with thermic cut such as: rounded and right corners, edges, thresholds, windowposts, and also connections with special development and tailor-made joints.

TENDER SPECIFICATIONS

The architectural wall called **SERBOND®** is made of a light substructure in galvanized steel, fixed to the bearing structure of the building. The monolithic sandwich panels with stabilized flatness, with thermic cut joint and hidden fixing are finished with an extruded aluminium profile. They can have both a vertical and a horizontal development. The system offers a wide range of finishing elements with thermic cut: rounded and right corners, edges, thresholds, windowposts and also panels with special development and tailor-made joints.

The **SERBOND®** System consists of:

- Substructure
- Blind panels with thermic cut
- Extruded aluminium profile
- Finishing elements with thermic cut

SUBSTRUCTURE

The substructure is made of vertical tubular profiles in galv. steelx..... mm thick, anchored to the main structure by means of a suitable fixing system.

PANELS WITH THERMIC CUT AND HIDDEN FIXING TYPE TERMOPARETI® WP/ST Flat or WPM/C-FNFlat

- External supports in **cold shaped galvanized steel / aluminium / stainless steel / corten**
- The finishing of the galvanized steel supports and of the aluminium supports consists of an organic coat obtained from a cycle of hot standard polyester prepainting according

to EN10169

- PVC profile, located in the longitudinal female joint of the panels between the two external supports to increase the overall stability of the panel and to avoid detachments of the supports from the insulation either during their handling or during the working phase.

- Polyurethane insulation, CFC free, according to UNI EN 13165 Norm.

CHARACTERISTICS OF THE PANEL

- Thickness of panel : mm 40-50-60-80-100
- Thickness of external supports : mm 0,6 side (E) + 0,5 side (I)

- Prepainting of external supports: our standard side (E) + ES73 White Grey side (I)

- Width of the panel : mm 1000

- Density of insulation : approx. 40 kg/m³

- Fixing : hidden fixing on the female joint

EXTRUDED ALUMINIUM PROFILE

Special profiles in extruded aluminium are used as architectural joint elements to panels or to other components.

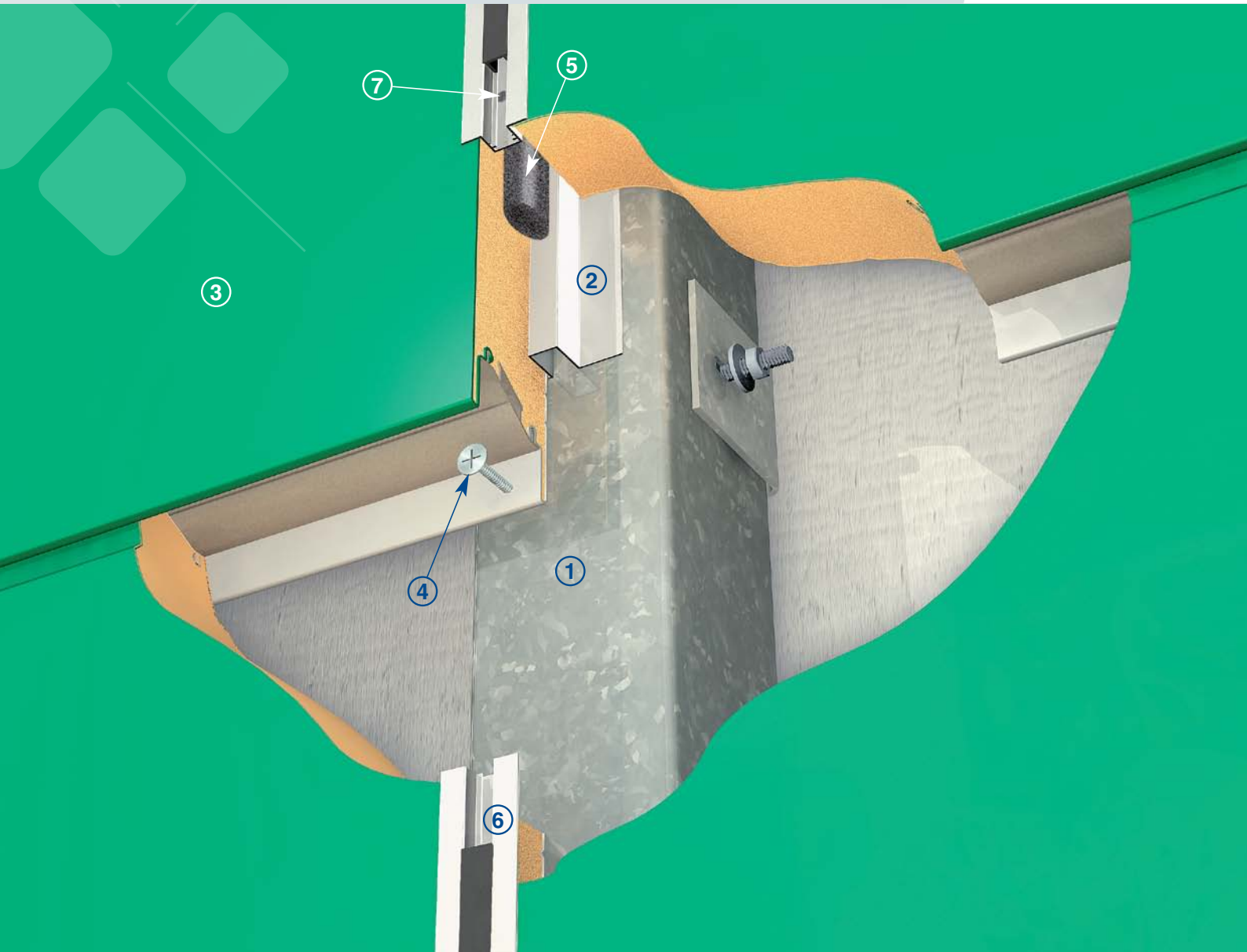
FINISHING ELEMENTS WITH THERMIC CUT

Special components with thermic cut are used to finish the panels and as connection to other elements.

ASSEMBLING SYSTEM

The tubular profilesx.... of the substructure are anchored to the bearing structure of the building, then the panels and the special components with thermic cut are being installed.





COMPOSITION OF THE SERBOND® SYSTEM

① SUBSTRUCTURE IN GALVANIZED STEEL

⑤ "LEM CORD" GASKET - DIAMETER 20 mm

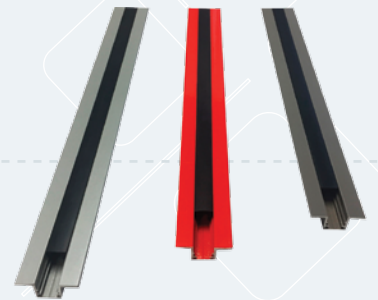
② FLASHING TO FIX ALUMINIUM PROFILE

⑥ ALUMINIUM PROFILE PAINTED IN DIFFERENT COLOURS WITH BLACK EPDM RUBBER

③ TERMOPARETI® WITH HIDDEN FIXING

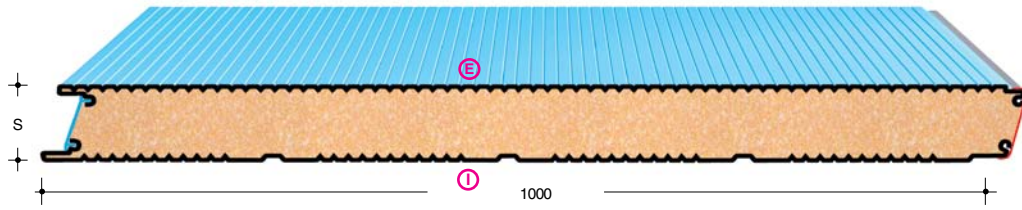
⑦ "DRILLEX" SCREWS TO FIX ALUMINIUM PROFILE

④ SCREWS WITH LARGE FLAT HEAD TO FIX TERMOPARETI®



TYPE WPM/C-FN

S=Thickness
mm. 40-50
60-80-100

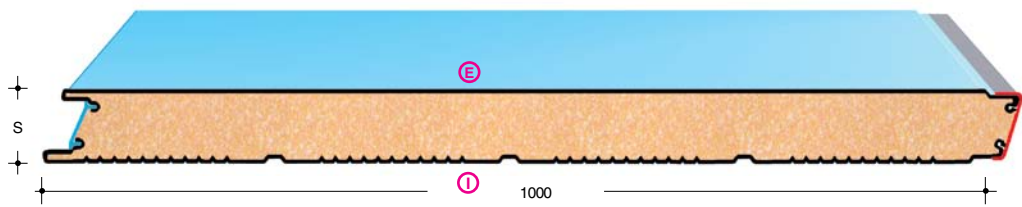


OPTION
PIR B-s2,d0



TYPE WP/ST FLAT

S=Thickness
mm. 40-50
60-80-100

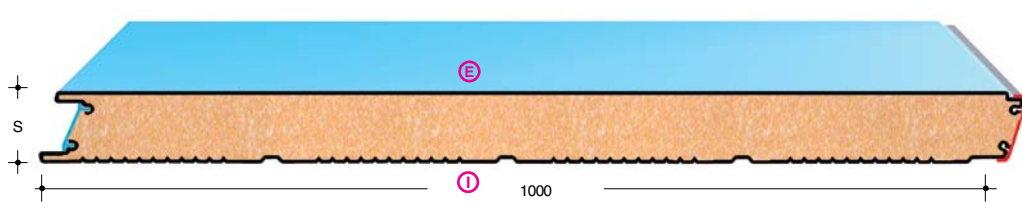


OPTION
PIR B-s2,d0



TYPE WPM/C-FN FLAT

S=Thickness
mm. 40-50
60-80-100

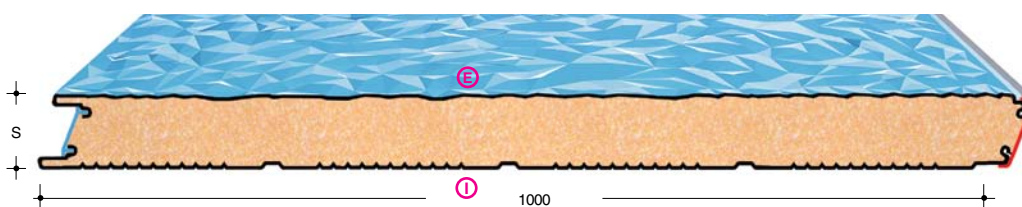


OPTION
PIR B-s2,d0



TYPE WPM/C-FN CAOS

S=Thickness
mm. 40-50
60-80-100

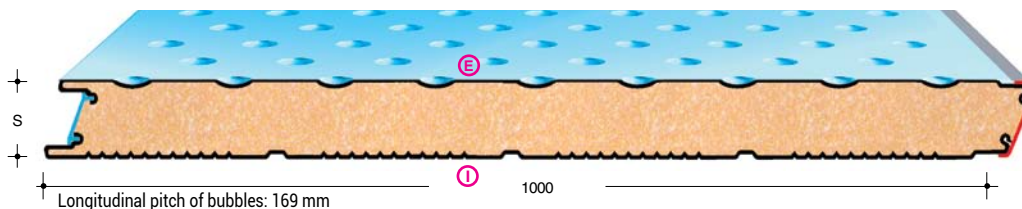


OPTION
PIR B-s2,d0



TYPE WP/ST BUBBLE

S=Thickness
mm. 40-50
60-80-100

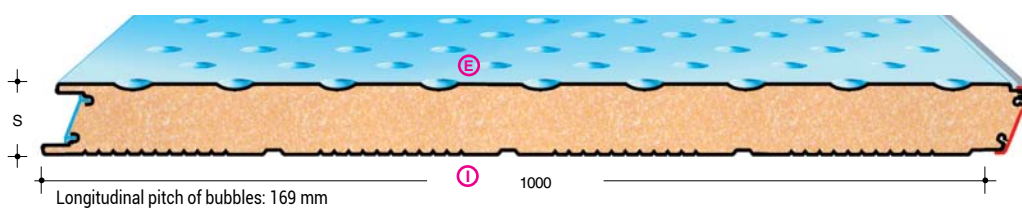


OPTION
PIR B-s2,d0



TYPE WPM/C-FN BUBBLE

S=Thickness
mm. 40-50
60-80-100

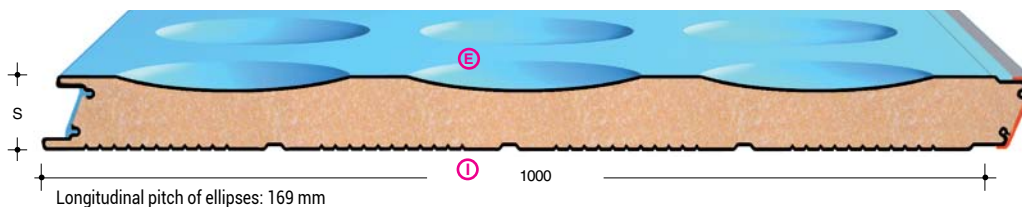


OPTION
PIR B-s2,d0



TYPE WP/ST RUGBY

S=Thickness
mm. 40-50
60-80-100

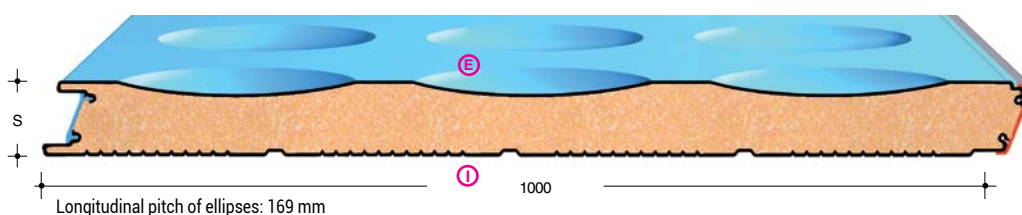


OPTION
PIR B-s2,d0



TYPE WPM/C-FN RUGBY

S=Thickness
mm. 40-50
60-80-100

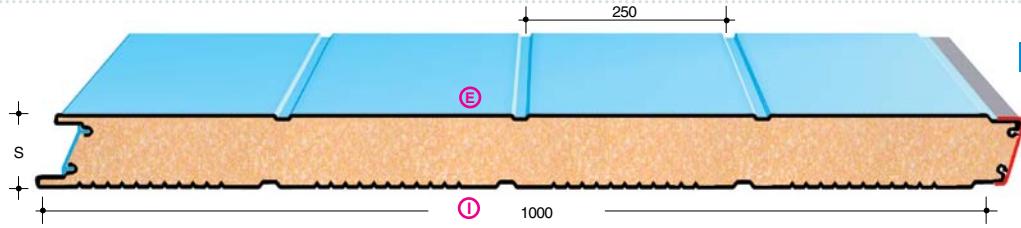


OPTION
PIR B-s2,d0



TYPE WP/ST ALT 1

S=Thickness mm. 40-50 60-80-100

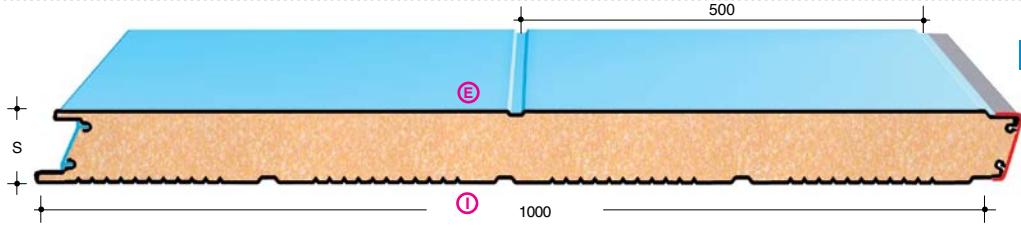


OPTION PIR B-s2,d0



TYPE WP/ST ALT 2

S=Thickness mm. 40-50 60-80-100

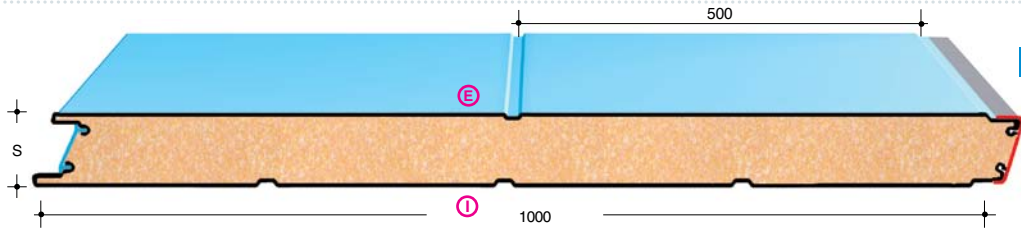


OPTION PIR B-s2,d0



TYPE WP/ST ALT 3

S=Thickness mm. 40-50 60-80-100

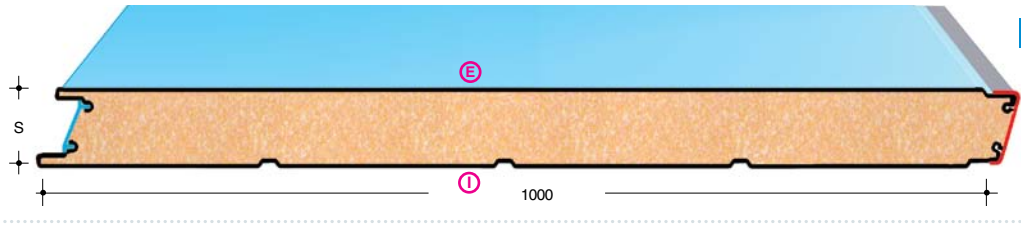


OPTION PIR B-s2,d0



TYPE WP/ST ALT 4

S=Thickness mm. 40-50 60-80-100



OPTION PIR B-s2,d0



S thickness mm	THERMIC INSULATION			weight Kg/m ²	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
	Kcal m ² ·h·°C	U m ² ·°C	W m ² ·°C			SPAN IN m ℓ									
						2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	10,15	Kg/m ²	KN/m ²	166	125	90	70	55	178	140	108	85	70
						1,63	1,22	0,88	0,68	0,54	1,74	1,37	1,05	0,83	0,68
50	0,372	0,433	10,53	Kg/m ²	KN/m ²	225	160	120	90	70	245	182	140	115	90
						2,21	1,57	1,18	0,88	0,68	2,41	1,78	1,37	1,13	0,88
60	0,313	0,364	10,91	Kg/m ²	KN/m ²	289	216	142	115	85	321	237	181	141	115
						2,83	2,12	1,39	1,13	0,83	3,15	2,32	1,77	1,38	1,13
80	0,237	0,276	11,67	Kg/m ²	KN/m ²	455	316	227	160	120	500	365	280	215	145
						4,46	3,09	2,22	1,57	1,18	4,91	3,58	2,74	2,11	1,42
100	0,191	0,222	12,63	Kg/m ²	KN/m ²	470	345	260	200	160	510	390	285	225	180
						4,60	3,38	2,55	1,96	1,57	4,99	3,82	2,79	2,20	1,76

LOAD CONDITIONS WITH STEEL SUPPORTS:

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of STEEL supports 0,5+0,5 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter \textcircled{E} shows the required painted side.

