

LANGUAGE
EN

GENERAL CATALOGUE

**SANDWICH PANELS
CORRUGATED SHEETS
BUILDING TECHNICAL SYSTEMS**

M

**PART OF
MANNI
GROUP**



ISOPAN

INSULATING DESIGN

Isopan: Roof and Wall Sandwich panels

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For 70 years, the future of Steel

Strength and reliability, sustainability and beauty. In a word, steel. Since 1945 the solid Verona industrial company Manni Group, has worked and transformed steel into a wide range of products. Continuous investment in Research and Development, constant commitment to achieving maximum levels of quality and service, and concentration on Client needs make Gruppo Manni companies ideal project partners:

- **Manni SIPRE**, leader in the market of structural pre-machined steel;
- **Manni INOX**, an advanced steel service centre;
- **Manni ENERGY**, for the design and construction of renewable energy source plants and energy efficiency;
- **ISOPAN** is Europe's leading manufacturer of insulated metal panels with high coefficient thermal insulation for roofs and walls.



The numbers of a real Leadership

- **12 operating companies**
- **21 production, service and distribution** centers in Italy and abroad
- **400 thousand tons/year** of processed and distributed steel
- **13 million square meters/year** of metal insulating panels produced and distributed in Italy and abroad
- **1000 employees**
- **€ 500 million annual revenue (2014)**
- **10.000 customers**
- **60 countries supplied in 4 continents**



The ideal solution for all situations

Isopan manufactures and sells insulated metal panels for roofs and walls with a high coefficient thermal insulation for civil, industrial, commercial and livestock construction. It also developed acoustic panels in mineral fibre, high fire resistance and architectural facade systems.

A wide range of products, colours and finishes allows the creation of customized solutions and innovative design.

Through its Service Centre it is able to offer even mounting hardware, sheet metal for finishes and rainwater collection, translucent and polycarbonate corrugated elements for skylights.

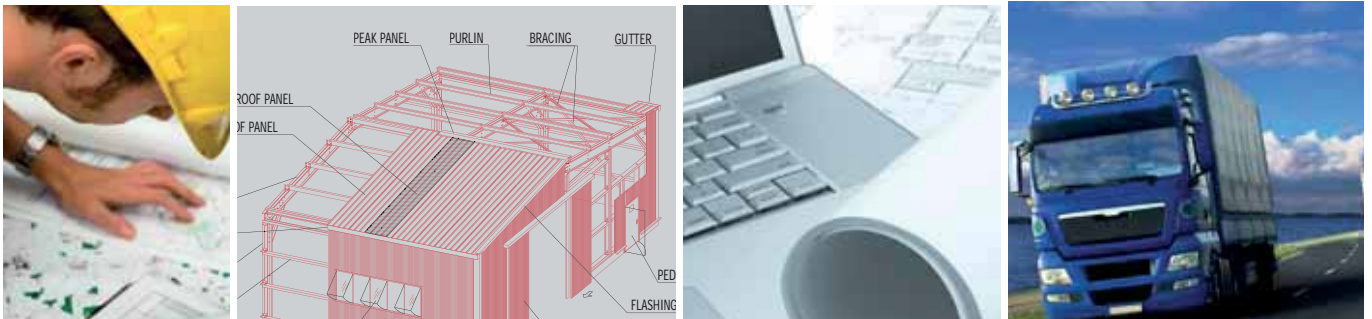


Team Isopan: add value to your project

Besides having one of the widest product ranges in the industry, Isopan makes available the knowledge of constantly updated professionals and highly skilled technicians. Team Isopan supports the Client by interpreting their needs and offering the best solutions.

A deep knowledge of the market, the industry standards and major construction industry trends supports the creation of exclusive products, innovative systems and unique solutions.

A modern logistics facility also ensures timely fulfilment of orders: the strong connection between production and distribution allows very quick delivery both in Italy and abroad.



We invest in technology with tomorrow in mind

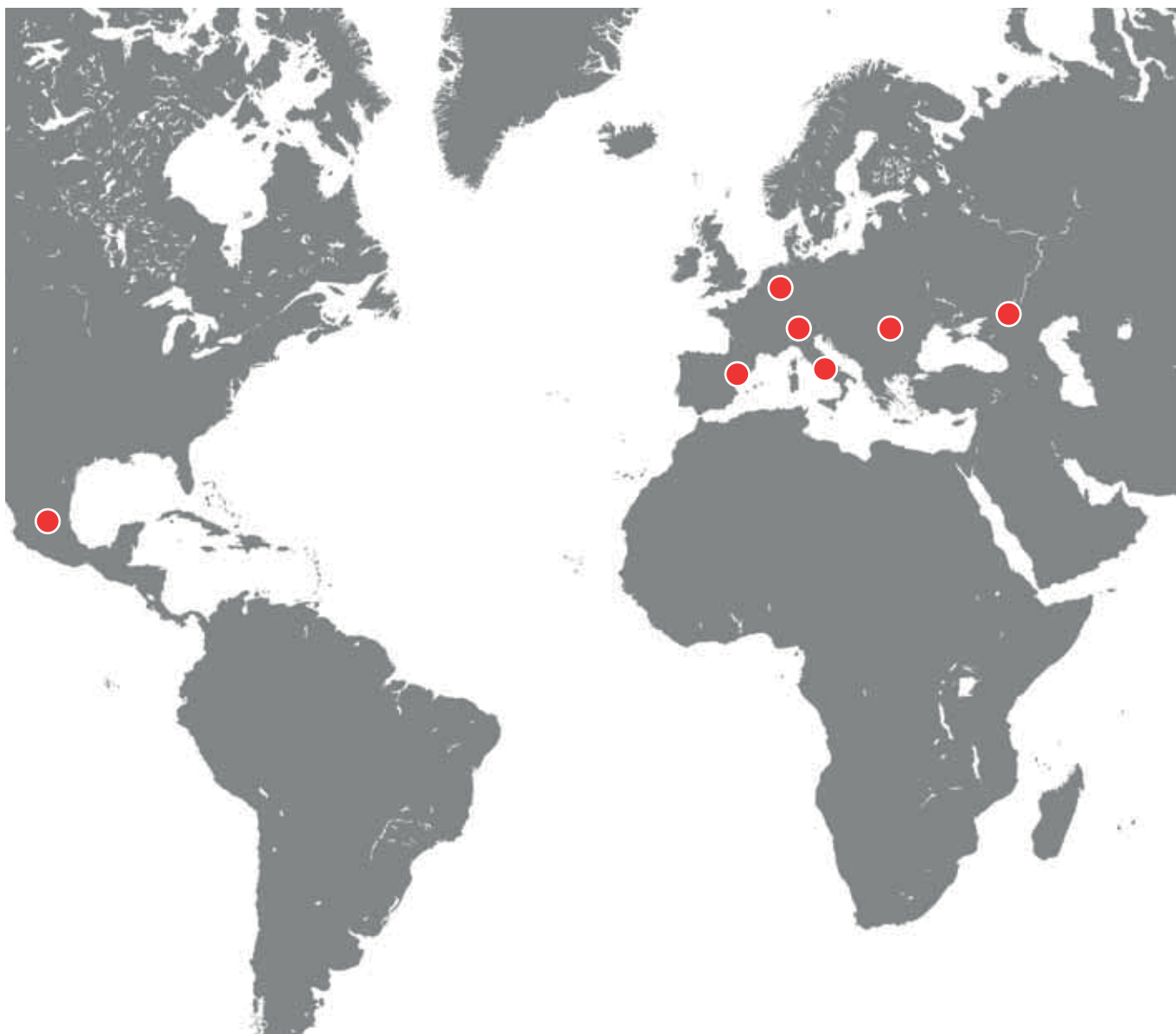
Continuous innovation in products and processes, high quality standards, broad product diversification and great attention for the Client have made it a reliable partner for many Italian and foreign companies for which it offers competitive advantage and value.

Testing in line and in the laboratory ensure the high quality standards of materials, while promoting polyurethane chemistry upgrades in order to evolve and expand the areas of use of sandwich panels.



The production of Isopan is in perfect harmony with the environment: the panels, consisting essentially of a metal shape support and an insulating layer of polyurethane or mineral fibre, are made in innovative plants which are able to reduce the environmental impact of the manufacturing process.

Additionally, all Isopan plants worldwide have photovoltaic systems which can produce enough electricity for their own needs.



Many markets, one Brand

Isopan is present in Italy with two production facilities in Frosinone and Verona, and in the World with Isopan Ibérica in Tarragona (Spain), Isopan East in Bucharest (Romania), Isopan Deutschland in Halle (Germany), Isopan Rus in Volgograd (Russia), and Isocindu in Silao (Mexico) . There are two sales offices in France and the Czech Republic. A presence throughout the territory and an established network of sales representatives allows the brand to reach the most important markets in the world.

The International Business Division also develops specific solutions for the needs of the different countries where Isopan is distributed. Thanks to the flexibility of manufacturing processes, efficient logistics and efficient technical assistance service, Isopan is able to adapt perfectly to the technical, construction and stylistic standards of the main world markets.



Manni Group HP - Verona (Italy)



Isopan Est - Popești Leordeni (Romania)



Isopan Spa - Frosinone (Italy)



Isopan Deutschland - Plötz (Germany)



Isopan Spa - Verona (Italy)



Isopan Rus - Volgograd (Russia)



Isopan Iberica - Tarragona (Spain)



Isocindu - Guanajuato (Mexico)



Certified Quality

Quality certification is the first commitment Isopan has made for its Clients; quality also means the product technical compliance. Isopan caters exclusively to selected suppliers, able to provide materials of proven reliability, always guaranteed and certified in complete compliance with international standards.

Isopan companies are certified ISO 9001 and products are certified according to standards of target markets.



Secure Fire protection

Isopan panels, thanks to special technical characteristics, can help protect the buildings from fire, impeding fire development and limiting its spread (passive protection).

EN13501 regulations concerning fire resistance and reaction attests to the excellent performance of the range of Isopan panels in mineral wool and good performance of products in Polyurethane PIR proposed for such use.



Isopan for LEED® Certification

LEED® (Leadership in Energy Environmental Design) is a voluntary certification system for the management, design and construction of buildings that are sustainable from a social, environmental and economic point of view and in terms of the wellbeing of the users.