S thickness mm	THERMIC INSULATION			weight Kg/m ²	U.M.	Useful loads uniformly distributed in KG/m ² – KN/m ²									
	Kcal m ² ·h·°C	U m ² ·°C	W m ² ·°C			SPAN IN m ℓ									
						2,00	2,50	3,00	3,50	4,00	2,00	2,50	3,00	3,50	4,00
40	0,461	0,536	5,16	Kg/m ²	KN/m ²	108	64	41	27	19	149	95	64	44	32
						1,06	0,62	0,40	0,26	0,18	1,46	0,93	0,63	0,43	0,31
50	0,372	0,433	5,56	Kg/m ²	KN/m ²	150	92	60	41	29	194	129	89	63	46
						1,47	0,90	0,58	0,40	0,28	1,90	1,26	0,87	0,61	0,45
60	0,313	0,364	5,96	Kg/m ²	KN/m ²	191	121	81	56	40	237	162	114	83	62
						1,87	1,18	0,79	0,55	0,39	2,32	1,59	1,11	0,81	0,61
80	0,237	0,276	6,76	Kg/m ²	KN/m ²	272	180	125	89	65	317	225	165	124	95
						2,67	1,76	1,22	0,87	0,63	3,11	2,20	1,62	1,21	0,93
100	0,191	0,222	7,56	Kg/m ²	KN/m ²	290	235	180	110	90	310	255	190	135	100
						2,84	2,30	1,76	1,08	0,88	2,94	2,49	1,86	1,32	0,98

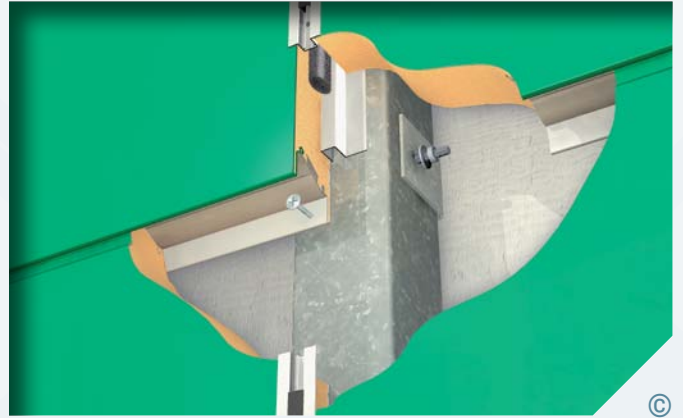
LOAD CONDITIONS WITH ALUMINIUM SUPPORTS:

The values shown in the tables are indicative and referred to a deflection $f \leq 1/200$ of the span ℓ (m) for panels with thickness of ALUMINIUM supports 0,6+0,6 mm. For sizing and checking refer to the enclosed E of the UNI EN 14509 Norm and to the values shown in the CE certification. The letter \textcircled{E} shows the required painted side.



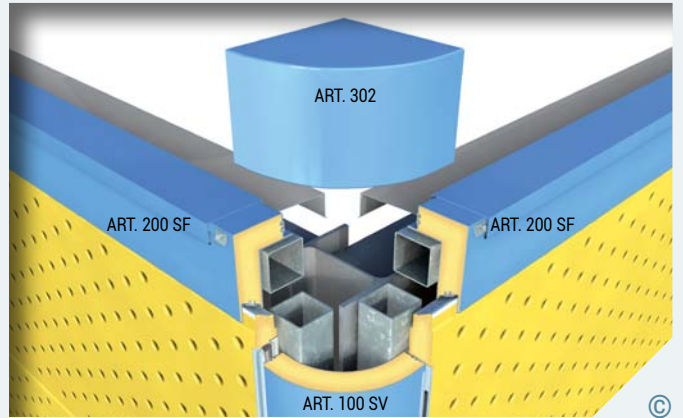


SPECIAL CONNECTIONS FOR WINDOWS



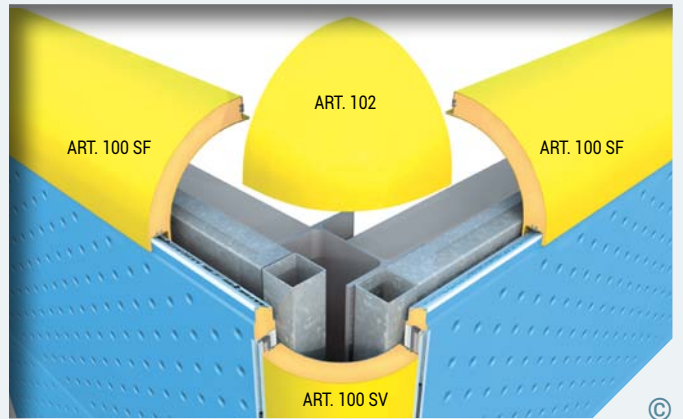
DETAIL TERMOPARETI® WALL JOINT

©



ROUNDED VERTICAL CORNERS / HORIZONTAL 90° CORNERS, UPPER CONNECTIONS

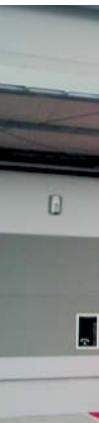
©

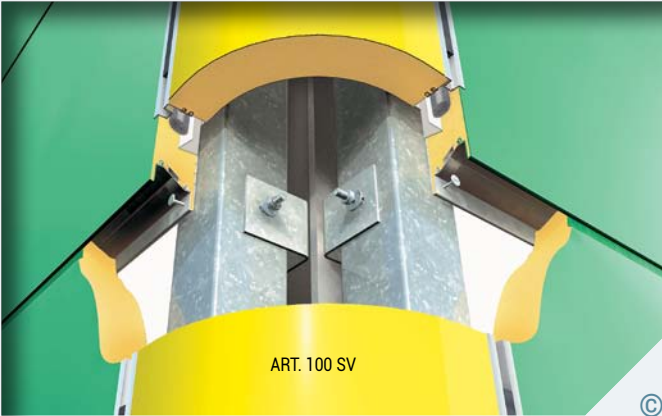


ROUNDED UPPER CONNECTION

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ROUNDED VERTICAL CONNECTION

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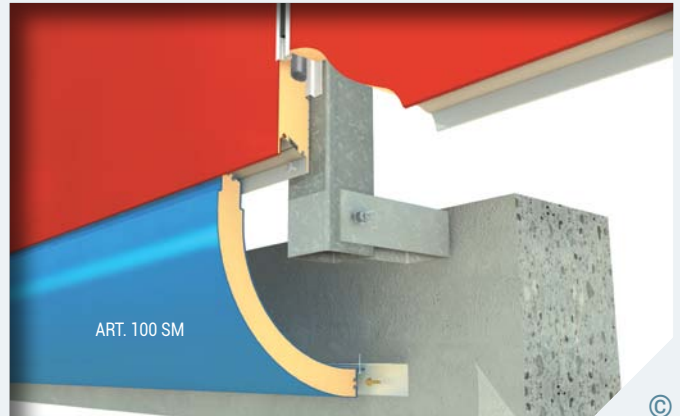
FOAMED 90° BOTTOM CONNECTION

©



FOAMED 90° UPPER CONNECTION

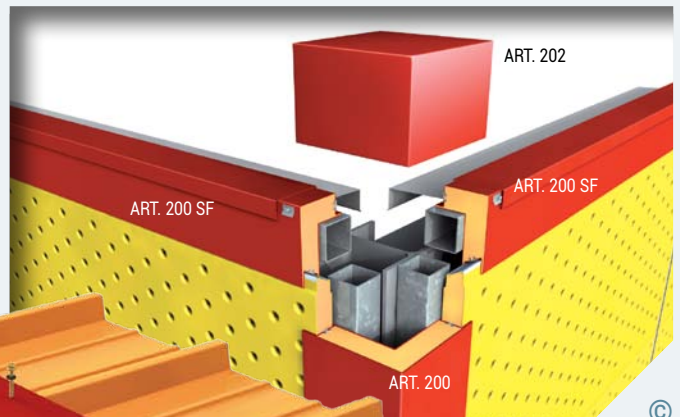
©



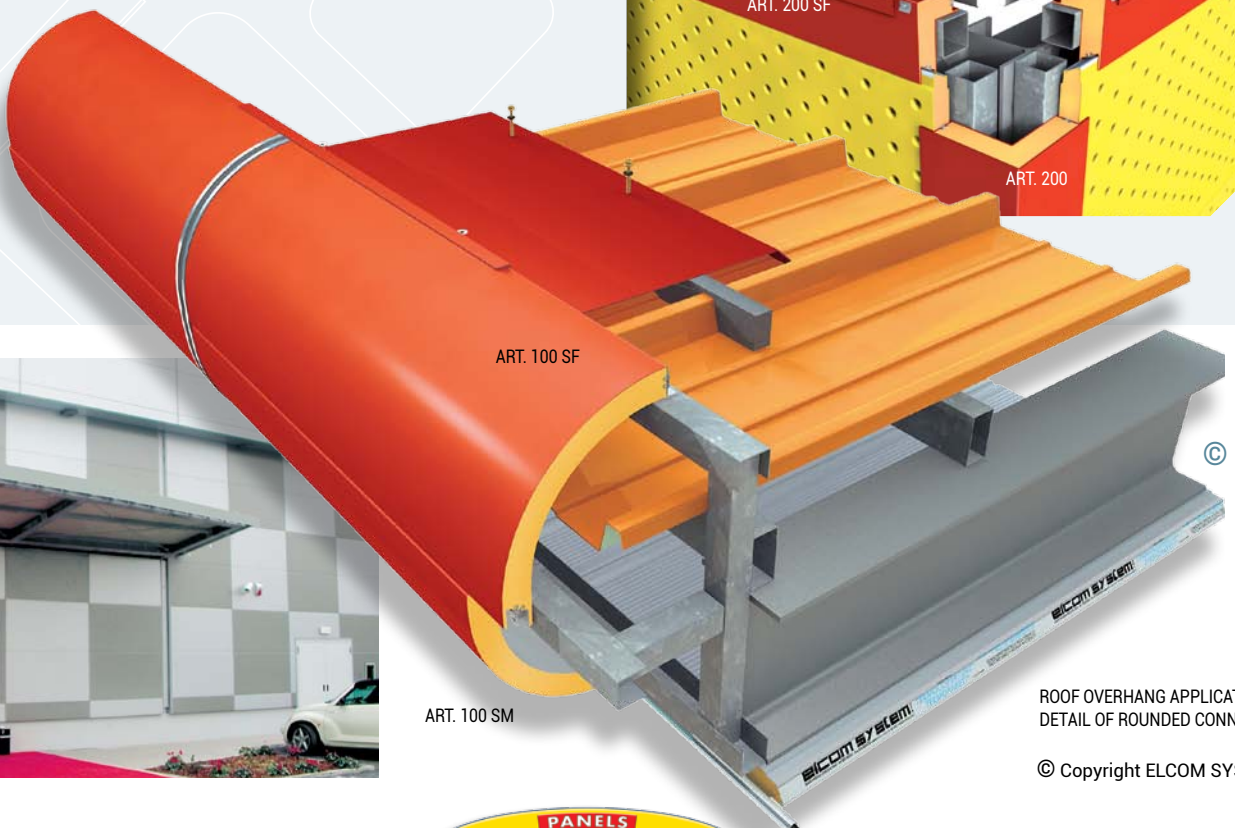
ROUNDED BOTTOM CONNECTION

©

FOAMED 90°
UPPER
CONNECTION



©



ART. 100 SM

ROOF OVERHANG APPLICATION
DETAIL OF ROUNDED CONNECTIONS

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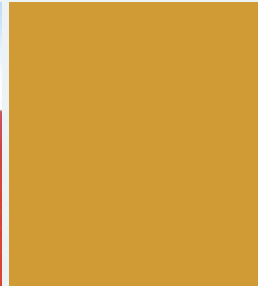


BEFORE

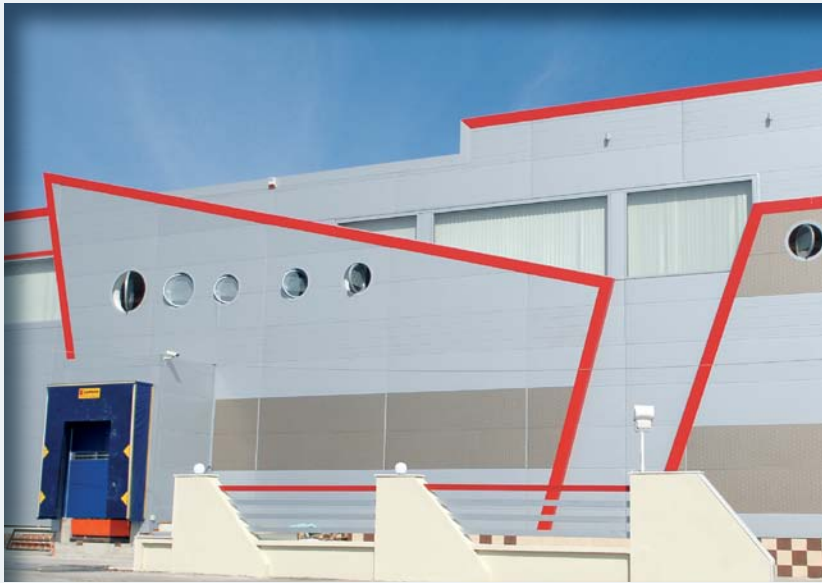
DURING



ENERGY-UPGRADING AND ARCHITECTURAL RENOVATION



AFTER



PROJECTS

BEFORE



DURING



ENERGY-UPGRADING AND ARCHITECTURAL RENOVATION



AFTER

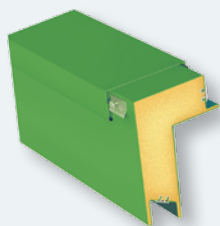


PROJECTS



System for architectural wall cladding

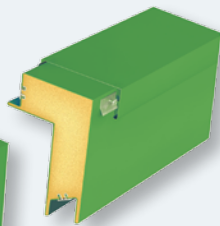
Special components with thermic cut



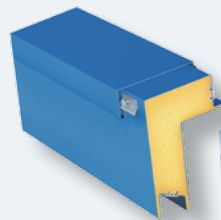
Art. 200 SF



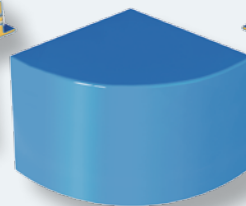
Art. 202



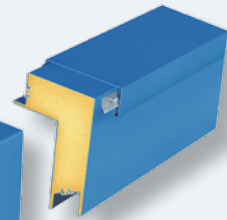
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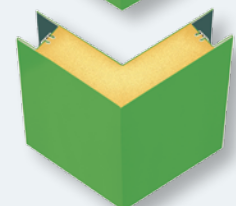
Art. 200 SF



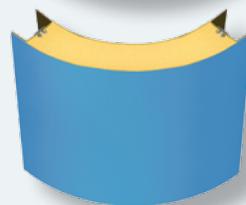
Art. 302



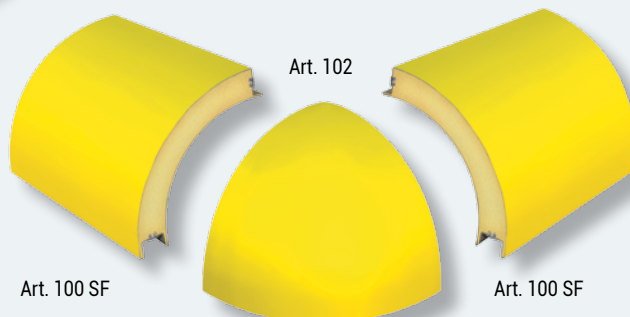
Art. 200 SF



Art. 200



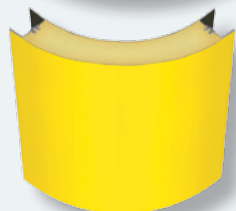
Art. 100



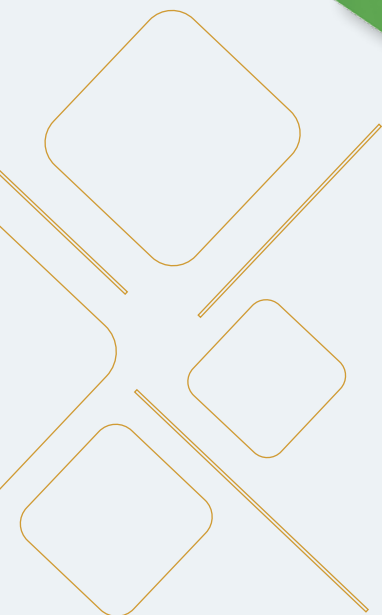
Art. 102

Art. 100 SF

Art. 100 SF



Art. 100



facciatearchitetoniche.it



Art. 302



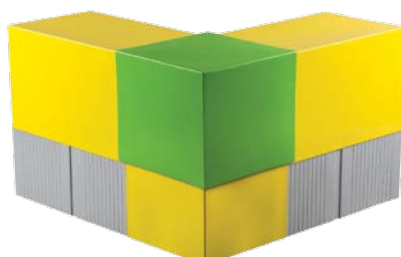
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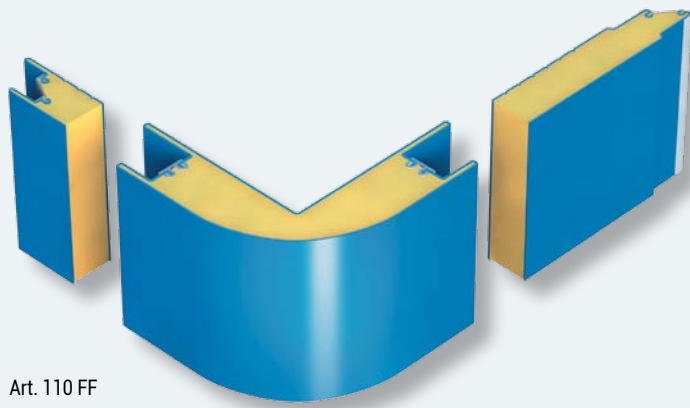


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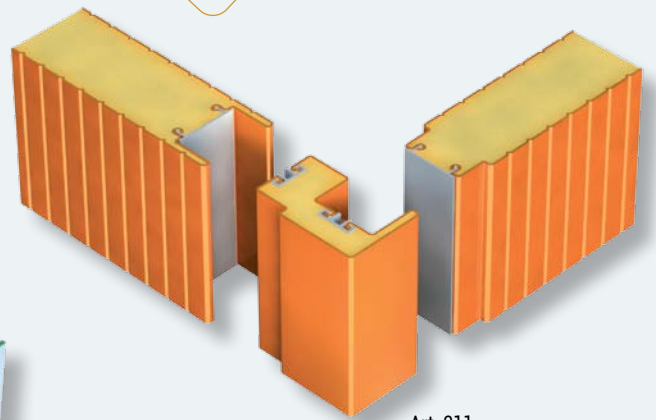


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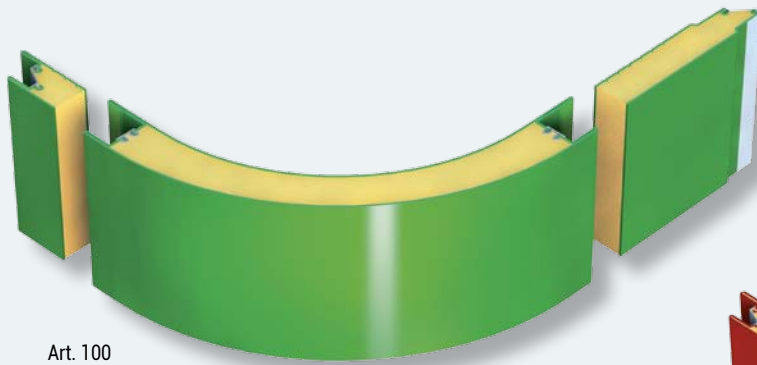




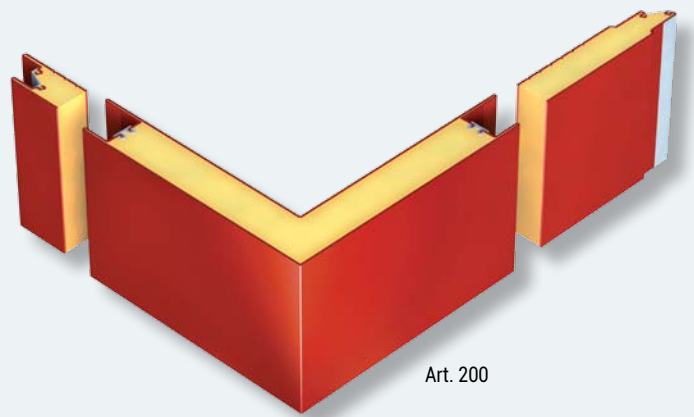
Art. 110 FF



Art. 211



Art. 100

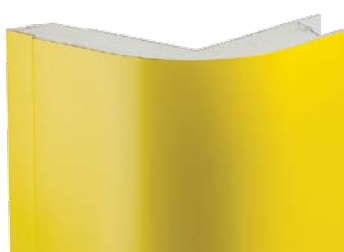


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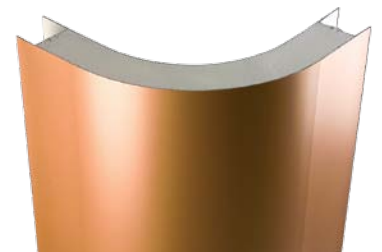
Art. 200



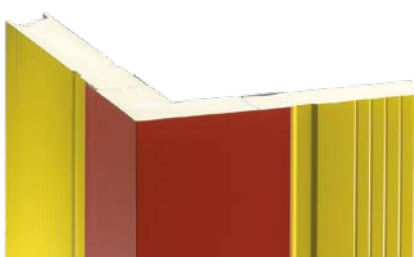
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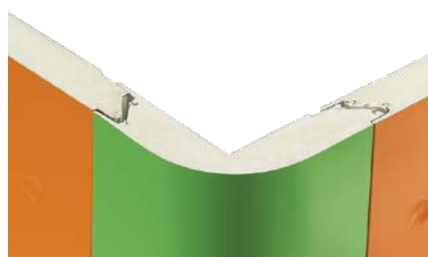
Art. 100



Art. 200



Art. 110 MF



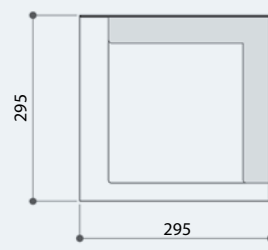
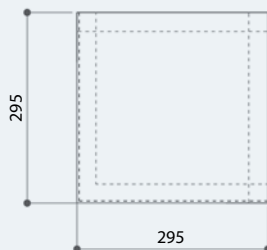
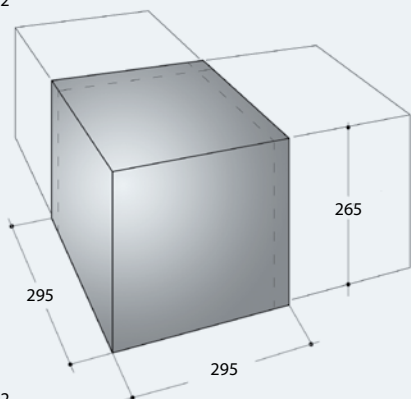
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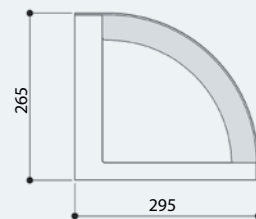
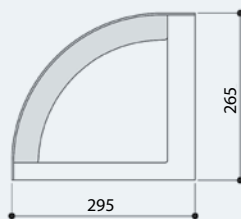
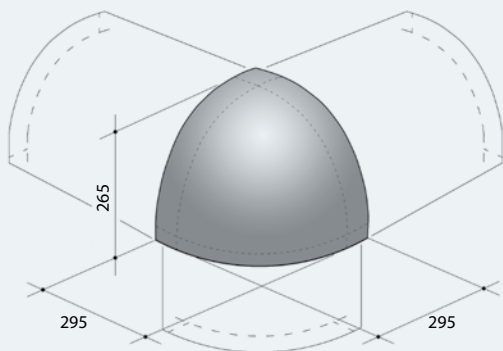


System for architectural wall cladding Special components with thermic cut

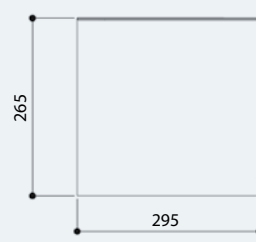
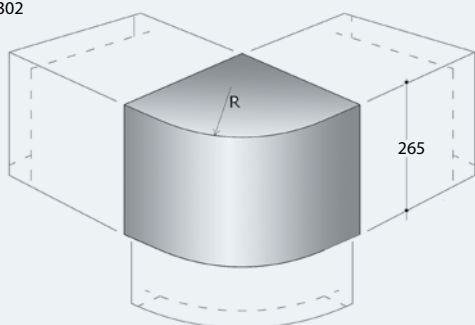
ART. 202



ART. 102

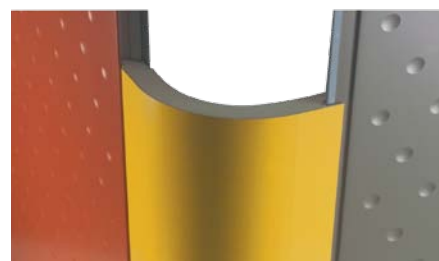


ART. 302

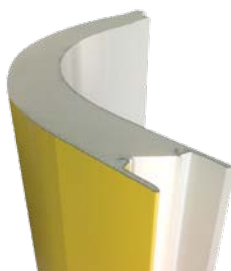


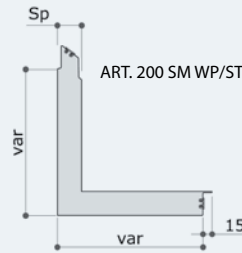
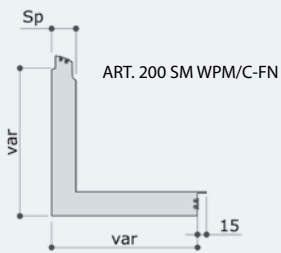
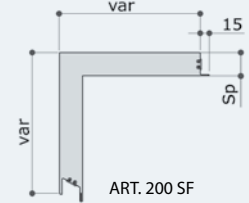
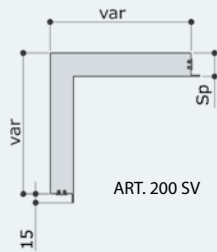
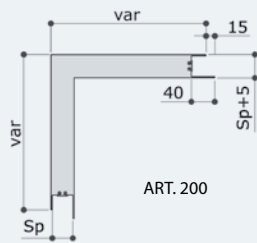
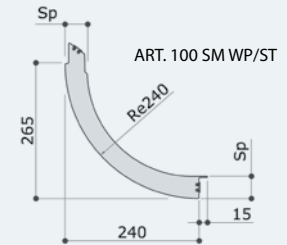
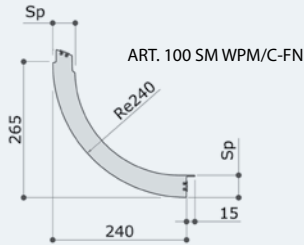
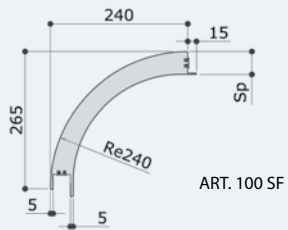
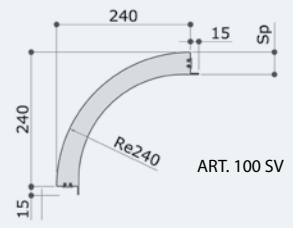
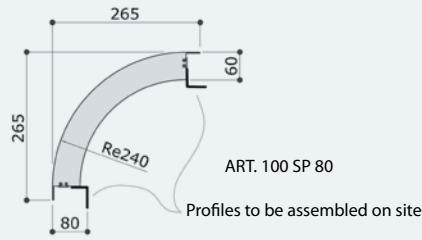
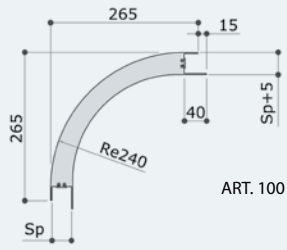
Product section

Art. 200 SV



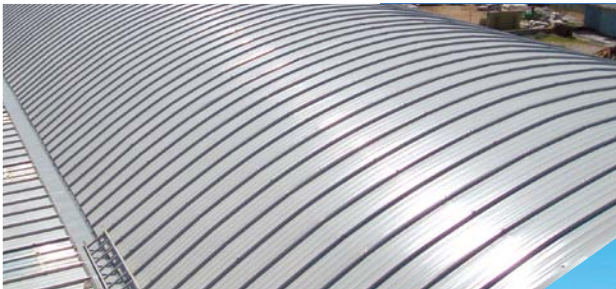
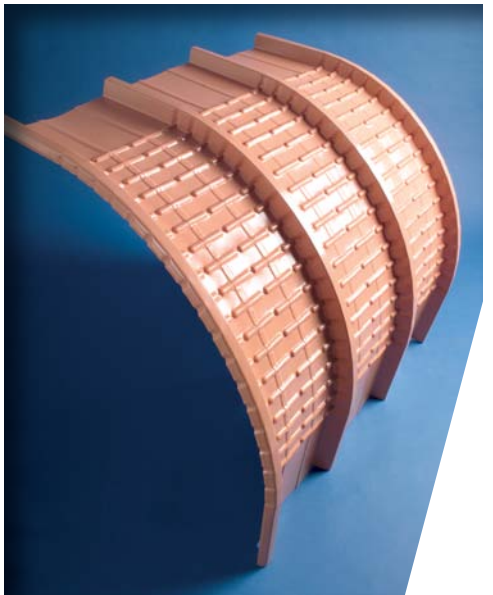
Art. 200 SS