Established in the United States in 1993 by the U.S. Green Building Council (USGBC), LEED is now the most widespread building sustainability certification standard in the world. It considers every field that involves the design and management of buildings or neighbourhoods, both commercial and residential new or undergoing requalification.

ISOPAN INSULATING PANELS CONTRIBUTE TOWARD SATISFYING PREREQUISITES AND CREDITS UNDER LEED®

Energy efficiency and savings are the guiding concepts to Isopan production management as well as our commitment to the research and development of innovative solutions. Our insulating panels for roofs or walls contribute toward satisfying prerequisites and credits under LEED BD+C (Building Design and Construction) V4 in the following areas:



INTEGRATIVE
PROCESS



SUSTAINABLE
SITES



ENERGY
AND ATMOSPHERE



MATERIALS
AND RESOURCES



INDOOR ENVIRONMENTAL
QUALITY

AREA IP			
Prerequisite	IPP	Integrative process planning and design - Healthcare	Isopan Team
Credit	IPC	Integrative Process	Isopan Team
AREA SS			
Credit	SSC 4	Rainwater management	Gamma PVC Flat Roof
Credit	SSC 5	Heat island reduction	Gamma PVC Flat Roof
AREA EA			
Prerequisite	EAP 1	Foundational commissioning and verification	All products
Credit	EAC 1	Enhanced commissioning and verification	All products
Prerequisite	EAP 2	Minimum energy performance	All products*
Credit	EAC 2	optimize energy performance	All products *
AREA MR			
Prerequisite	MRP 2	Construction and demolition waste management planning	All products
Credit	MRC 5	Construction and demolition waste management	All products
Credit	MRC 1	Building life cycle impact reduction - Opt. 4 LCA building	LCA data ref. EPD
Credito	MRC 2	Building product disclosure and optimization Environmental Product Declarations - Opt. 1: EPD	EPD Isocop, Isobox, Isofire **
Credit	MRC 3	Building product disclosure and optimization Sourcing of raw materials - Opt. 2	According to range specification
Credit	MRC 4	Building product disclosure and optimization Material ingredients - Opt. 2: Reach optimization	According to range specification
AREA EQ			
Credit	EQC 3	Construction Indoor air quality management plan	All products
Credit	EQC 5	Thermal comfort	All products *
Credit	EQC 9	Acoustic performance	Isofire Roof Fono, Isofire Wall Fono

* Excluding corrugated sheets

** EPDs: Industry Wide - with Third party certification - Explicitly recognized as participant

EPD - EPQ - 20130169 Double skin steel facades sandwich panels with core made of mineral wool

EPD - EPQ - 20130170 Double skin steel facades sandwich panels with core made of polyurethane

Ref. Isocop, isobox, Isofire Roof, Isofire Wall



MAPPED ISOPAN PRODUCTS

Roof panels

Isocop
Isosmart
Isodomus
Isotap
Isodeck PVsteel
Isodeck
Isofire Roof Fono
Isofire Roof

Wall Panels

Exposed fixing system - example Isobox
Concealed fixing system - ex. Isoparete Plissé, Isoparete EVO
Isofrigo
Isofire Wall
isofire Wall Fono
Isofire Wall Plissé

Corrugated sheets

Tipo LG40

Systems

Ark Wall
Isocappotto

10 RULES FOR SANDWICH PANELS

- Identify the product if it is used as wall or as roof.
- Identify the aesthetic and architectonic necessities according to the project, choosing the more adapted product in the Isopan product range.
- Identify the structural needs according to the project, choosing the more adapted product and its related fixing elements after having analysed the resistance to loads.
- Identify needs of fire resistance for the construction elements, in order to comply with the safety requirements in case of fire.
- Identify the thermal and/or sound insulation of the wall in terms of efficiency and energy savings.
- Identify the best face according to the degradation resistance of the exposed faces in order to respect the construction durability.
- Verify that the delivery conditions and the qualitative standards of the panel are compatible with the requirements of the project and the construction site.
- Assign the assembly phase to experienced and qualified staff in order to ensure the installation is performed with great workmanship and in accordance with the correct installation instructions.
- Ensure that the standards on panels handling and storage indicated by Isopan are respected.
- Identify a correct and adapted plan for maintenance and inspection in order to ensure the proper durability of the construction according to the Isopan's indications..

LEGEND

Here below are listed the iconographic symbols that identify the technical characteristics of insulated panels and their type of use: the legend makes it possible to interpret the symbols provided for each panel.

PROJECT TYPOLOGY



Architectonic Project



Industrial Project



Agricultural – Zootechnical Project



Project On Low Temperature Rooms



Project On Prefabricated Boxes

PANEL TECHNICAL CHARACTERISTICS



Wall Panel



Roof Panel / Floor



Incombustibility



Sound Insulation



Thermal Insulation



Concealed Fixing



Exposed Fixing



Polyurethane Expanded Foam



Mineral Wool

ATTENTION

All information given in the overload charts refer only to the features of the panel. They can not replace the project calculations made by a qualified technician, who will apply the rules in force in the referring market.

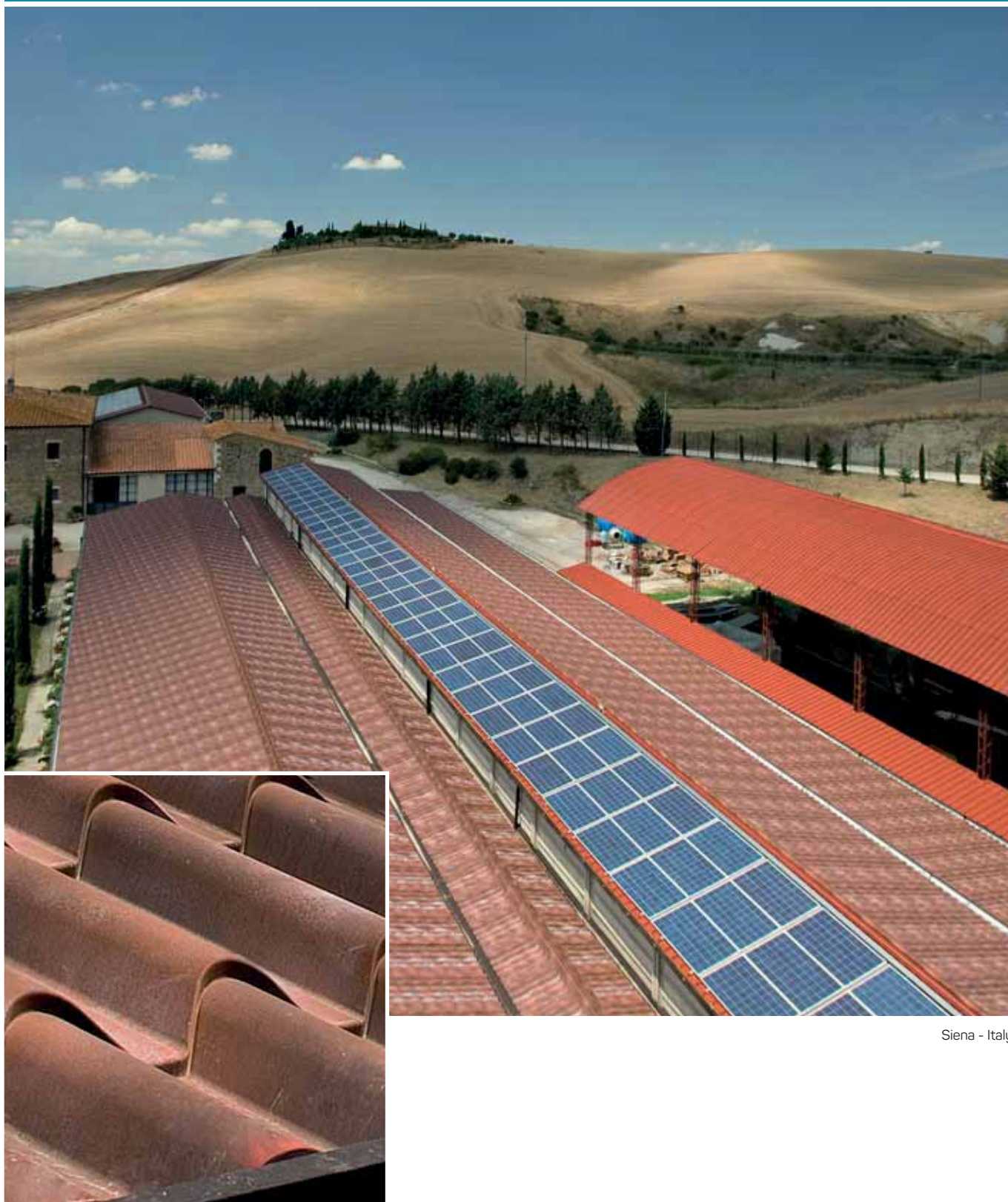
All information about Isopan product characteristics, in terms of suitability, contained in this catalogue, on the website and in the informational material must be verified by the buyer / purchaser with respect to compliance with local regulations in the country of employment.



Roof Panels

Isodomus & Isodomus Classic

Manufactured in: Italy



Siena - Italy



APPLICATION

Isodomus is appropriate for public and industrial buildings' roofs with sheds located in determined urbanised areas. It can be used for new buildings' roofs, but also for renovation of roofs that are obsolete.