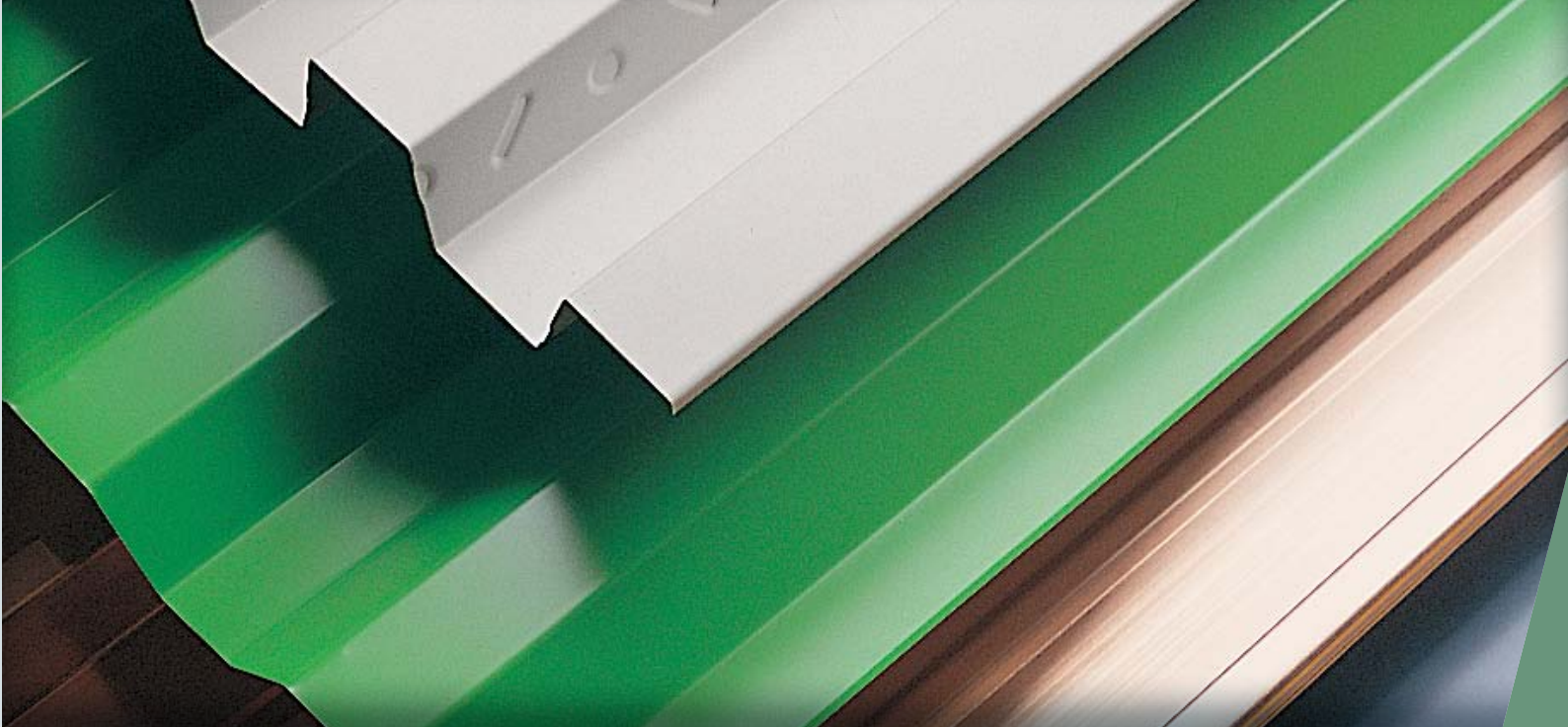




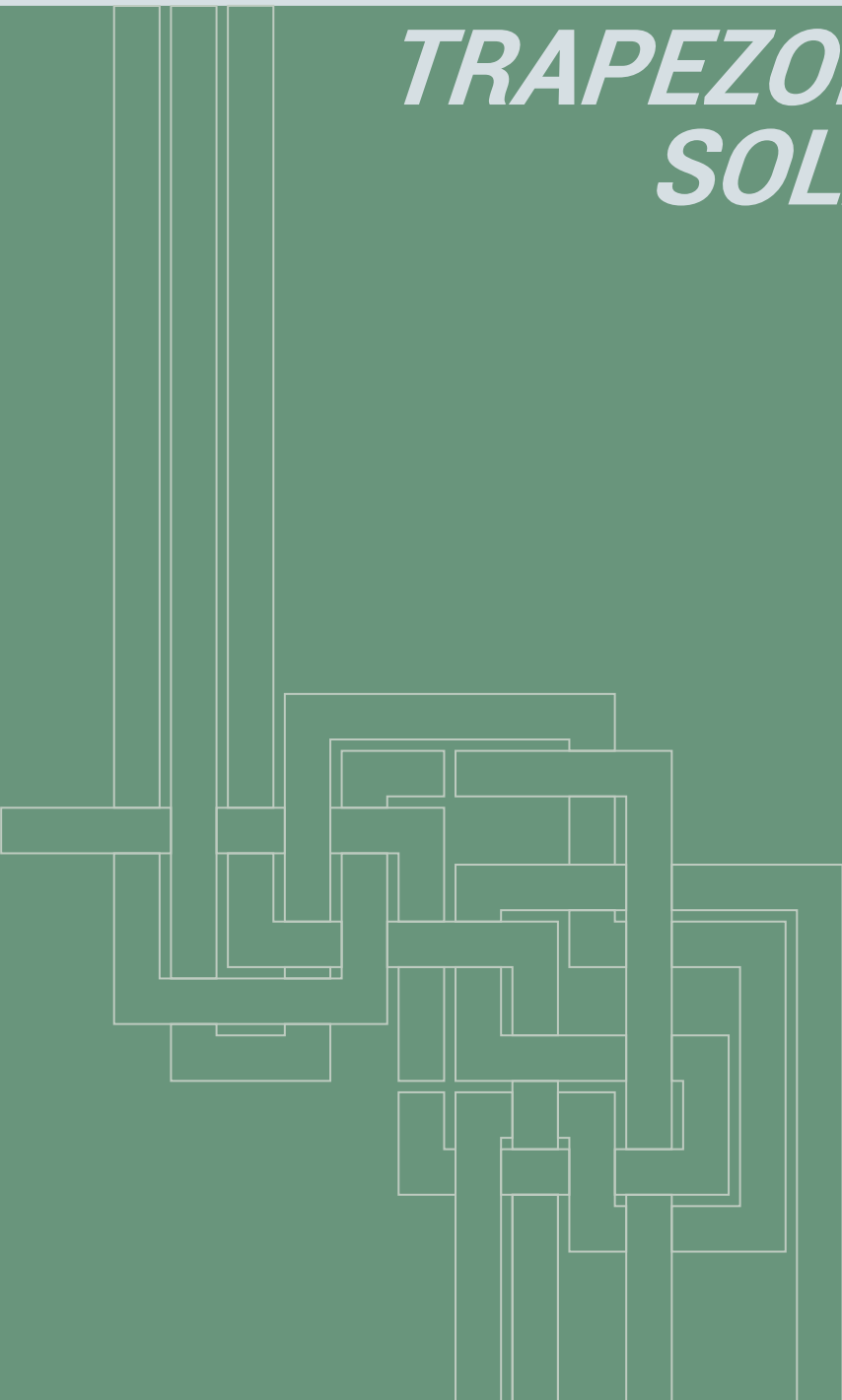
var = Min. Panel thk. +30 / max. 265



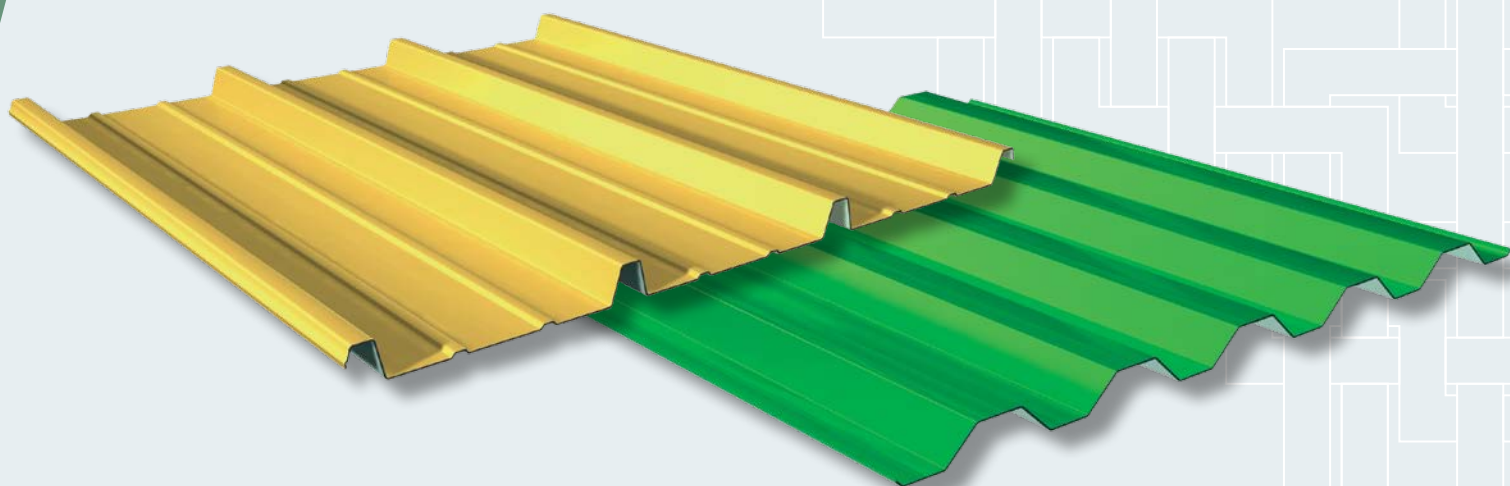




TRAPEZOIDAL SHEETS
SOLAC[®] STEEL DECKINGS



TRAPEZOIDAL SHEETS



LG 454 ROOF

LG 450 WALL

LG 454	thickness mm	KG/m ²	NET LOADS Kg/m ²															
	0,6	5,89	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00			
	0,7	6,87	0,6	556	354	244	178	135	105	84	62	47	36	27	21	16		
	0,8	7,85	0,7	648	412	284	207	157	123	98	73	55	41	32	25	19		
	1,0	9,81	0,8	740	471	325	236	179	140	112	83	62	47	36	28	22		
	1,2	11,77	1,0	923	587	405	295	223	175	140	104	78	59	46	35	27		
			1,2	1106	704	485	353	268	209	167	125	94	71	55	42	33		
			deflection cm		0,19	0,30	0,44	0,60	0,78	0,99	1,23	1,37	1,50	1,62	1,75	1,87	2,00	

LG 450	thickness mm	KG/m ²	NET LOADS Kg/m ²															
	0,6	5,67	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00			
	0,7	6,61	0,6	656	420	291	193	129	91	66	50							
	0,8	7,56	0,7	811	519	361	234	157	110	80	60							
	1,0	9,45	0,8	976	624	434	277	186	130	95	71	55						
			1,0	1326	848	580	365	245	172	125	94	73						
				deflection cm		0,33	0,51	0,74	0,88	1,00	1,13	1,25	1,38	1,50				

The TRAPEZOIDAL SHEETS of ELCOM SYSTEM S.p.A. (company with UNI EN ISO 9001 certification) have been researched to make roofing and wall. The possibilities of particular ways of shaping such as cambering and drawing allows for their use in every kind of building.

Technical Characteristics

Materials. The Trapezoidal Sheets are obtained by cold profiling of coils of following materials:
 - carbon steel coated with zinc applied in a continuous hot dip according to UNI EN 10346 norm with mechanical characteristics as foreseen in the D.M. of 14/01/2008.
 - stainless steel whose characteristics are fixed by EN10088-1 norms;
 - Aluminium with a minimum yielding limit 150 MPa according to UNI EN 1396 norm.
 - Copper with mechanical characteristic and physical properties defined by UNI EN 1172 norm.

Finishing. All materials, except copper, can be furnished with an organic hot dip coat applied in continuous, with characteristics according to the UNI EN 10169 norm. The surfaces of the coils are degreased and pretreated according to their nature. Next is the application with rollers of a priming coat on both sides having a thickness of 5 microns; after baking at 220/250°C approx., a finishing coat will be applied. The standard paint coat is Polyester whose thickness is 25 microns. Other coatings can be furnished. The corrugated sheets obtained from prepainted coils are more resistant to

the wear and tear of time and the different colours give an effect of a high finishing. The guarantee for the prepainting depends on the resins applied, on the environmental conditions and on the use of the products.

Tolerances: The maximum dimensional and forme tolerances are according the UNI EN 508-1-2-3 norms.

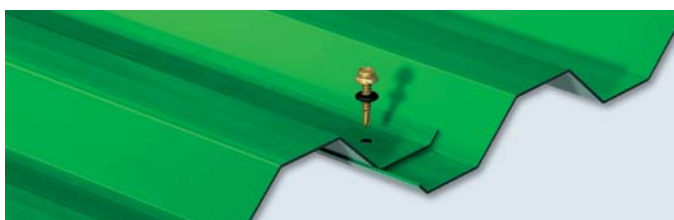
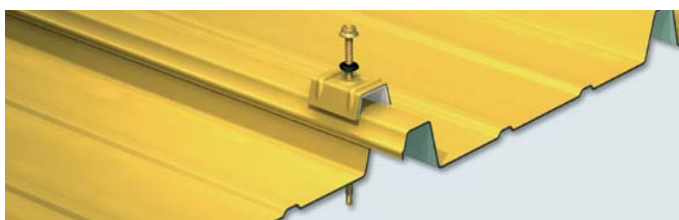
Definition of static characteristics and live loads. Conditions:

- 1 - $\sigma_{amm} = 165 \text{ N/mm}^2$ (Fe S250GD - UNI EN 10326)
- 2 - Load "P" uniformly distributed
- 3 - "l" span between supports
- 4 - Deflection $f \leq 1/200 \cdot "l"$

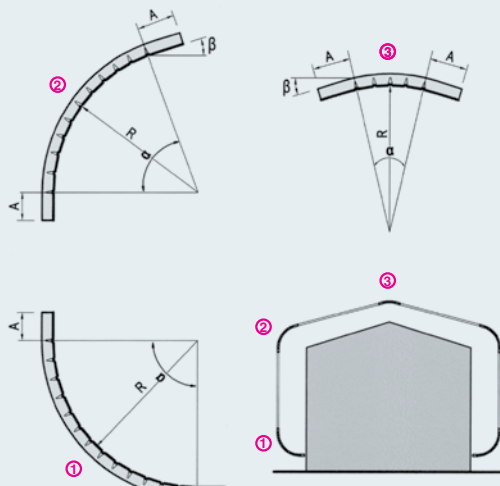
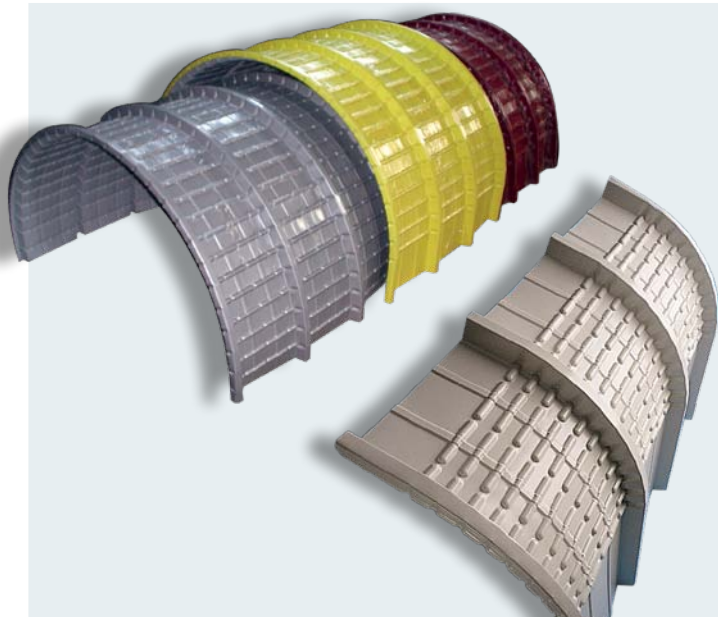
Modulus of steel elasticity $E = 210000 \text{ N/mm}^2$

Description of the method adopted to determine the static parameters.

It is made reference to the CNR 10022-84 norms, about the instructions for the construction of cold profiles and to the AIPPEG (Italian Association for Panels and Corrugated sheets manufacturers) recommendations.