CHARACTERISTICS

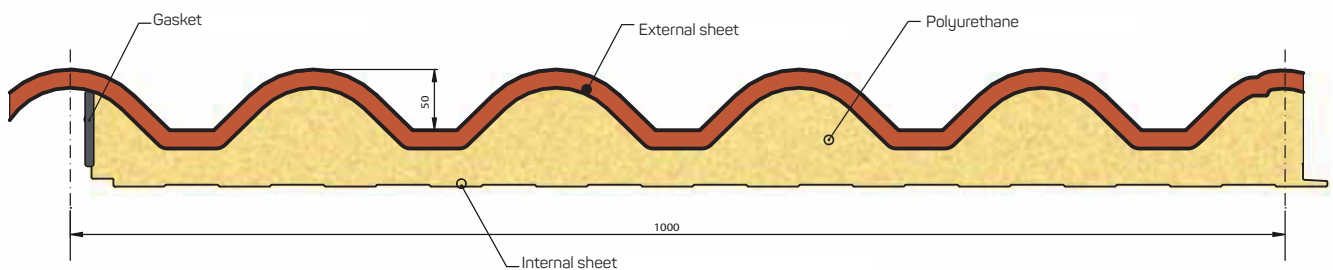
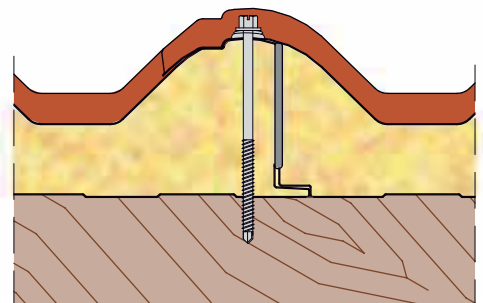
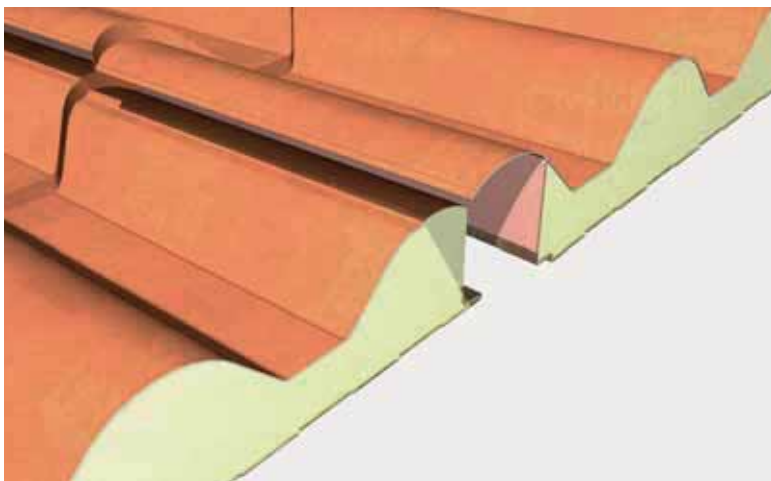
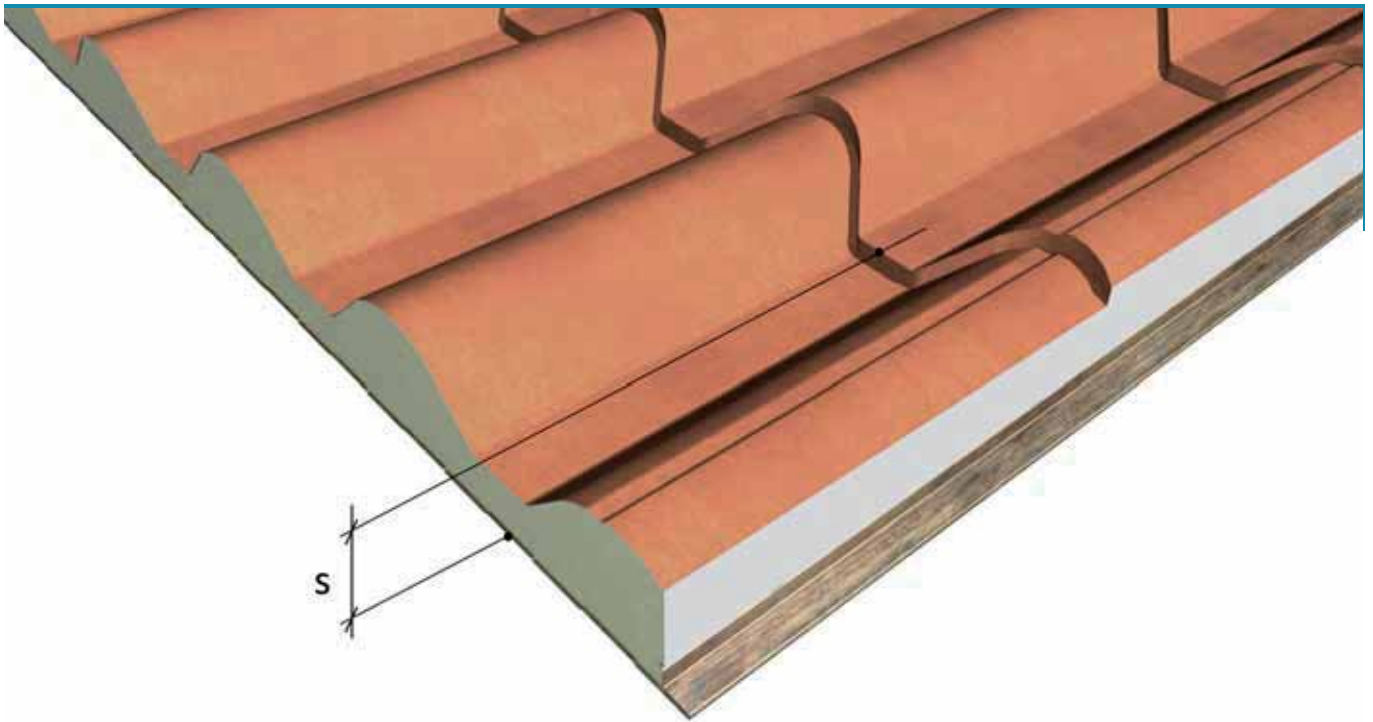
The standard tile or barrel tile shape makes this panel particular with a high aesthetic value that is suitable for public and rural sectors. The fixing system is a penetrating type with the possibility to use exposed caps, the number and the place of the fixing elements should guarantee the stresses resistance.

This range of roof panels is characterised by a wide choice of colours; particularly, colours that simulate the traditional roofs.

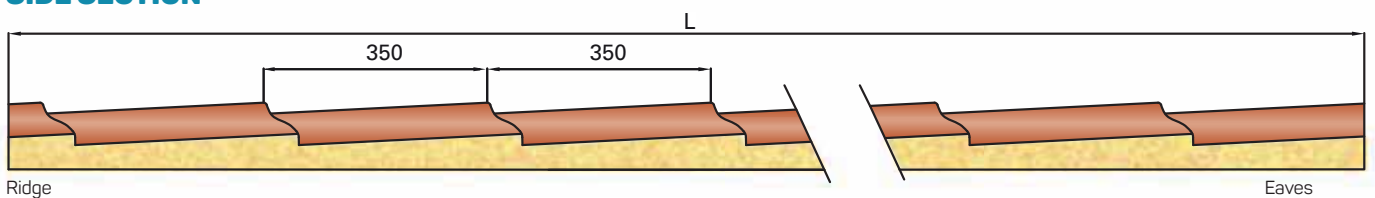
ADVANTAGES

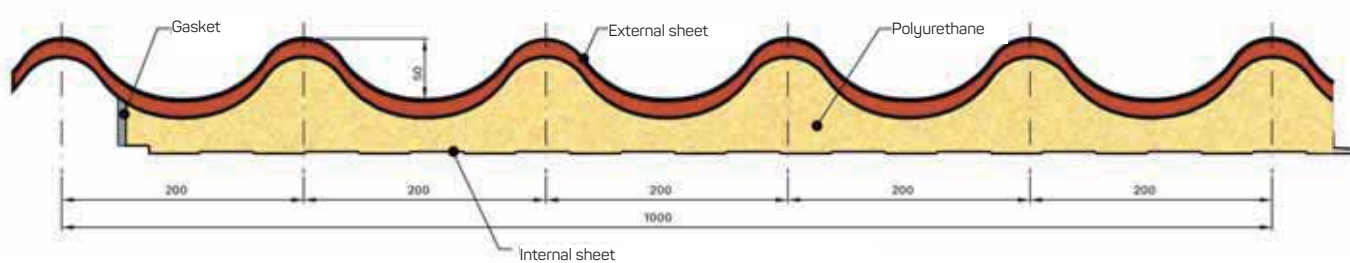
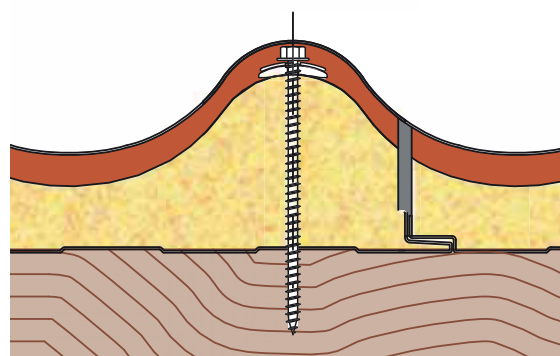
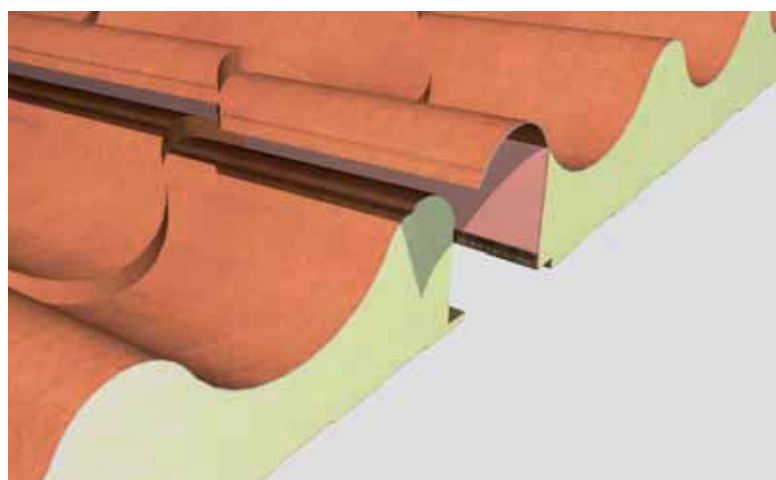
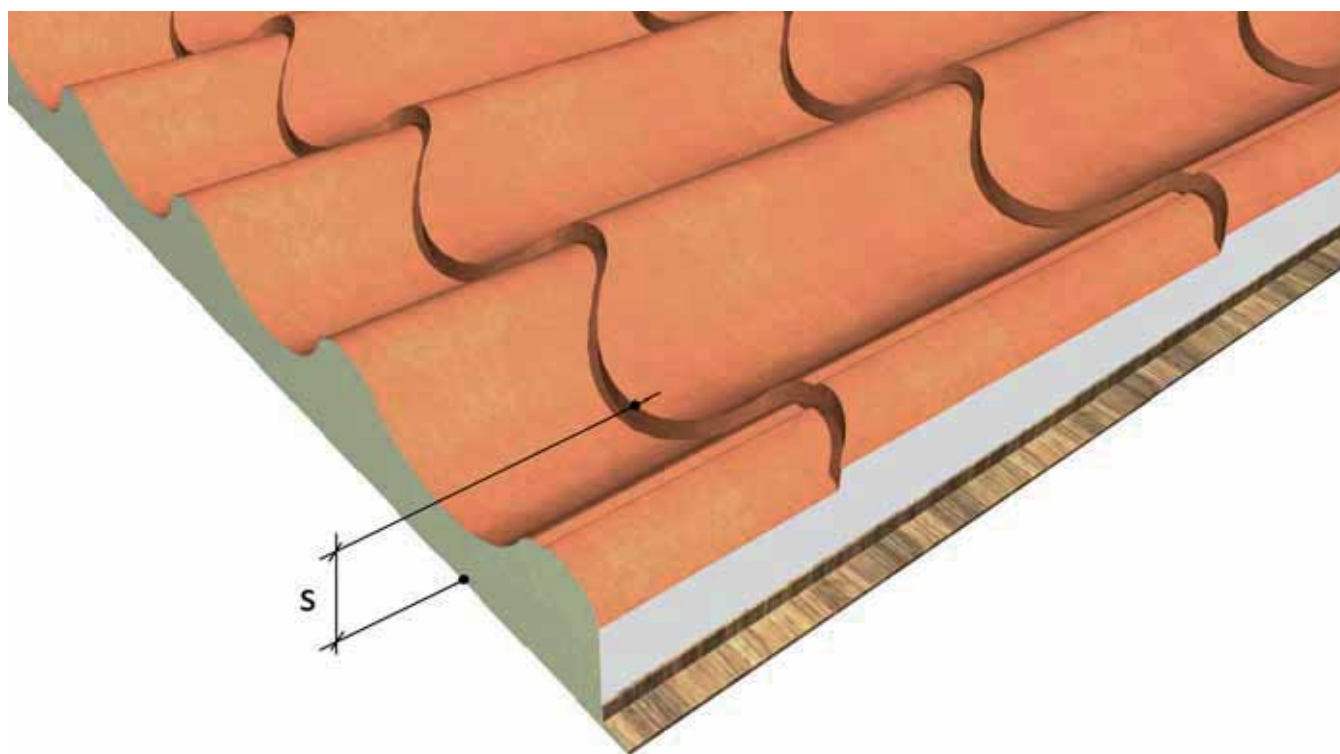
The Isodomus panel made of polyurethane foam allows a high thermal insulation. It is a functional panel fast and easy to install. Moreover, thanks to its special barrel tile shape, it can comply with the standards regarding landscape constraints.

- Architectonic quality
- Earthquake safety
- Lightness
- Versatility
- Functional reliability
- Thermal efficiency

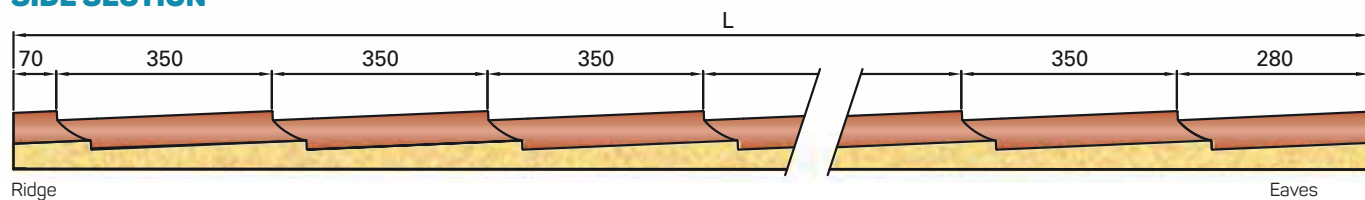


SIDE SECTION





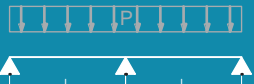
SIDE SECTION

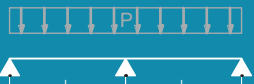




INSTRUCTIONS OF USE


For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.


ACCEPTABLE LOADS kg/m²


	INSULATING CORE THICKNESS mm	SPAN MM							
		1050	1400	1750	2100	2450	2800*	3150*	3500*
External steel sheet 0.5 mm Internal steel sheet 0.4 mm	30	320	190	115	85	60			
External aluminium sheet 0.6 mm Internal steel sheet 0.4 mm	30	200	120	60					

	INSULATING CORE THICKNESS mm	SPAN MM							
		1050	1400	1750	2100	2450	2800*	3150*	3500*
External steel sheet 0.5 mm Internal steel sheet 0.4 mm	40	415	250	175	130	105	80	54	
External aluminium sheet 0.6 mm Internal steel sheet 0.4 mm	40	285	210	135	100	90	60		

	INSULATING CORE THICKNESS mm	SPAN MM							
		1050	1400	1750	2100	2450	2800*	3150*	3500*
External steel sheet 0.5 mm Internal steel sheet 0.4 mm	50	440	265	190	140	120	90	60	
External aluminium sheet 0.6 mm Internal steel sheet 0.4 mm	50	315	235	160	115	100	70	50	

	INSULATING CORE THICKNESS mm	SPAN MM							
		1050	1400	1750	2100	2450	2800*	3150*	3500*
External steel sheet 0.5 mm Internal steel sheet 0.4 mm	60	500	305	230	170	145	110	75	60
External aluminium sheet 0.6 mm Internal steel sheet 0.4 mm	60	375	285	190	140	120	90	65	

	INSULATING CORE THICKNESS mm	SPAN MM							
		1050	1400	1750	2100	2450	2800*	3150*	3500*
External steel sheet 0.5 mm Internal steel sheet 0.4 mm	80	580	430	320	260	170	140	90	70
External aluminium sheet 0.6 mm Internal steel sheet 0.4 mm	80	460	355	295	200	155	115	70	55

	INSULATING CORE THICKNESS mm	SPAN MM							
		1050	1400	1750	2100	2450	2800*	3150*	3500*
External steel sheet 0.5 mm Internal steel sheet 0.4 mm	100	620	490	365	275	180	155	95	75
External aluminium sheet 0.6 mm Internal steel sheet 0.4 mm	100	500	390	315	230	170	125	70	60

* On grey facing, no foot traffic on spans. Deflection limit 1/200 ℓ

The indicated values, obtained after laboratory tests on panels not fixed to supports, take into account an adequate safety coefficient. We recommend, during the inspection for maintenance and roof cleaning, to be careful in order to avoid the sheet crush on the deepest ribs. It is recommended to wear shoes with rubber soles and carefully use the tools and / or equipments that could scratch the paint and the underlying zinc, impeding corrosion. It is recommended also to periodically inspect (at least once a year) the roof, to remove eventual wastes that could create unwanted stagnant water. The data's reported in the tables are only indicative. The designer has to check these data's according to the specific application.

Isodomus & Isodomus Classic

ISODOMUS

ISODOMUS (Steel sheet)

THICKNESS SHEETS MM mm		PANEL NOMINAL THICKNESS MM				
		30	40	50	60	80
0,5 / 0,5	kg/m2	10,5	10,9	11,3	11,7	12,5

Peso pannelli ISODOMUS MONO (Steel sheet)

THICKNESS SHEETS MM mm		PANEL NOMINAL THICKNESS MM				
		30	40	50	60	80
0,5	kg/m2	7,3	7,7	8,1	8,5	9,3

ISODOMUS CLASSIC

Peso pannelli ISODOMUS classic (Steel sheet)

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS (mm)					
		30	40	50	60	80	100
0,5 / 0,5	kg/m2	10,8	11,2	11,6	12,0	12,8	13,6

Peso pannelli ISODOMUS classic MONO (lamiera acciaio)

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS (mm)					
		30	40	50	60	80	100
0,5	kg/m2	7,6	8,0	8,4	8,8	9,5	10,3

ISODOMUS - ISODOMUS CLASSIC

THERMAL INSULATION (K) EN ISO 6946

K	PANEL NOMINAL THICKNESS (mm)					
	30	40	50	60	80	100
W / m² K	0,47	0,36	0,31	0,27	0,23	0,17
Kcal / m² h °C	0,40	0,32	0,27	0,23	0,20	0,15

THERMAL INSULATION (U) UNI EN 14509:2007 A.10

U	PANEL NOMINAL THICKNESS(mm)					
	30	40	50	60	80	100
W / m² K	0,55	0,43	0,38	0,29	0,24	0,19
Kcal / m² h °C	0,47	0,37	0,32	0,25	0,21	0,16

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm	
Length	L ≤ 3 m ± 5 mm L > 3 m ± 10 mm
Working length	± 2 mm
Thickness	D ≤ 100 mm ± 2 mm D > 100 mm ± 2 %
Deviation from perpendicularity	6 mm
Misalignment of the internal metal faces	± 3 mm
Bottom sheet coupling	F = 0 + 3 mm

L = working length, D = panels thickness, F = sheets coupling.