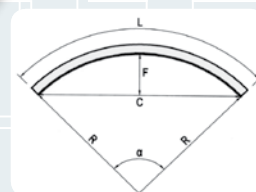
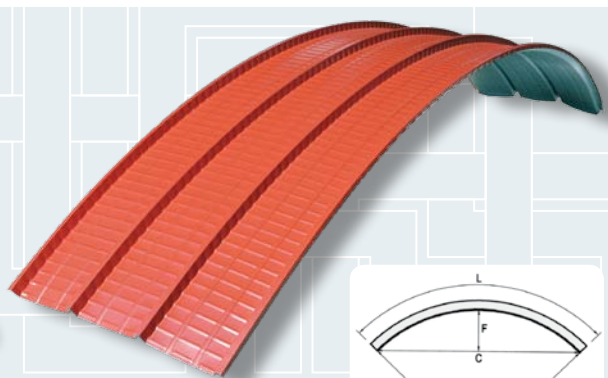
STAMPED SHEETS



LG 454 minimum radius 500 mm - A = minimum 50 mm



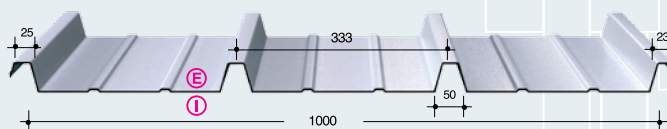
CAMBERED SHEETS



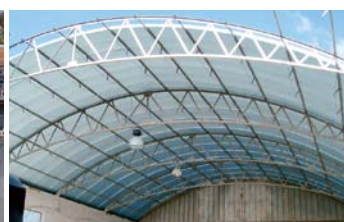
LG 454



LG 454
minimum radius 3000 mm
minimum thickness 0,6 mm

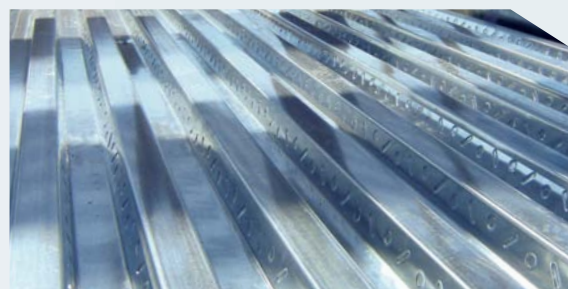
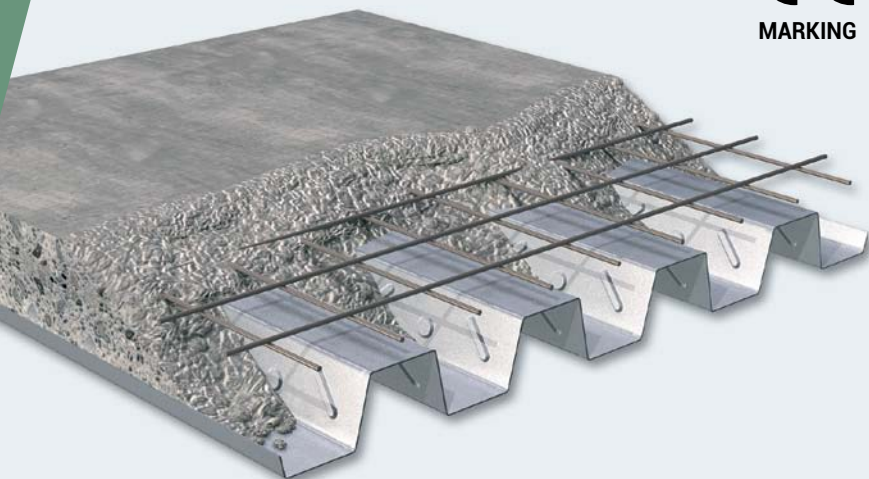


thickness mm	Kg/m ²
0,6	5,89
0,7	6,87
0,8	7,85
1,0	9,81
1,2	11,77



SOLAC® STEEL DECKINGS

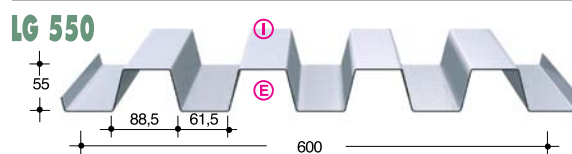
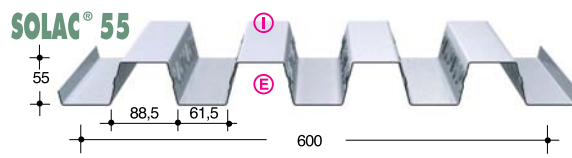
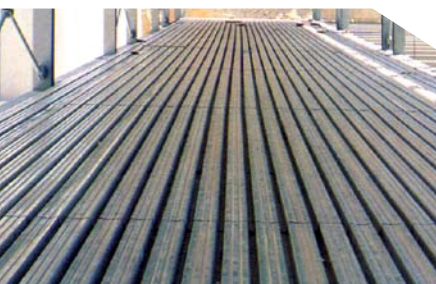
® registered trade name



Thickness	S	mm	0,6	0,7	0,8	1,0	1,2
Weight	P	kg/m ²	7,85	9,16	10,47	13,08	15,70
Section modulus	W	cm ³ /m	11,69	14,46	17,40	23,69	30,38
	W _r	cm ³ /m	13,71	16,97	20,44	26,66	33,35
Moment of inertia	J	cm ⁴ /m	40,95	49,85	59,07	78,15	97,52

thickness mm	NET LOADS Kg/m ²											
	span in m											
1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00
0,6	1302	830	574	420	319	251	202	151	114	88	69	55
0,7	1610	1027	711	520	396	311	248	184	140	108	85	67
0,8	1938	1237	855	626	477	374	294	219	166	128	101	80
1,0	2640	1685	1166	853	650	511	390	290	220	170	134	106
1,2	3387	2162	1497	1095	835	657	488	362	276	213	168	133
deflection cm	0,20	0,32	0,46	0,63	0,82	1,04	1,25	1,37	1,50	1,62	1,75	1,87

SOLAC® 55 - LG 550



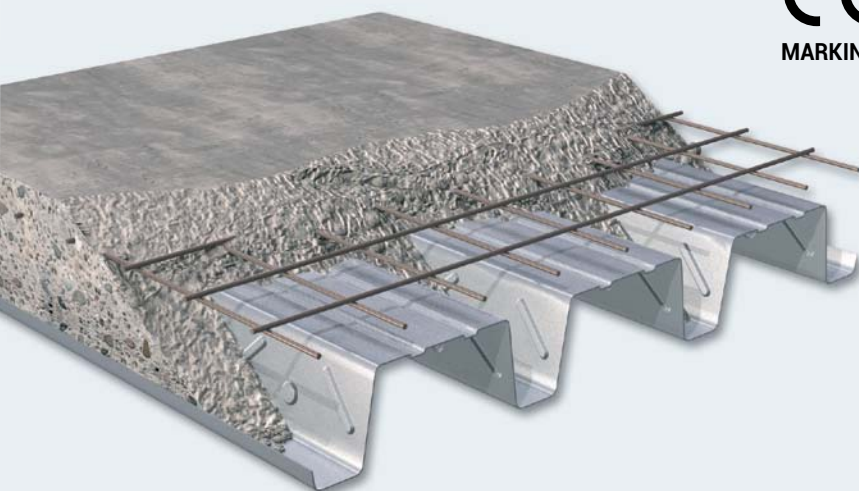
Geometric and static properties					Net loads in Kg/m ²															
thickness mm	SLAB - 3,5 cm. HT = 9 cm.				loading conditions	height cm	thickness mm	weight Kg/m ²	span in m											
	X cm	J cm ² /m	W cm ³ /m	Me kg cm ⁴ /m					1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
0,6	5,81	227	39,04	54649		3,5 cm. HT = 9 cm.	0,6	162	1781	1266	931	702	538	416	324	252	195	149	111	
0,7	5,66	253	44,67	62536			0,7	163	2060	1470	1088	825	637	498	393	310	245	193	150	
0,8	5,52	277	50,16	70223			0,8	164	2332	1670	1240	945	734	578	460	367	294	235	184	
1,0	5,29	321	60,78	85098			1,0	167	2859	2056	1535	1178	922	733	590	478	389	317	238	
1,2	5,10	362	71,02	99429			1,2	169	3246	2428	1819	1402	1103	882	714	584	480	384	287	
							deflection cm	0,28	0,39	0,50	0,64	0,79	0,95	1,13	1,33	1,54	1,77	2,00		

Geometric and static properties					Net loads in Kg/m ²															
thickness mm	SLAB - 4,5 cm. HT = 10 cm.				loading conditions	height cm	thickness mm	weight Kg/m ²	span in m											
	X cm	J cm ² /m	W cm ³ /m	Me kg cm ⁴ /m					1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
0,6	6,50	300	46,11	64553		4,5 cm. HT = 10 cm.	0,6	187	2108	1499	1104	833	639	496	387	302	235	180	136	
0,7	6,32	334	52,77	73875			0,7	188	2438	1742	1289	979	757	593	468	371	294	232	181	
0,8	6,16	365	59,25	82952			0,8	189	2760	1977	1470	1121	872	688	548	439	352	282	225	
1,0	5,90	423	71,76	100470			1,0	192	3328	2433	1818	1396	1094	871	701	569	464	380	310	
1,2	5,68	476	83,76	117261			1,2	194	3458	2869	2151	1659	1307	1046	848	694	571	473	392	
							deflection cm	0,25	0,34	0,45	0,57	0,70	0,85	1,01	1,19	1,38	1,58	1,80		

Geometric and static properties					Net loads in Kg/m ²															
thickness mm	SLAB - 5,5 cm. HT = 11 cm.				loading conditions	height cm	thickness mm	weight Kg/m ²	span in m											
	X cm	J cm ² /m	W cm ³ /m	Me kg cm ⁴ /m					1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
0,6	7,21	387	53,63	75085		5,5 cm. HT = 11 cm.	0,6	212	2458	1749	1290	975	749	582	455	357	278	215	163	
0,7	7,01	430	61,41	85971			0,7	213	2844	2033	1506	1145	887	696	551	438	348	276	217	
0,8	6,83	471	68,98	96574			0,8	214	3219	2308	1717	1312	1022	807	644	517	416	335	268	
1,0	6,53	546	83,60	117040			1,0	217	3605	2840	2124	1633	1281	1021	823	670	547	449	368	
1,2	6,28	613	97,61	136651			1,2	219	3730	3166	2514	1940	1530	1226	995	816	673	558	464	
							deflection cm	0,23	0,31	0,41	0,51	0,64	0,77	0,92	1,07	1,25	1,43	1,63		

SOLAC® STEEL DECKINGS - The use of the trapezoidal steel sheets in the construction of floors has impacted an innovation of great importance; the elasticity of the system allows easy use in every condition. The particular marks on the sides of the ribs permit the anchoring of the concrete thus avoiding horizontal slide or vertical detachment.

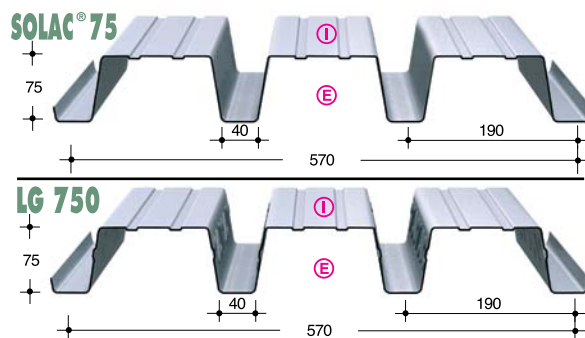
Technical norms for trapezoidal sheets and deckings
 - D.M. 09/01/96 - CNR 10022-84
 - CNR UNI 10011-88 - CNR 10016-72
 - EUROCODE 3 - PART 1.3



Thickness	S mm	0,6	0,7	0,8	1,0	1,2
Weight	P kg/m ²	8,26	9,64	11,02	13,77	16,53
Section modulus	W cm ³ /m	19,52	23,07	26,65	33,87	40,37
	Wr cm ³ /m	18,77	22,80	26,93	34,62	41,47
Moment of inertia	J cm ⁴ /m	82,13	99,84	117,99	152,16	184,49

		NET LOADS Kg/m ²												
		span in m												
thickness mm		1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00
0,6		2178	1391	963	706	538	424	341	281	235	185	146	117	95
0,7		2574	1644	1139	834	636	501	404	332	277	225	178	143	116
0,8		2974	1899	1316	964	735	579	467	384	321	266	211	169	138
1,0		3779	2414	1672	1225	934	735	593	488	408	344	272	219	178
1,2		4505	2877	1993	1460	1114	877	707	581	486	412	330	266	216
deflection cm		0,16	0,25	0,35	0,48	0,63	0,79	0,98	1,19	1,41	1,63	1,75	1,88	2,00

SOLAC® 75 - LG 750



Geometric and static properties				
thickness mm	SLAB 4,5 cm. HT = 12 cm.			
	X cm	J cm ² /m	W cm ³ /m	Me kg cm/m
0,6	8,41	359	42,66	59728
0,7	8,23	401	48,77	68284
0,8	8,07	442	54,73	76616
1,0	7,80	516	66,22	92712
1,2	7,58	585	77,27	108173

Net loads in Kg/m ²														
loading conditions	height cm	thickness mm	weight Kg/m ²	span in m										
				1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00
	SLAB 4,5 cm. HT = 12 cm.	0,6	170	1953	1390	1024	774	594	462	361	282	220	170	128
		0,7	171	2256	1612	1194	908	703	551	435	346	274	217	170
		0,8	173	2551	1829	1360	1038	808	638	508	408	328	263	210
		1,0	175	3121	2246	1679	1290	1011	805	649	527	430	352	288
		1,2	178	3668	2648	1986	1531	1027	966	784	641	528	437	363
	deflection cm			0,19	0,26	0,34	0,44	0,54	0,65	0,77	0,91	1,05	1,21	1,38

Geometric and static properties				
thickness mm	SLAB 5,5 cm. HT = 13 cm.			
	X cm	J cm ² /m	W cm ³ /m	Me kg cm/m
0,6	9,11	450	49,40	69161
0,7	8,91	503	56,47	79051
0,8	8,73	553	63,34	88672
1,0	8,42	645	76,58	107219
1,2	8,17	729	89,27	124984

Net loads in Kg/m ²														
loading conditions	height cm	thickness mm	weight Kg/m ²	span in m										
				1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00
	SLAB 5,5 cm. HT = 13 cm.	0,6	195	2264	1611	1188	898	690	536	420	329	256	198	151
		0,7	196	2614	1869	1385	1053	815	640	506	402	320	253	199
		0,8	198	2955	2119	1576	1203	937	740	590	474	381	307	246
		1,0	200	3565	2600	1944	1494	1172	934	753	612	500	410	336
		1,2	203	3826	3062	2297	1772	1397	1119	908	744	613	508	422
	deflection cm			0,18	0,24	0,32	0,40	0,50	0,60	0,72	0,84	0,97	1,12	1,27

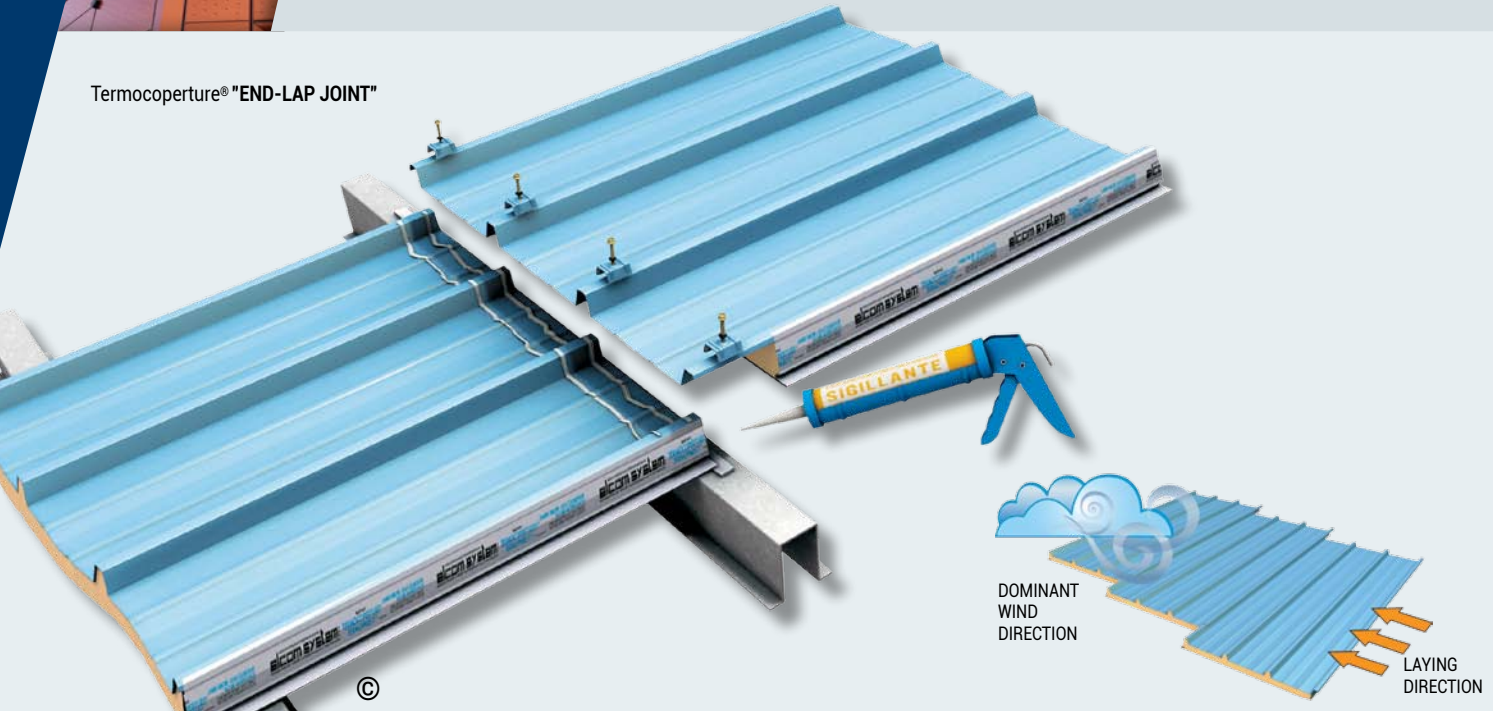
Geometric and static properties				
thickness mm	SLAB 6,5 cm. HT = 14 cm.			
	X cm	J cm ² /m	W cm ³ /m	Me kg cm/m
0,6	9,83	556	56,61	79249
0,7	9,60	622	64,72	90604
0,8	9,40	683	72,60	101645
1,0	9,07	796	87,80	122915
1,2	8,79	899	102,33	143264

Net loads in Kg/m ²														
loading conditions	height cm	thickness mm	weight Kg/m ²	span in m										
				1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00
	SLAB 6,5 cm. HT = 14 cm.	0,6	220	2598	1850	1365	1032	794	618	484	380	297	231	176
		0,7	221	3000	2145	1591	1210	938	737	584	465	370	294	232
		0,8	223	3391	2432	1810	1383	1078	852	681	547	441	355	285
		1,0	225	3775	2985	2233	1717	1348	1075	867	706	577	474	389
		1,2	228	4034	3425	2637	2036	1606	1288	1046	857	708	587	488
	deflection cm			0,17	0,23	0,29	0,37	0,46	0,56	0,66	0,78	0,90	1,04	1,18

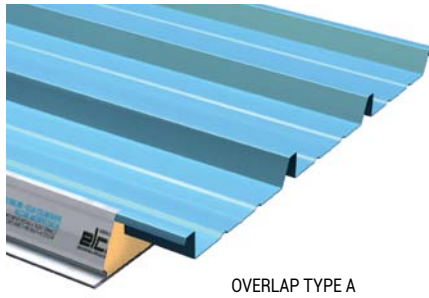
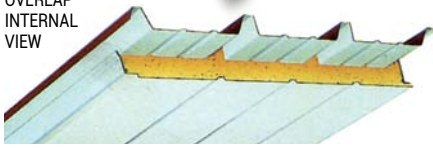
NOTE - Trapezoidal sheets that derive from the SOLAC 75 and SOLAC 55, are used to work on wide spans both for roof and walls. These sheets, called LG750 and LG550, are without the marks on the sides of the rib.

ACCESSORIES AND FINISHINGS

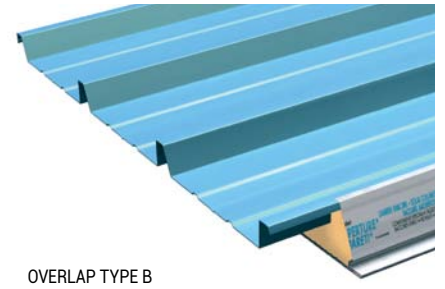
Termocoperture® "END-LAP JOINT"



OVERLAP INTERNAL VIEW



OVERLAP TYPE A

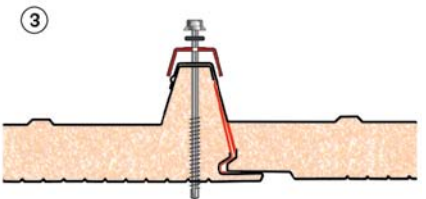
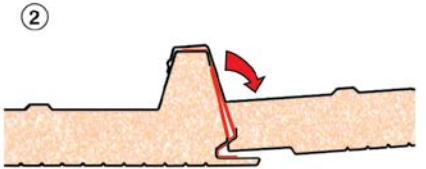
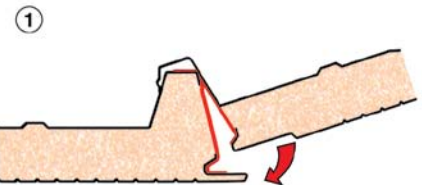


OVERLAP TYPE B

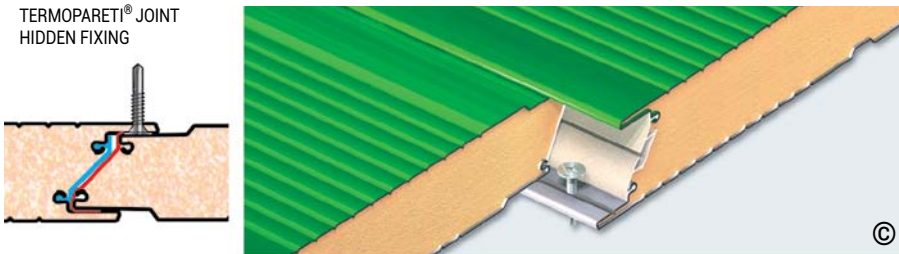
TERMOPARETI® JOINT VISIBLE FIXING



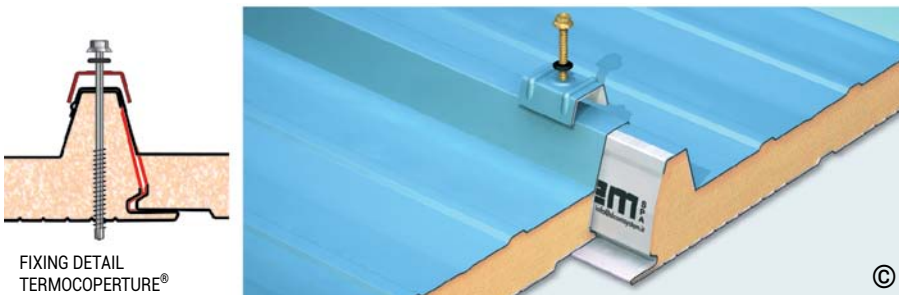
TERMOCOPERTURE® INSTALLATION STEPS

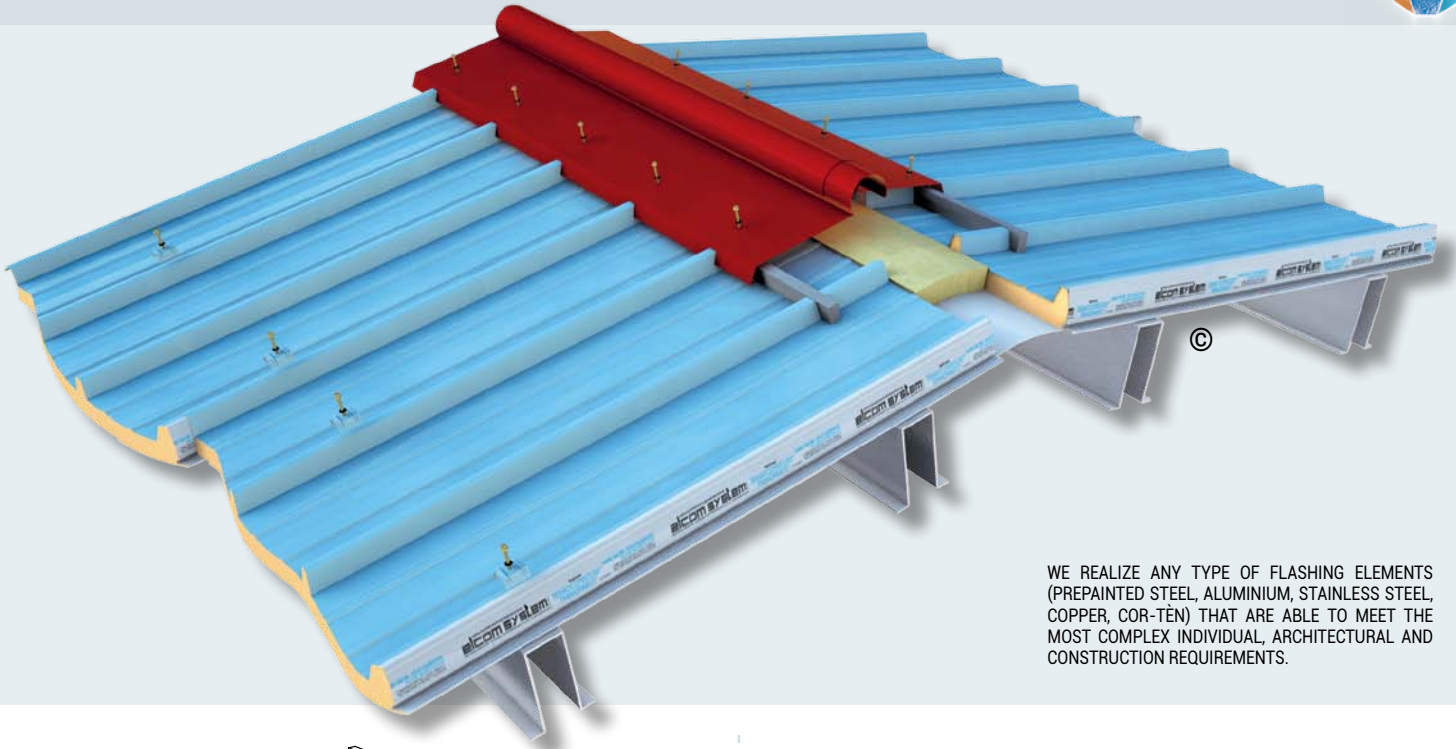


TERMOPARETI® JOINT HIDDEN FIXING

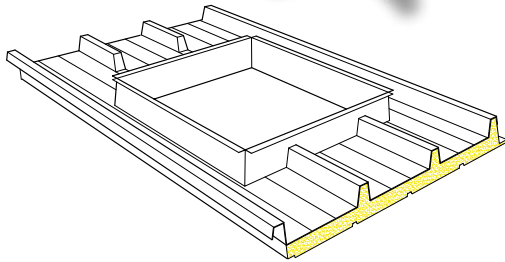


FIXING DETAIL TERMOCOPERTURE®

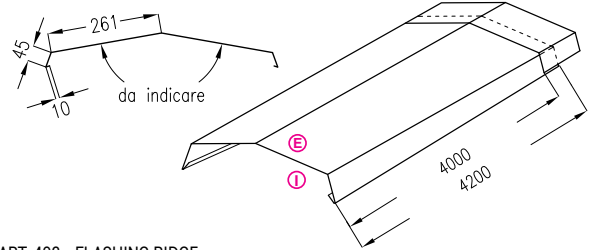




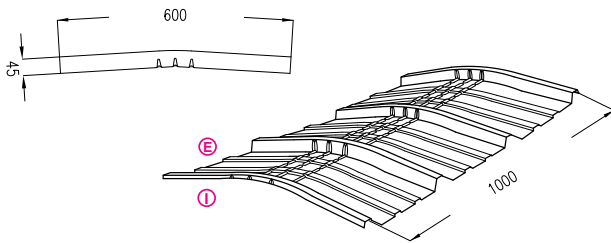
WE REALIZE ANY TYPE OF FLASHING ELEMENTS (PREPAINTED STEEL, ALUMINIUM, STAINLESS STEEL, COPPER, COR-TEN) THAT ARE ABLE TO MEET THE MOST COMPLEX INDIVIDUAL, ARCHITECTURAL AND CONSTRUCTION REQUIREMENTS.



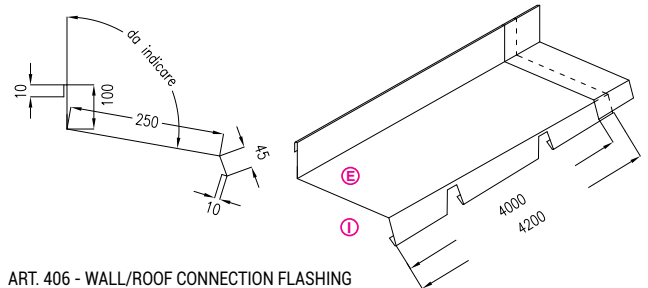
ART. 405 - SPECIAL SKY-LIGHT ELEMENT



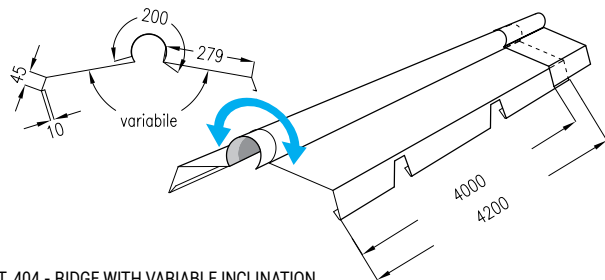
ART. 402 - FLASHING RIDGE



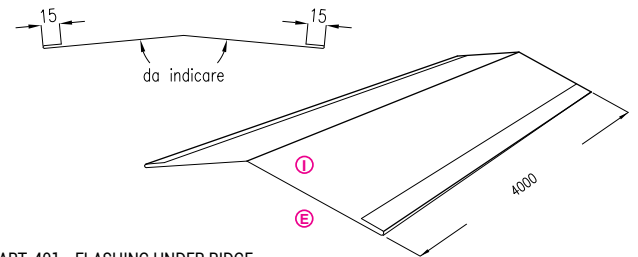
ART. 403 - RIDGE IN PRESSED SHEET



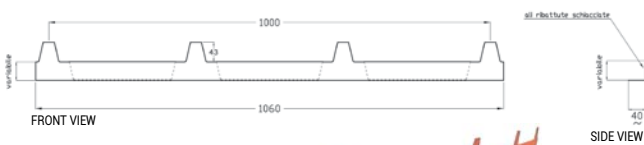
ART. 406 - WALL/ROOF CONNECTION FLASHING



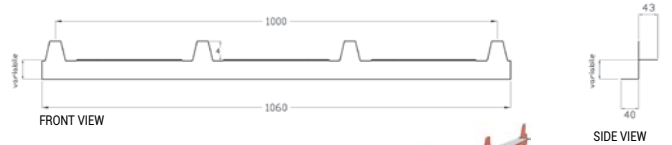
ART. 404 - RIDGE WITH VARIABLE INCLINATION



ART. 401 - FLASHING UNDER RIDGE



ART. 407 - HEAD CLOSING FOR ROOF



ART. 408 - OVERLAP HEAD CLOSING FOR ROOF

ACCESSORIES AND FINISHINGS

FIXING ACCESSORIES



CAPS

Shaped caps needed to fix Termocoperture® available in pre-painted steel, stainless steel, copper, cor-tèn, pre-painted aluminium, aluzinc



SELF-SCREWING STEEL SCREW WITH HEXAGONAL HEAD

Self-screwing screw for Termocoperture® or Termopareti® with visible fixing on steel structure



PVC WASHERS

important part of the fixing group for Termocoperture®



VITI SCREWS

Screw to fix aluminium profile of our Serbond® system



SELF-DRILLING STEEL SCREW WITH HEXAGONAL HEAD

Self-drilling screw for Termocoperture® or Termopareti® with visible fixing on steel structure



COMPLETE FIXING GROUP

Fixing group for Termocoperture® including screw, washer and cap



SCREW WITH LARGE FLAT HEAD

Special screw for hidden fixing of Termopareti®



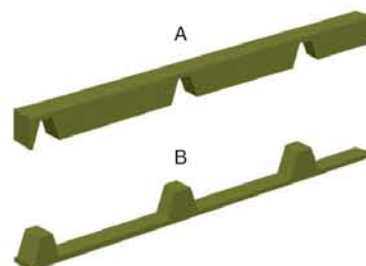
DIFFERENT RIVETS

Rivets in different colours to fix flashings



WOOD SCREWS

Wood screws to fasten Termocoperture® or Termopareti® with visible fixing on wood structure