STANDARD LENGTHS

PANEL STANDARD LENGTHS mm													
2100	2450	2800	3150	3500	3850	4200	4550	4900	5250	5600	5950	6300	6 6 5 0
7000	7350	7700	8050	8400	8750	9100	9450	9800	10150	10500	10850	11200	115 5 0
11900	12250	12600	12950	13300									

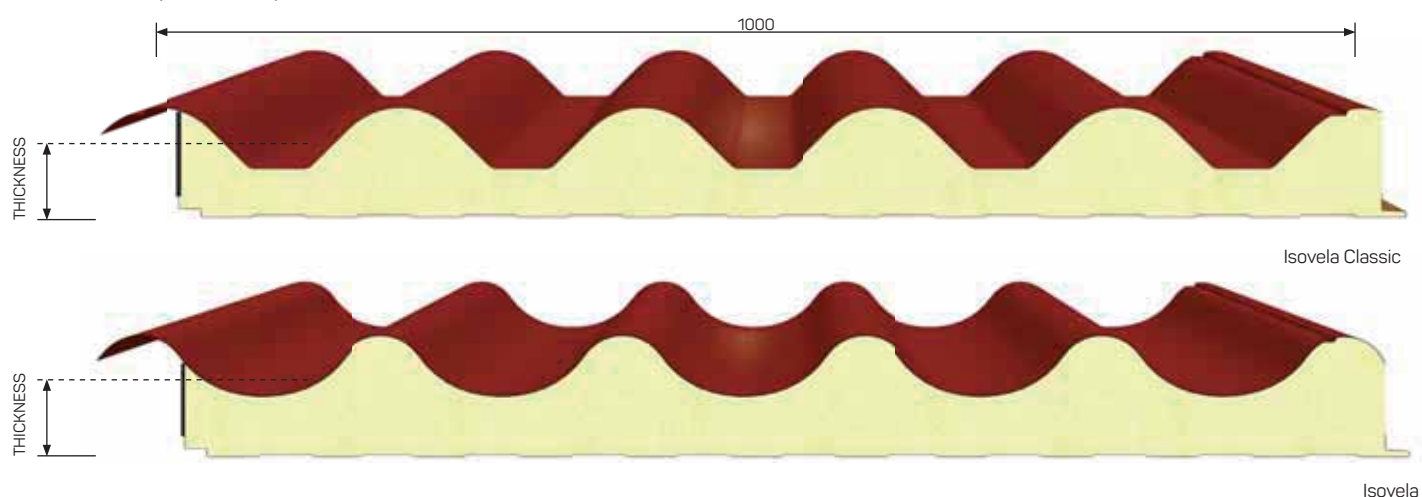


Isovela & Isovela Classic

Manufactured in: Italy



It is a self-supporting double skin roof panel, insulated with polyurethane foam, with a tongue-and-groove joint. On big longitudinal pitches, the panel overlap can be foreseen. The panel is composed by 6 waves that allow to increase the static resistance. It is available in different insulating core thicknesses for building's roofs. The assembly can be made on pitched roofs. The fixing system is a penetrating type with the possibility to use exposed caps.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



FIRE CHARACTERISTICS

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm				STEEL SHEETS 0,6 / 0,5 mm - Support 120 mm		
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm			PANEL NOMINAL THICKNESS mm		
	60	70	80	60	70	80
MAX SPANS cm				MAX SPANS cm		
80	420	445	470	430	470	500
100	380	410	445	400	430	460
120	360	385	415	370	400	430
140	335	365	390	350	380	400
160	320	345	370	330	355	380
180	300	325	350	315	340	360
200	290	310	335	290	320	345
220	270	300	320	270	310	330
250	240	275	300	240	270	310

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm		
		60	70	80
0,4 / 0,4	kg/m ²	9,3	9,7	10,1
0,5 / 0,5	kg/m ²	11,1	11,5	11,9
0,6 / 0,6	kg/m ²	12,9	13,3	13,7

DIMENSION TOLERANCE (EN 14509)

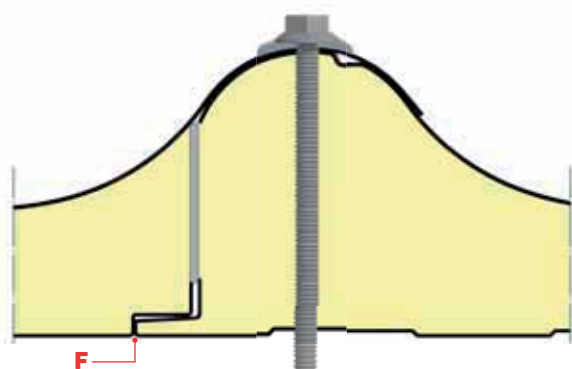
DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Bottom sheet coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

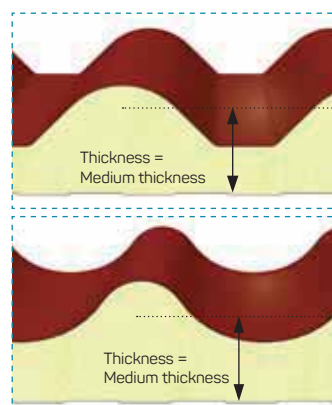
THERMAL INSULATION

According to EN 14509 A.10

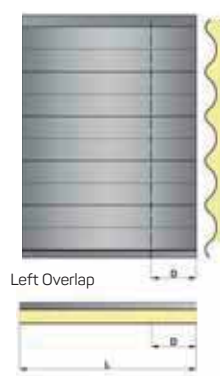
U	PANEL NOMINAL THICKNESS mm		
	60	70	80
W/m ² K	0,46	0,38	0,33
kcal/m ² h °C	0,40	0,33	0,29



Details of the fixing system and the coupling tolerance



ATTENTION: Nominal thickness value of Isovela and Isovela classic is referred to the the average thickness of panels

D = mm 100-150-200-250
Other measurement after agreement

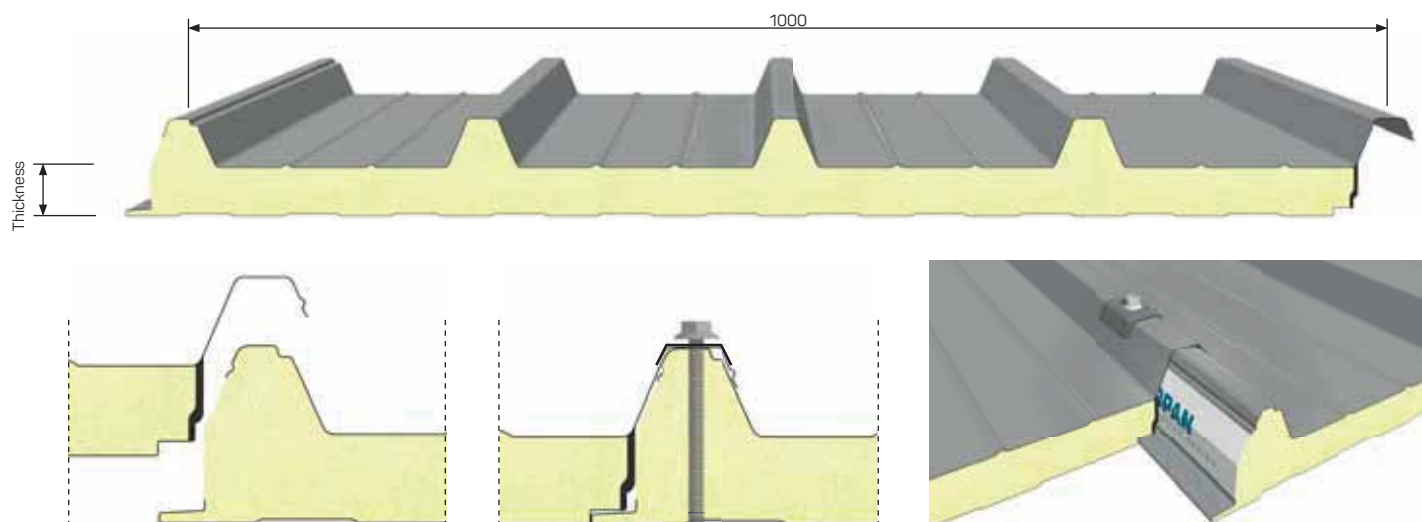
Details of the overlapping system

Isocop

Manufactured in: Italy, Germany, Spain, Romania



It is a self-supporting double skin roof panel, insulated with polyurethane foam, with a tongue-and-groove joint. The panel is composed by 5 ribs that allow a good static resistance. It is available in different insulating core thicknesses for building's roofs.



Details of the assembly phase



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.




FIRE CHARACTERISTICS

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,4 / 0,4 mm - Support 120 mm									STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm								
UNIFORMLY DISTRIBUTED LOAD																	
	PANEL NOMINAL THICKNESS mm								PANEL NOMINAL THICKNESS mm								
	30	40	50	60	80	100	120	150	30	40	50	60	80	100	120	150	
kg/m²	MAX SPANS cm								MAX SPANS cm								
80	270	290	310	340	390	440	470	500	320	350	390	420	500	570	630	730	
100	250	260	280	300	350	390	440	480	295	320	360	390	450	510	580	670	
120	230	245	260	280	320	360	400	460	270	300	330	360	420	480	540	620	
140	210	230	255	260	290	330	370	420	235	280	315	340	390	450	500	580	
160	200	220	230	255	285	310	340	390	210	260	300	320	370	420	480	550	
180	185	215	220	230	270	290	320	370	185	235	280	300	355	400	450	520	
200	160	200	210	220	260	270	300	340	170	210	250	290	330	380	430	500	
220	140	190	200	210	230	260	280	320	150	190	230	270	320	360	410	470	
250	115	170	190	200	220	240	260	300	130	170	205	240	300	340	385	445	

ALUMINIUM SHEETS 0,6 / 0,6 mm - Support 120 mm								
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
	MAX SPANS cm							
80	255	290	325	370	435	505	565	605
100	225	255	290	315	385	455	510	590
120	205	230	255	285	340	400	460	540
140	190	210	230	255	315	370	420	495
160	170	190	215	230	285	335	385	455
180	155	170	200	215	265	310	360	420
200	145	160	180	200	240	285	335	395
220	130	155	170	190	225	255	310	355
250	110	145	155	165	200	230	275	335

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard.
Deflection limit 1/200 ℓ . Thermal load is not considered.