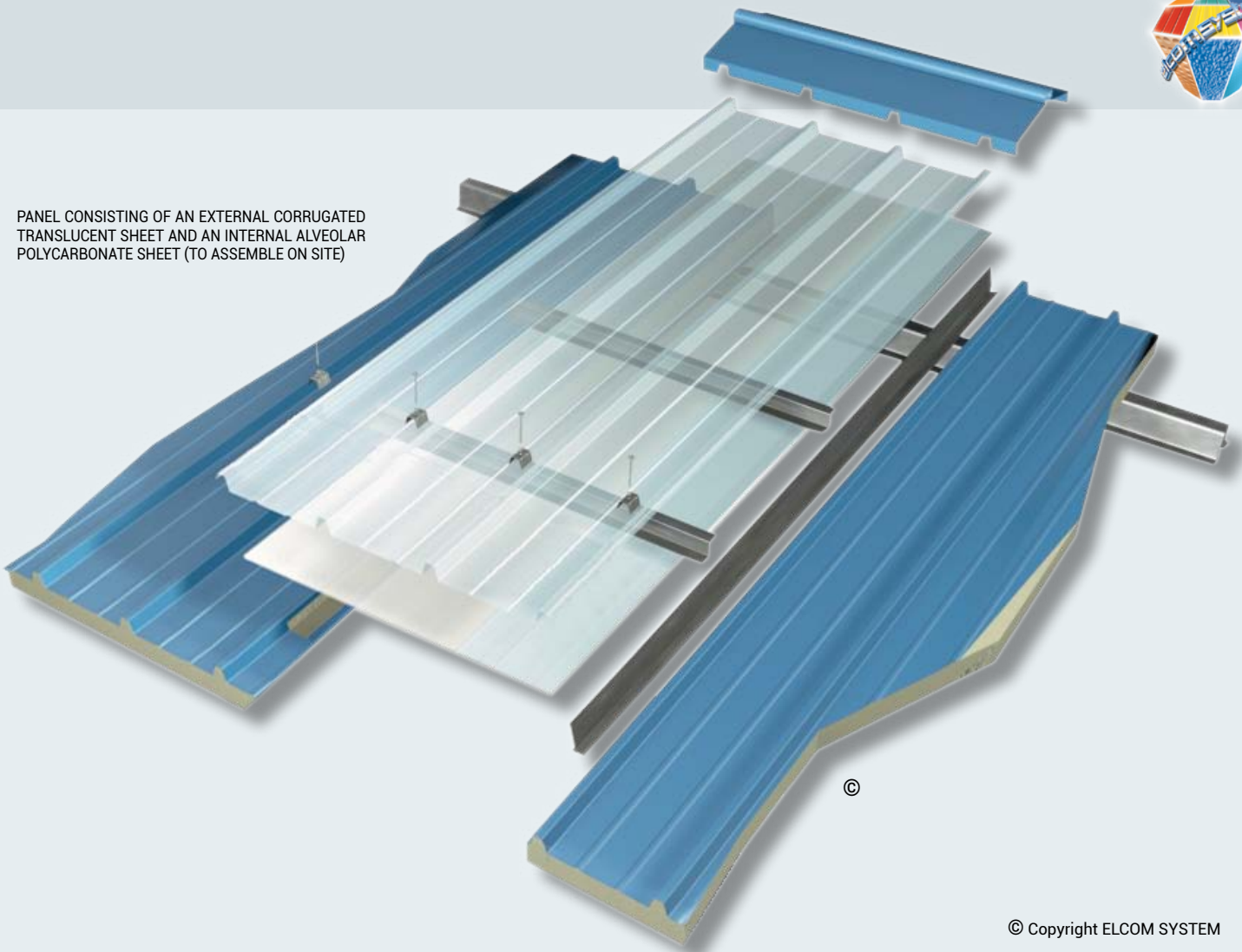


SHAPED PACKING IN EXPANDED POLYURETHANE WITH ACRYLIC RESINS TYPE A AND B

Sealing packing to be installed near the ridge



PANEL CONSISTING OF AN EXTERNAL CORRUGATED TRANSLUCENT SHEET AND AN INTERNAL ALVEOLAR POLYCARBONATE SHEET (TO ASSEMBLE ON SITE)



© Copyright ELCOM SYSTEM

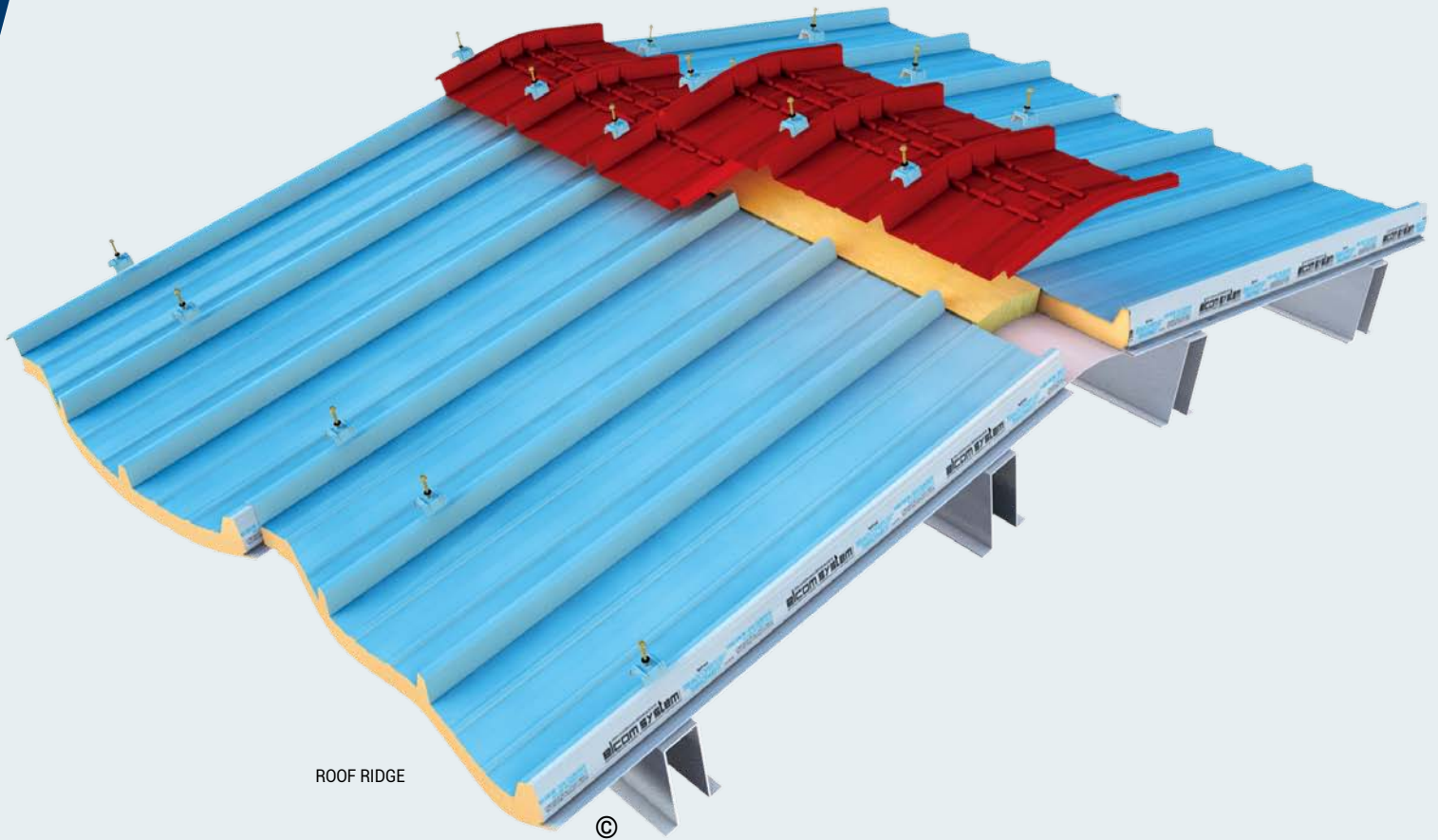
DIFFERENT SPECIAL WINDOWS INTEGRATED ON PANELS TERMOPARETI®



THERMOGRECA



ACCESSORIES AND FINISHINGS



ROOF RIDGE

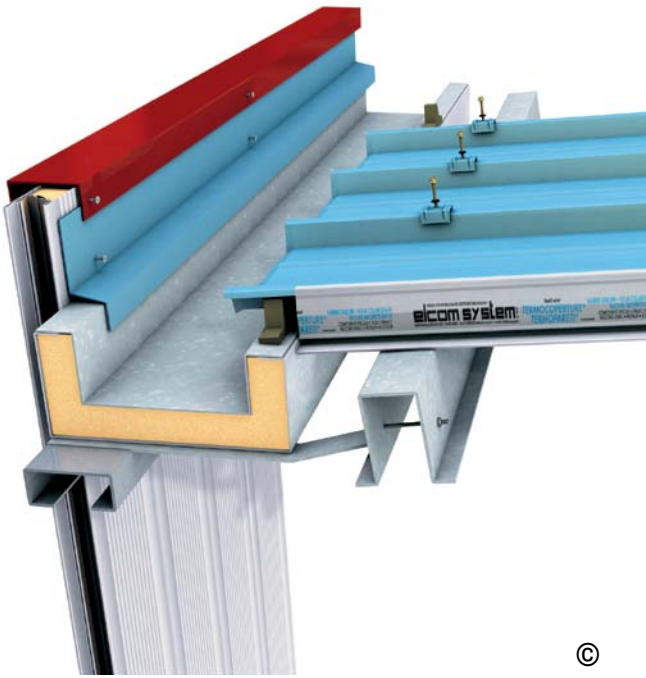
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ROOF, WALL, GUTTER CONNECTION (bottom view)

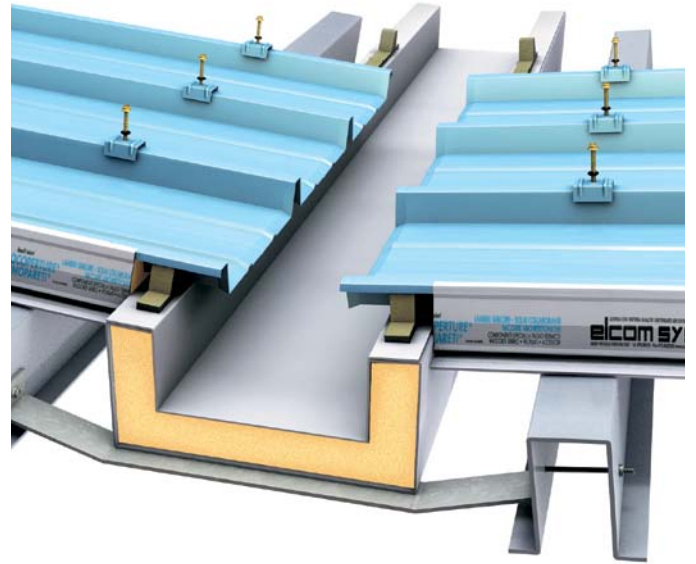


ROOF, WALL, GUTTER CONNECTION (top view)



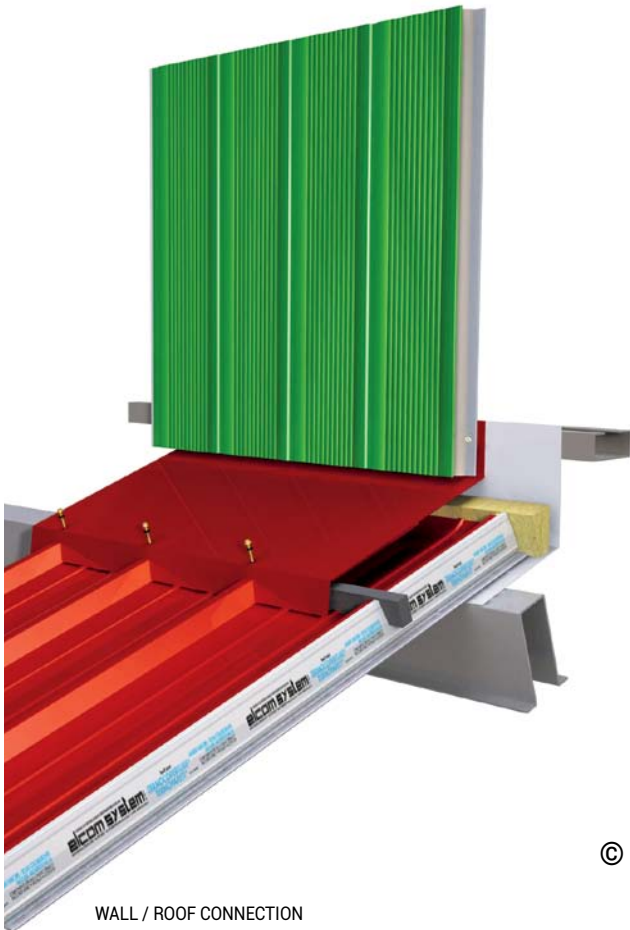
©

CONNECTION WITH INSULATED GUTTER (wall and roof)



©

INSULATED VALLEY GUTTER DETAIL



©

WALL / ROOF CONNECTION

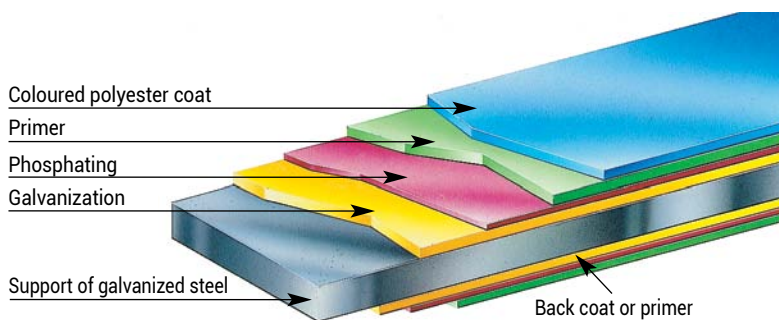


©

WALL / "DECK" ROOF CONNECTION

COLOUR CHART

 ES 73 simil RAL 9002 White Gray	 ES 02 simil RAL 1014 Cream	 Simil RAL 9010 Pure White	 ES 24 simil RAL 5024 Middle Blue
 Simil RAL 1021 Rape Yellow	 Simil RAL 5010 Gentian Blue	 Simil RAL 2004 Pure Orange	 ES 84 simil RAL 3009 Dark Red
 Simil RAL 3020 Traffic Red	 ES 26 Light Grey	 ES 10 simil RAL 6021 Light Green	 ES 17 simil RAL 8019 Dark Brown
 ES 31 simil RAL 7012 Basalt Grey	 Simil RAL 6005 Moss Green	 Simil RAL 9006 White Aluminium	 Simil RAL 9007 Grey Aluminium
 Bronze	 Stainless Steel	 EAT	 ALUZINC
 CORTEN	 Copper	 Simil Wood	The above colours aren't realized with the original materials, therefore they have to be considered for guidance purposes only.



CLASSIFICATION REPORTS

Certificato N. IT960245
 1 sistema di gestione per la qualità di

ELCOM SYSTEM S.p.A.

Strada Industriale in Taverna 3, Via 216 - 00009 Partinò di Tuoli (PG) - Italia
 è stato verificato ed è risultato conforme ai requisiti di

ISO 9001 / UNI EN ISO 9001:2015

Impiego del sistema

Progettazione e produzione di pannelli metallici isolanti per pareti e coperture horizontali; Termopareti e Termocapperture in Lamiera grecata, lamiera greca per tutti i pesi (preappesi), accessori e componenti vari.

Sistema EA. IT. 14
 Questo certificato è valido fino al 31/12/2017. Per il rinnovo, il cliente deve sottoporre a valutazione l'attività di certificazione precedente. La validità è subordinata all'adempimento dell'obbligo di certificazione precedente. Modifiche di seguito indicate:
 Rev. 7 - Certificato del 02/08/2009
 Rev. 8 - Certificato del 02/08/2010
 Rev. 9 - Certificato del 02/08/2011

SGS

ACCREDIA

Autorevole di Prima Classe

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Page 1 of 1

ISTITUTO GIORDANO **ACCREDIA**

Classificazione e campo di applicazione.
 Classificazione e campo di applicazione.

Riferimento di classificazione.
 Riferimento di classificazione.

Questa classificazione viene definita in accordo con la norma UNI EN 13501-1:2009.
 This classification is assigned in accordance with standard EN 13501-1:2009.

Classificazione.
 Classificazione.

Il prodotto "Sistema tipo DOW VORACOR CM 72 (polare) e tipo VORACOR CE 628 (isolante)", in relazione al suo comportamento di reazione al fuoco, è classificato.
 The product "System type DOW VORACOR CM 72 (polare) e tipo VORACOR CE 628 (isolante)" in relation to its reaction to fire behaviour is classified.

E

La classificazione finale di reazione al fuoco del prodotto da costruire è:
 The final reaction to fire classification of the construction product is:

Classificazione / Classification: E

Limitazioni.
 Limitations.

Questo rapporto di classificazione è valido fintanto che la composizione e la struttura del prodotto non cambia.
 This classification report is valid as long as the composition and structure remains unchanged.

Questo rapporto di classificazione non rappresenta un'approvazione di tipo o una certificazione di prodotto.
 This classification report does not represent type approval or certification of the product.

Il Responsabile Tecnico / Technical Director: Gian Luigi Belloni
 Il Responsabile del Laboratorio di Ricerche al Fuoco / Fire Research Laboratory Director: Gian Luigi Belloni
 L'Amministratore Delegato / Managing Director: Gian Luigi Belloni

LAPI **ACCREDIA**

Attestazione di Classificazione AC/1188-1189/12/CPD/...
 Classification Assessment

RAFFORO DI CLASSIFICAZIONE DI REAZIONE AL FUOCO N° 1188-1189/00005/12
 Reaction to fire Classification Report n° 1188-1189/00005/12

CLASSIFICAZIONE RICHIESTA DA / Classification on behalf of:
ELCOM SYSTEM S.p.A.
 S.S. Ex Taverna 3 Via 216-00009 Loc. Partinò - Tuoli (PG) - Italy

DENOMINAZIONE COMMERCIALE DEL MATERIALE / Trade name of the material:
TERMOCOPERTURE RPST 4G H100 (Reazione al Fuoco: EI 120)

METODO DI PROVA / Test method:
UNI EN/TS 13501-1:2009

METODO DI CLASSIFICAZIONE / Classification standard:
UNI EN 13501-1:2009 - EN 13501-1+A1:2009

Classificazione di fuoco dei prodotti e degli elementi di costruzione.
 Fire classification of construction products and building elements.

Parte 3: Classificazione in base ai risultati delle prove di esposizione dei test su fuoco esterno.
 Part 3: Classification using data from external fire exposure test results.

CLASSIFICAZIONE / Classification:
REI 120

La classificazione sopra riportata è valida per la gamma di spessori dell'isolante da 20 mm a 100 mm e per la gamma di altezze della parete da 2000 mm a 3000 mm.
 The classification is valid for the thickness range of the insulation from 20 mm to 100 mm and for the height range of the wall from 2000 mm to 3000 mm.

Impiego del materiale / Use of the material:
 Capacità: Rivestimento per pareti / Roof cladding
 Gamma di altitudini ammissibili / Allowed altitude range: Non superiore a / Not higher than 10°

Tipi di substrati ammessi / Allowed substrates:
 Non sono richiesti / Not required
 Non sono richiesti / Not required
 Non sono richiesti / Not required

Note:
 Note: This report is not a type approval or certification of the product.
 This classification report is valid as long as the composition and structure remains unchanged.
 This classification report does not represent type approval or certification of the product.

Il Responsabile Tecnico / Technical Director: Gian Luigi Belloni
 Il Responsabile del Laboratorio di Ricerche al Fuoco / Fire Research Laboratory Director: Gian Luigi Belloni
 L'Amministratore Delegato / Managing Director: Gian Luigi Belloni

LAPI **ACCREDIA**

4.2. Condizioni di esposizione
 4.2. Conditions of exposure

- Curva temperatura-tempo: standard (le condizioni di riscaldamento e l'ambiente del forno rispondono a quanto indicato nella EN 1363-1, p.to 5.1.1, 5.1.2 e 5.2.1);
- Dimensione di esposizione: Esposta al fuoco la parte sottostante del campione
- Numero di superfici esposte: 1
- Condizioni di carico: Momento flettente massimo di 0,651 kNm, taglio massimo di 1,544 kN.

4.3. Risultati di Prova
 4.3. Test Results

Criterio di prestazione	Descrizione	Risultato
Capacità portante (R)	Resistenza strutturale (deformazione massima e velocità di deformazione)	121" - non perduta
	Fiamme penetranti	121" - non perduta
Tenuta (E)	Tempore di cotone	121" - non perduta
	Calibro da 6 mm Calibro da 25 mm	121" - non perduta
Isolamento (I)	$\Delta T_{max} < 140 \text{ } ^\circ\text{C}$ (Tc 1-5)	121" $\Delta T_{max} < 121 \text{ } ^\circ\text{C}$
	$\Delta T_{max} < 180 \text{ } ^\circ\text{C}$ (Tc 1-7)	121" $\Delta T_{max} < 132 \text{ } ^\circ\text{C}$ (Tc 3)

4.4. Classificazione e campo di applicazione dei risultati di prova
 4.4. Classification and field of application of the test results

La presente classificazione è stata eseguita in accordo a quanto previsto al punto 7.5.2.4 della UNI EN 13501-2:2009.

4.1. Classificazione
 4.1. Classification

L'elemento in prova denominato **TERMOCOPERTURE® SERIE AEFPE ATHOS H120** viene classificato in accordo alla seguente combinazione di parametri e classi appropriate.

REI 120

CLASSIFICAZIONE DI RESISTENZA AL FUOCO: REI 120

LAPI **ACCREDIA**

4. Classificazione e campo di applicazione dei risultati di prova
 4. Classification and field of application of the test results

La presente classificazione è stata eseguita in accordo a quanto previsto al punto 7.5.2.4 della UNI EN 13501-2:2009.

4.1. Classificazione
 4.1. Classification

L'elemento in prova denominato **TERMOPARETI® SERIE AEFPE ATHOS H120** viene classificato in accordo alla seguente combinazione di parametri e classi appropriate.

REI 120

CLASSIFICAZIONE DI RESISTENZA AL FUOCO: EI 120

4.2. Applicazione dei risultati di prova
 4.2. Application of the test results

I risultati della prova di resistenza al fuoco sono direttamente applicabili alle costruzioni simili in cui sono state effettuate una o più delle modifiche indicate nel seguito e che continuano a rimanere conformi al codice di progettazione appropriato in termini di rigidità e stabilità:

Riferimento EN 1364-1 ed. 1999	Descrizione	Variazioni consentite
13.1 a)	Variazioni in altezza (H) della parete	Altezza consentita: H=4000 mm
13.1 b)	Aumento di spessore della parete	Consentito aumento di spessore della parete ad un valore >120 mm
13.1 c)	Aumento di spessore dei materiali componenti	Consentito aumento di spessore dell'isolamento in lana di roccia ad un valore nominale >120 mm Consentito aumento dello spessore delle lamiere di rivestimento ad un valore >0,5 mm
13.1 d)	Riduzione dimensioni inerti parziali	Consentita la riduzione delle dimensioni nominali dei pannelli ad un valore >1000 mm in larghezza ed un valore >3000 mm in altezza.

LAPI **ACCREDIA**

4. Classificazione e campo di applicazione dei risultati di prova
 4. Classification and field of application of the test results

La presente classificazione è stata eseguita in accordo a quanto previsto al punto 7.5.2.4 della UNI EN 13501-2:2009.

4.1. Classificazione
 4.1. Classification

L'elemento in prova denominato **TERMOPARETI® SERIE AEFPE ATHOS H120** viene classificato in accordo alla seguente combinazione di parametri e classi appropriate.

REI 120

CLASSIFICAZIONE DI RESISTENZA AL FUOCO: EI 60 E 90

4.2. Applicazione dei risultati di prova
 4.2. Application of the test results

I risultati della prova di resistenza al fuoco sono direttamente applicabili alle costruzioni simili in cui sono state effettuate una o più delle modifiche indicate nel seguito e che continuano a rimanere conformi al codice di progettazione appropriato in termini di rigidità e stabilità:

Riferimento EN 1364-1 ed. 1999	Descrizione	Variazioni consentite
13.1 a)	Variazioni in altezza (H) della parete	Altezza consentita: H=4000 mm
13.1 b)	Aumento di spessore della parete	Consentito aumento di spessore della parete ad un valore >100 mm
13.1 c)	Aumento di spessore dei materiali componenti	Consentito aumento di spessore dell'isolamento in lana di roccia ad un valore nominale >100 mm Consentito aumento dello spessore delle lamiere di rivestimento ad un valore >0,6 mm
13.1 d)	Riduzione dimensioni inerti parziali	Consentita la riduzione delle dimensioni nominali dei pannelli ad un valore >1000 mm in larghezza ed un valore >3000 mm in altezza.

English Version **AFITI LICOF** Classification Report n° 9153/15-4

3- TEST REPORTS AND RESULTS IN SUPPORT OF THIS CLASSIFICATION.

Reports

Issuing Laboratory	Applicant	Report	Test method
AFITI LICOF Controllo del Comportamento al Fuoco Via S. Maria, 218 20090 - Spadolini (BG) (Italia)	ELCOM SYSTEM S.p.A. - Via S. Maria, 218 20090 - Spadolini (BG) (Italia)	N°: 9153/15-4 EN 13501-1:2009	EN 13501-1:2009

Conditions of exposure

Temperature curve / time: Standard
 No. of exposed sides: One

Test results

	Specimen no.	Result
Integrity (E)	S11A	45 minutes ^(a)
	Cotton pad	61 minutes ^(a)
	Gap papers Ø 6 mm	61 minutes ^(a)
	Gap papers Ø 25 mm	61 minutes ^(a)
	Saturated fibres > 10 s	61 minutes ^(a)
Thermal insulation (I)		24 minutes
	Mean temperature	30 minutes
	Maximum temperature	24 minutes

4- CLASSIFICATION AND FIELD OF APPLICATION

4.1- CLASSIFICATION STANDARD
 This classification has been carried out in accordance with clause 7.5.2 of the standard EN 13501-2:2007+A1:2009.

4.2- CLASSIFICATION
 The product "TERMOPARETI® RPST 4G H100" is classified according to the following combination performance parameters and classes.
 Other classifications are not indicated.

Fire Resistance Classification
E120 E60

English Version **AFITI LICOF** Classification Report n° 9154/15-4

4- CLASSIFICATION AND FIELD OF APPLICATION

4.1- CLASSIFICATION STANDARD
 This classification has been carried out in accordance with clause 7.5.3 of the standard EN 13501-2:2007+A1:2009.

4.2- CLASSIFICATION
 The product "TERMOCOPERTURE® RPST 4G H100" is classified according to the following combination performance parameters and classes.
 Other classifications are not indicated.

Fire Resistance Classification
REI 20 RE 30

4.3- FIELD OF APPLICATION
 According to the chapter 13 of the standard UNI-EN 1363-2:2000, the element "TERMOCOPERTURE® RPST 4G H100", has the following field of direct application.
 The classification is also valid for the following modification of the specimen characteristics, without the need for further testing.

Characteristics	Permitted modification	Reference value ^(a)
- Structural building and clear floors, which when calculated on the same basis as the test load, shall not be greater than those tested.	The maximum increase and clear floors, which when calculated on the same basis as the test load, shall not be greater than those tested.	Calculation as specified in test report RES 9754-15 Paragraph 4. Max. (total) Negative: 0.22 kg/m ² Positive: 1.0 kg/m ² En. (total) 14.8 kg/m ² p 36.2 kg/m ² (weight/width of the wall L = 4.2 m)
- Inclination of roof construction without glazing	In the 0-2° Range	Inclination angle 0°
- Walls	Unlimited perimeter	9000 - 2000 mm

5- LIMITATIONS
 This report does not represent type approval or certification of the element.

Arganda del Rey, 20th of October 2015

Signature: Magdaleno Villegas Hernandez
 Technical Director
 Fire Resistance Laboratory

Informe de Clasificación n° 289715-3
 Classifier Report n° 289715-3

4- CLASSIFICATION AND FIELD OF APPLICATION
 CLASSIFICATION AND FIELD OF APPLICATION

4.1- NORMA DE CLASIFICACIÓN - CLASSIFICATION STANDARD
 La clasificación de la reacción al fuego se ha realizado de acuerdo con la especificación de la norma UNI-EN 13501-2:2007+A1:2009.
 Reaction to fire classification according to UNI-EN 13501-2:2007+A1:2009 standard.

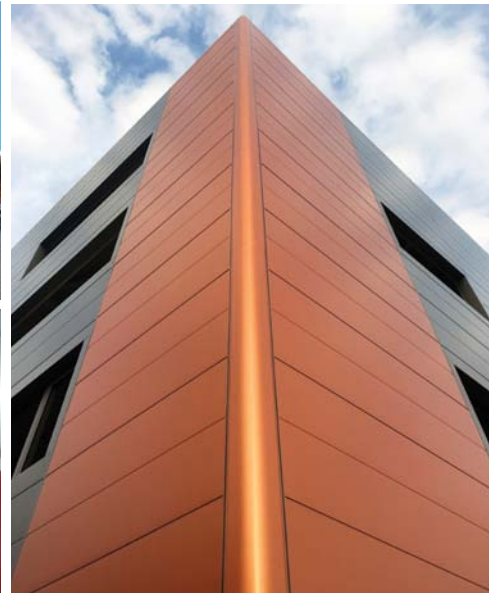
4.2- CLASSIFICATION - CLASSIFICATION
 La gama de productos de paneles aislantes con lana de PIR (ver Tabla 1) presenta la siguiente clasificación:
 Product family of metallic sandwich panel with PIR core (see Table 1) shows the following classification:

Clasificación de la Reacción al Fuego - Reaction to fire classification

Comportamiento al Fuego / Fire behaviour	Producción de humo / Smoke production	Gases inflamables / Flaming droplets
B	2	0

4.3- CAMPO DE APLICACIÓN - FIELD OF APPLICATION
 Según la especificación de la norma técnica ENXAP n° ENXAP 289715-3, la gama de productos (ver Tabla 1) tiene el siguiente campo de aplicación.
 According to Technical Report ENXAP n° 289715-3, the product family (see Table 1), has the following field of application.
 La clasificación otorgada sigue siendo válida para las siguientes variaciones en las características de la muestra, sin que la realización de estas modificaciones requiera la ejecución de nuevas ensayos.
 Classification obtained is valid for the following open characteristics variations, without further testing needed.





PROJECTS



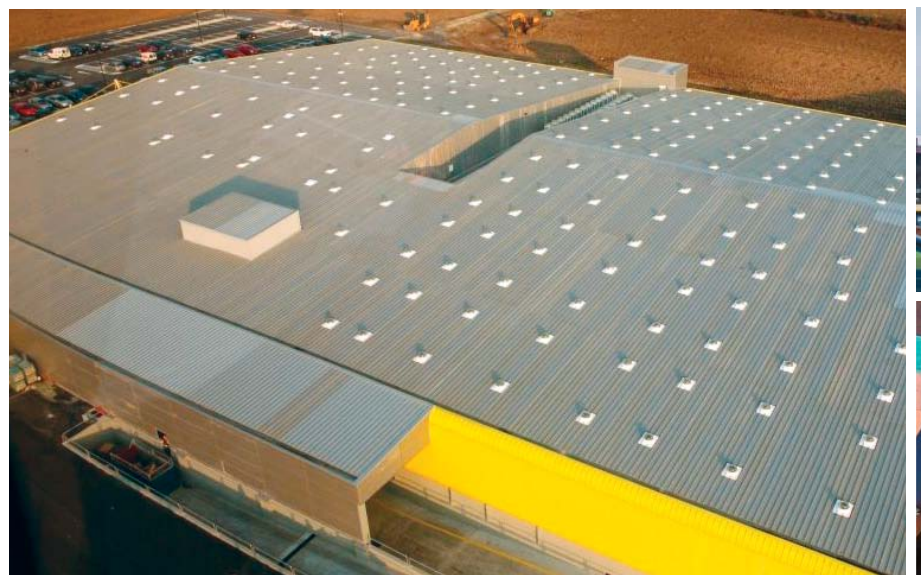
PROJECTS



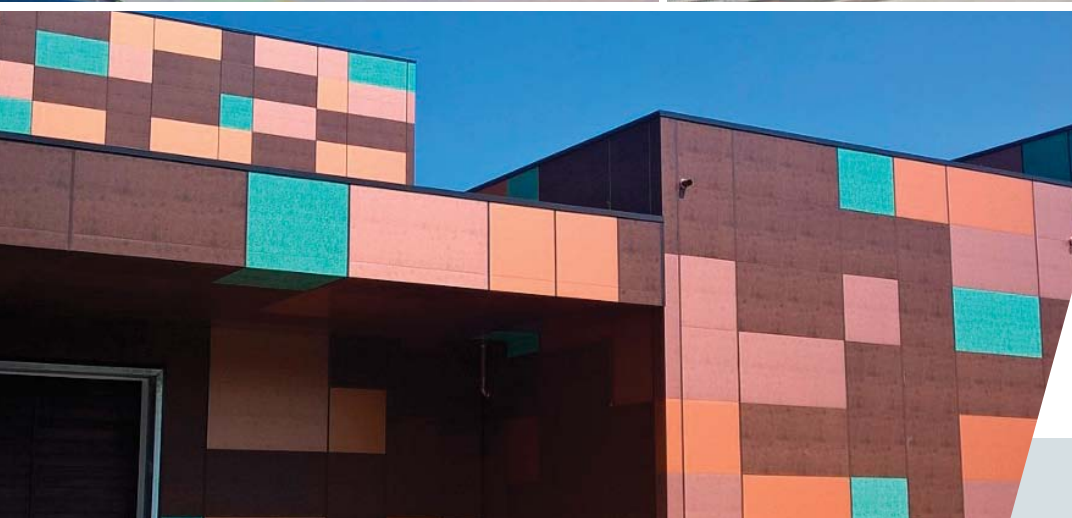




PROJECTS



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