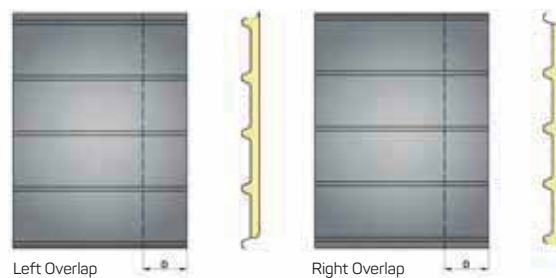
PANELS WEIGHT

THICKNESS SHEETS mm	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
0,5 / 0,5 kg/m ²	9,9	10,3	10,7	11,2	11,9	12,7	13,5	14,7
0,6 / 0,6 kg/m ²	11,7	12,1	12,5	12,9	13,7	14,5	15,3	16,5

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Bottom sheet coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling



D = mm 100-150-200-250
Other measurement after agreement

Details of the overlapping system

THERMAL INSULATION

According to EN 14509 A.10

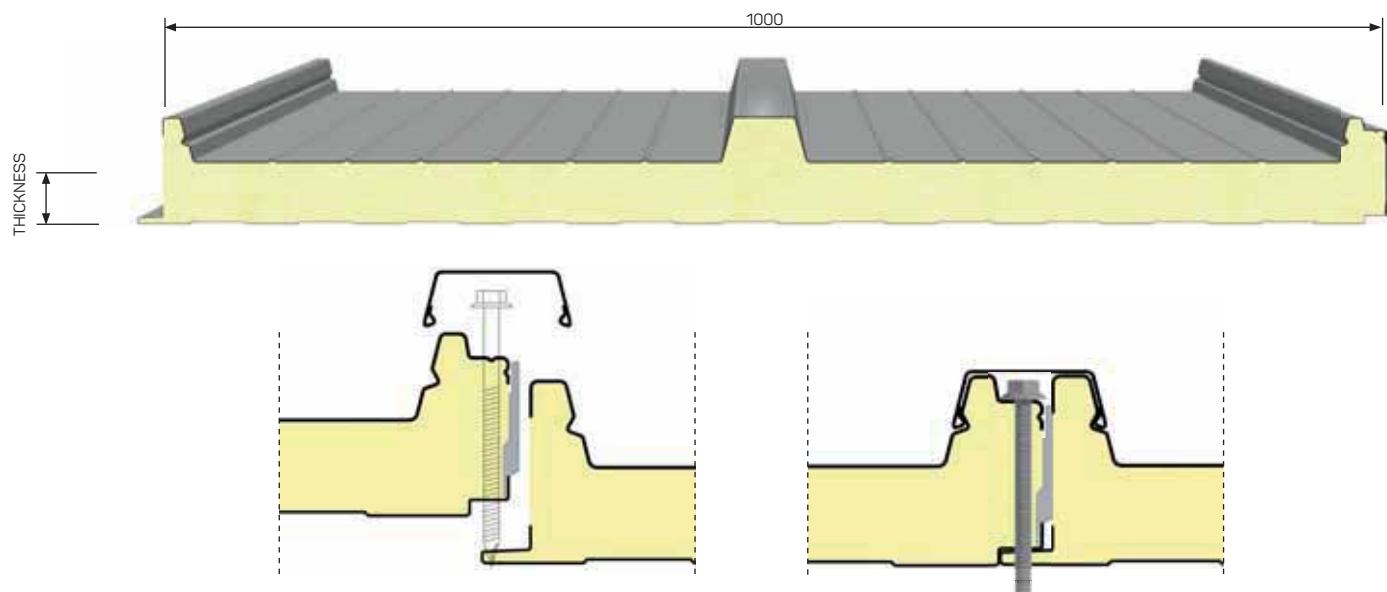
U	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
W/m ² K	0,71	0,54	0,44	0,37	0,28	0,22	0,19	0,15
kcal/m ² h °C	0,61	0,47	0,38	0,32	0,24	0,19	0,16	0,13

Isotap

Manufactured in: Spain



It is a self-supporting double skin panel, insulated with polyurethane foam, with a tongue-and-groove joint, designed for pitched roofs with a minimum slope of 7%. On large longitudinal pitches, the panel overlap can be foreseen. The fixing system is a penetrating type with the possibility to use exposed caps, with the possibility to use caps, in the coupling zone is placed a special flashing.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



FIRE PERFORMANCES

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.



→ see pag. 16

OVERLOAD SPANS

UNIFORMLY DISTRIBUTED LOAD kg/m ²	STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm							STEEL SHEETS 0,5 / 0,4 mm - Support 120 mm				
	PANEL NOMINAL THICKNESS mm							PANEL NOMINAL THICKNESS mm				
	30	40	50	60	80	100	120	30	40	50	60	80
	MAX SPANS cm							MAX SPANS cm				
80	295	330	365	400	470	530	600	290	320	355	400	460
120	230	280	310	340	400	450	500	230	280	310	340	390
150	190	240	280	310	365	410	460	190	240	280	300	360
200	145	180	220	260	320	360	400	145	180	220	260	310
250	115	150	180	220	275	320	360	115	150	180	215	275

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.**PANELS WEIGHT**

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm						
		30	40	50	60	80	100	120
0,4 / 0,4	kg/m ²	8,1	8,5	8,9	9,3	10,1	-	-
0,5 / 0,5	kg/m ²	9,9	10,3	10,7	11,2	11,9	-	-
0,6 / 0,6	kg/m ²	11,7	12,1	12,5	12,9	13,7	14,5	15,3

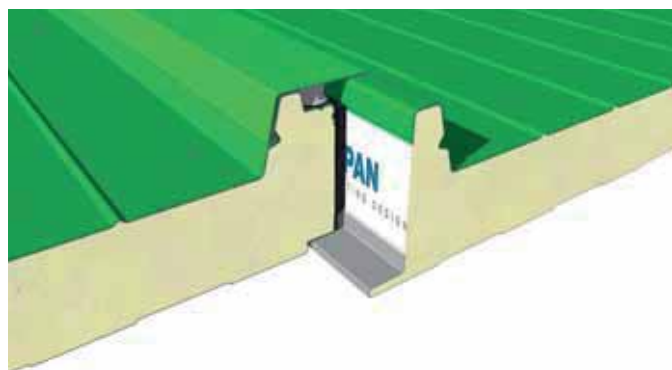
DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Bottom sheet coupling	F = 0 + 3 mm	

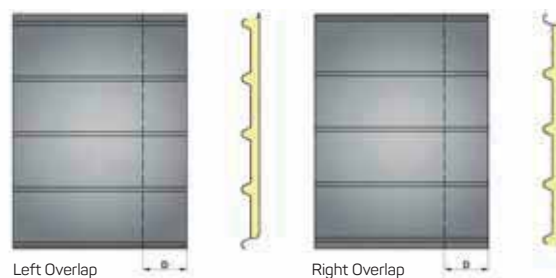
L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION**According to EN 14509 A.10**

U	PANEL NOMINAL THICKNESS mm						
	30	40	50	60	80	100	120
W/m ² K	0,71	0,54	0,44	0,37	0,28	0,22	0,19
kcal/m ² h °C	0,61	0,47	0,38	0,32	0,24	0,19	0,16



Details of the fixing system and the coupling tolerance

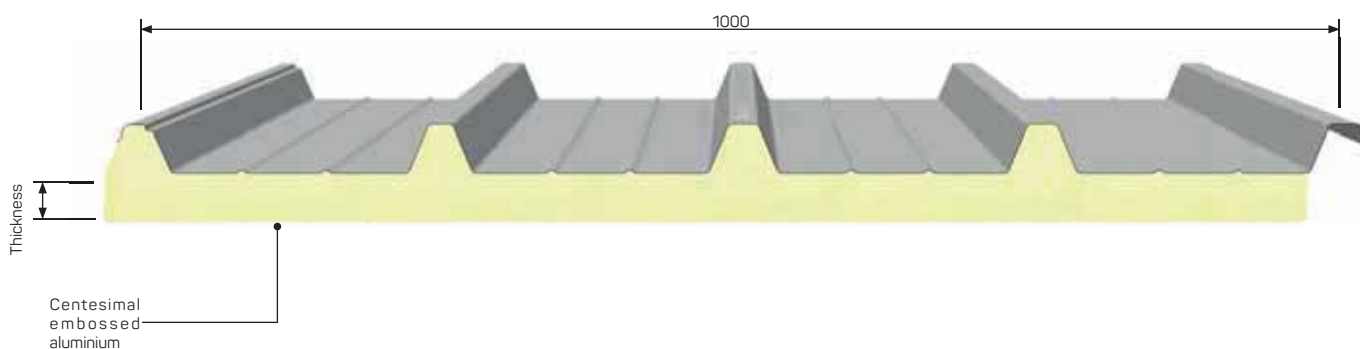
D = mm 100-150-200-250
Other measurement after agreement

Isogrecata

Manufactured in: Italy, Germany, Spain, Romania



Isogrecata is a self-supporting single skin metal faced panel, insulated with polyurethane foam; its internal face is made of centesimal embossed aluminium. The panel is composed by 5 ribs that allow a good static resistance. It is available in different insulating core thicknesses for building's roofs.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



FIRE PERFORMANCES



Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS										
UNIFORMLY DISTRIBUTED LOAD kg/m ²	THICKNESS SHEETS mm					THICKNESS SHEETS mm				
	0,5	0,6	0,7	0,8	1,0	0,5	0,6	0,7	0,8	1,0
	MAX SPANS cm					MAX SPANS cm				
80	220*	235	250	265	285	250*	270	285	295	320
100	200*	220*	235	245	265	200*	245*	260	275	295
120	180*	200*	215*	230	250	200*	225*	240*	260	280
140	165*	185*	200*	215*	235	185*	205*	225*	240*	265
160	155*	170*	185*	200*	225	175*	195*	210*	225*	255

ALUMINIUM SHEETS								
UNIFORMLY DISTRIBUTED LOAD								
	THICKNESS SHEETS mm				THICKNESS SHEETS mm			
	0,6	0,7	0,8	1,0	0,6	0,7	0,8	1,0
kg/m²	MAX SPANS cm				MAX SPANS cm			
80	160*	170	180	190	180*	190	200	220
100	140*	155*	165	180	160*	175*	190	205
120	130*	140*	155	170	145*	160*	185	190
140	120*	130*	140*	160	135*	150*	160*	180
160	110*	120*	130*	150	125*	140*	150*	170

* Values with stress limitations. Deflection limit 1/200 ℓ

PANELS WEIGHT

THICKNESS SHEETS mm	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
0,6 kg/m ²	6,9	7,3	7,7	8,1	8,9	9,7
0,7 kg/m ²	7,9	8,3	8,7	9,1	9,9	10,7
0,8 kg/m ²	8,7	9,3	9,7	10,1	10,9	11,7

DIMENSION TOLERANCE

DEVIATION mm	
Length	± 10
Working length	± 5
Thickness	± 2
Orthogonality and rectangularity	± 3

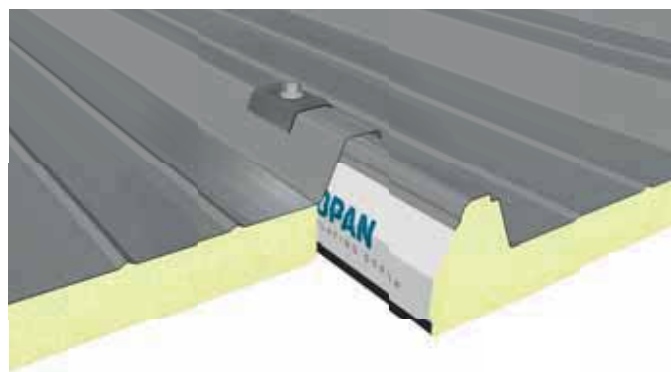
THERMAL INSULATION

According to EN 14509 Annex 10

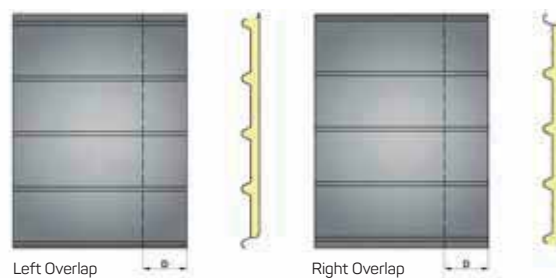
U	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
W/m ² K	0,71	0,54	0,44	0,37	0,28	0,22
kcal/m ² h °C	0,61	0,47	0,38	0,32	0,24	0,20

According to the calculation method EN ISO 6946

K	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
W/m ² K	0,55	0,44	0,36	0,31	0,25	0,20
kcal/m ² h °C	0,48	0,38	0,32	0,27	0,22	0,17



Details of the fixing system and the coupling tolerance

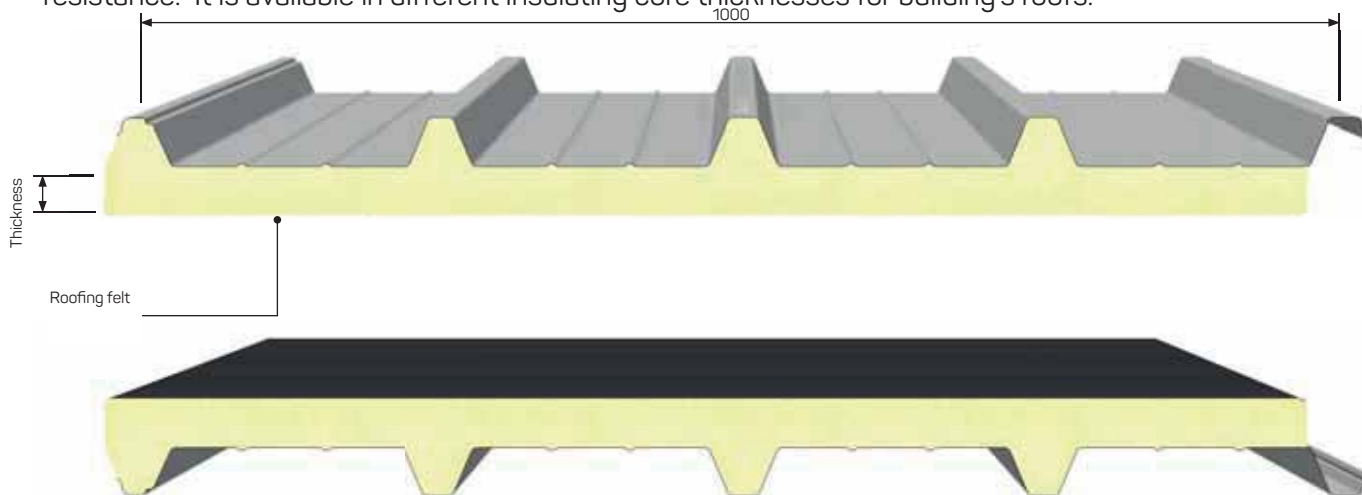
D = mm 100-150-200-250
Other measurement after agreement
Dettaglio sistemi di sormonto

Isodeck

Manufactured in: Italy, Germany, Spain, Romania



Isodeck is a self-supporting simple skin metal faced panel, insulated with polyurethane foam with internal face made of roofing felt. The panel can be installed upside down for the construction of flat roofs to be waterproofed on site. In fact, the ribbed face is the internal face of the building; it can also be used in the traditional way on hidden faces and continuous slab. The panel is composed by 5 ribs that allow a good static resistance. It is available in different insulating core thicknesses for building's roofs.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



FIRE PERFORMANCES



Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS										
UNIFORMLY DISTRIBUTED LOAD kg/m ²	THICKNESS SHEETS mm					THICKNESS SHEETS mm				
	MAX SPANS cm					MAX SPANS cm				
	0,5	0,6	0,7	0,8	1,0	0,5	0,6	0,7	0,8	1,0
80	220*	235	250	265	285	250*	270	285	295	320
100	200*	220*	235	245	265	200*	245*	260	275	295
120	180*	200*	215*	230	250	200*	225*	240*	260	280
140	165*	185*	200*	215*	235	185*	205*	225*	240*	265
160	155*	170*	185*	200*	225	175*	195*	210*	225*	255

ALUMINIUM SHEETS								
UNIFORMLY DISTRIBUTED LOAD kg/m²								
	THICKNESS SHEETS mm				THICKNESS SHEETS mm			
	0,6	0,7	0,8	1,0	0,6	0,7	0,8	1,0
MAX SPANS cm					MAX SPANS cm			
80	160*	170	180	190	180*	190	200	220
100	140*	155*	165	180	160*	175*	190	205
120	130*	140*	155	170	145*	160*	185	190
140	120*	130*	140*	160	135*	150*	160*	180
160	110*	120*	130*	150	125*	140*	150*	170

* Values with stress limitations. Deflection limit 1/200 ℓ

PANELS WEIGHT

THICKNESS SHEETS mm	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
0,6 kg/m ²	7,3	7,7	8,1	8,5	9,3	10,1
0,7 kg/m ²	8,3	8,7	9,1	9,5	10,3	11,1
0,8 kg/m ²	9,1	9,7	10,1	10,5	11,3	12,1

DIMENSION TOLERANCE

DEVIATION mm	
Length	± 10
Working length	± 5
Thickness	± 2
Orthogonality and rectangularity	± 3

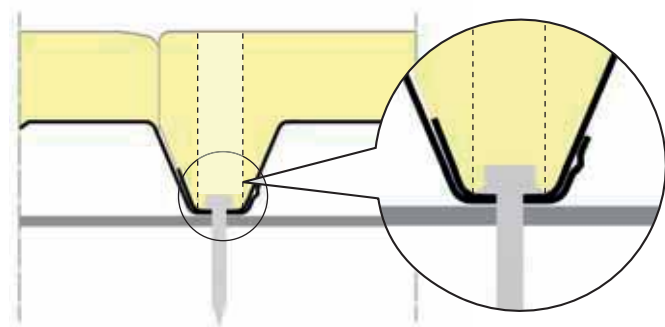
THERMAL INSULATION

According to EN 14509 Annex 10

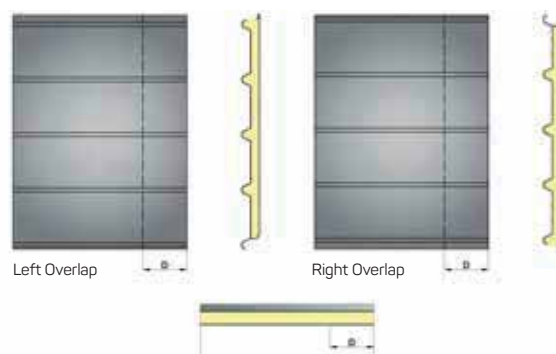
U	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
W/m ² K	0,71	0,54	0,44	0,37	0,28	0,22
kcal/m ² h °C	0,61	0,47	0,38	0,32	0,24	0,20

According to the calculation method EN ISO 6946

K	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
W/m ² K	0,55	0,44	0,36	0,31	0,25	0,20
kcal/m ² h °C	0,48	0,38	0,32	0,27	0,22	0,17

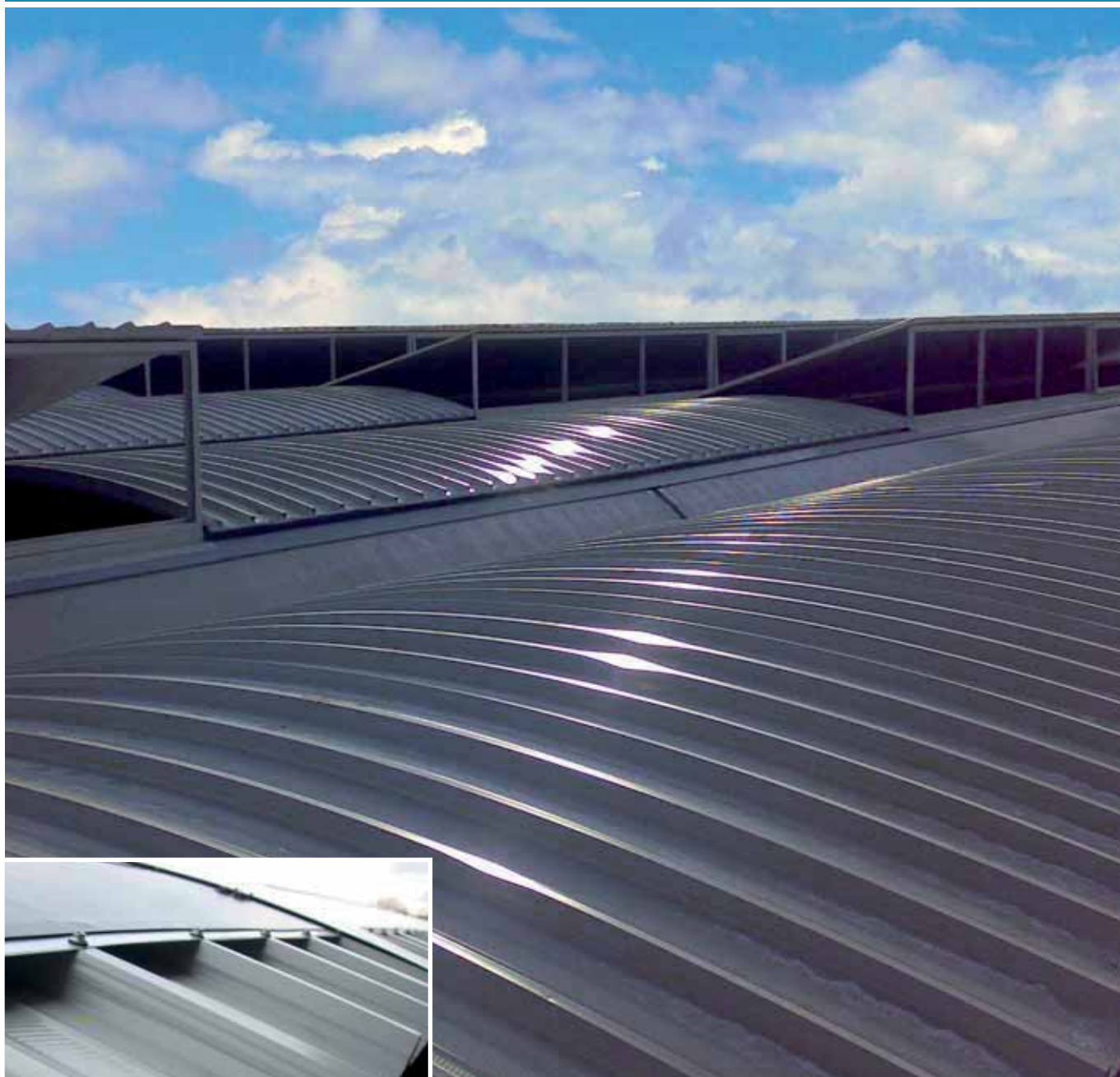


Details of the fixing system

D = mm 100-150-200-250
Other measurement after agreement

Isoray 3.3 & Isoray 6

Manufactured in: Italy



Copertura industriale su prefabbricato in calcestruzzo

Dettaglio della copertura con impianto fotovoltaico amorfo



→ see pag. 16



APPLICATION

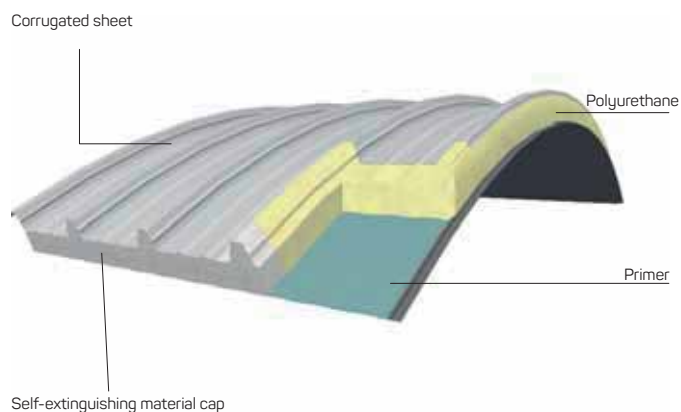
Isoray is a precurved thermo-insulated roof panel. It is designed for roofs that are principally placed on prefabricated structures made of prestressed concrete: it guarantees waterproofness, high thermal insulation and high load resistance.

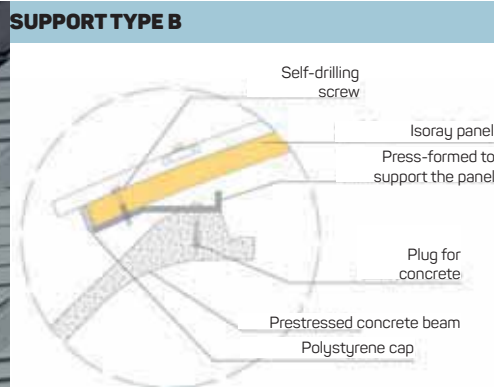
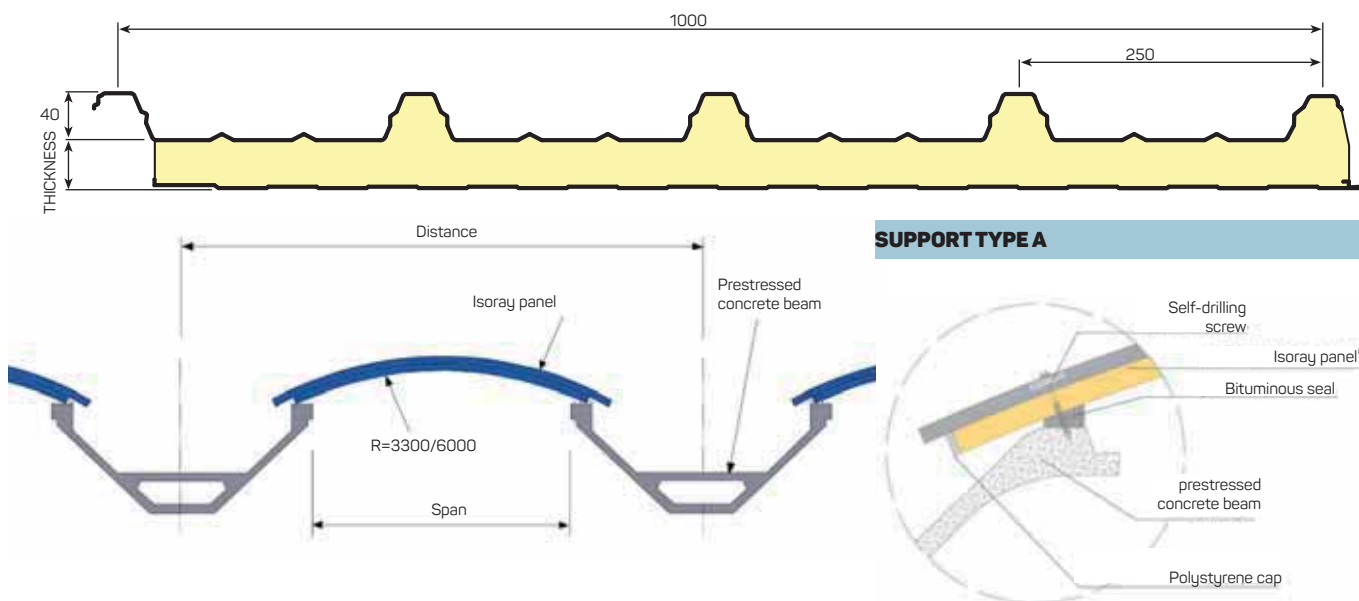
CHARACTERISTICS

The panel allows you to create curved roofs with a radius of 3.3 m to 6 m, even if it is curved, with the 5 ribs sheet, it shows a high load resistance. The fixing is made at the end of the support structure thanks to steel self-drilling screws.

ADVANTAGES

It shows high results of thermal insulation even with a flat roof that is appropriate also for prefabricated elements in prestressed concrete. Isoray is a monolithic solution with a high mechanical resistance and a high thermal insulation power.

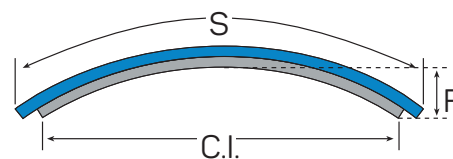




For more information on assembly and fixing systems, please contact Isopan

DEVELOPMENT - CHORD - DEFLECTION (The measures refer to a 40 mm thick panel)

ISORAY 3.3 (measures in cm)			ISORAY 6 (measures in cm)		
Internal chord C.I.	Development S	Deflection F	Internal chord C.I.	Development S	Deflection F
107	120	4	150	162	5
137	151	7	200	214	8
158	173	10	250	265	13
177	194	12	300	317	19
196	214	15	350	370	26
216	235	18	400	423	34
236	257	22	450	477	44
255	278	26	500	533	55
260	284	27	-	-	-
275	300	30	-	-	-



**ACCEPTABLE LOADS (LOAD BEARING SCHEME (kg/m²))**

ISORAY 3.3 with 0.5 mm thick steel faces						
CORE THICKNESS mm	CALCULATED DEFLECTION m					
	1	1,5	2	2,5	2,75	3
40	410	370	290	250	230	210
50	490	425	340	280	260	240
60	590	490	380	300	220	260

ISORAY 3.3 with 0.6 mm thick external aluminium face and 0.5 mm thick internal steel face						
CORE THICKNESS mm	CALCULATED DEFLECTION m					
	1	1,5	2	2,5	2,75	3
40	400	250	210	180	165	150
50	480	315	260	210	185	170
60	580	380	290	230	195	180

ISORAY 6 with 0.5 mm thick steel faces										
CORE THICKNESS mm	CALCULATED DEFLECTION m									
	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5
40	390	256	190	190	170	150	110	85	75	62
50	490	323	240	220	200	170	130	100	83	67
60	590	390	280	240	220	190	150	120	90	73
80	800	520	348	283	264	234	198	173	117	91
100	913	588	383	305	282	255	224	200		

PANEL ISORAY 6 with 0.6 mm thick external aluminium face and 0.5 mm thick internal steel face										
CORE THICKNESS mm	CALCULATED DEFLECTION m									
	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5
40	390	256	190	182	150	130	80	70	60	50
50	490	323	240	210	170	150	100	85	65	52
60	590	390	270	230	180	160	110	105	70	55
80	787	511	342	271	218	197	145	127	82	65
100	889	573	372	292	233	215	164	140		

Note : the red values indicate the acceptable loads for a panel anchored to the support.

The data's reported in the tables are only indicative. The designer has to check them according to the specific application.

Deflection limit 1/200 ℓ

PANEL THICKNESS mm	K		PANEL WEIGHT (kg/m²) WITH STEEL SHEETS 0,5 mm
	Kcal/m² h°C	Watt/m² K	
40	0,38	0,45	10,3
50	0,32	0,38	10,7
60	0,27	0,32	11,2
80	0,22	0,25	11,9
100	0,18	0,20	12,7

DIMENSION TOLERANCE

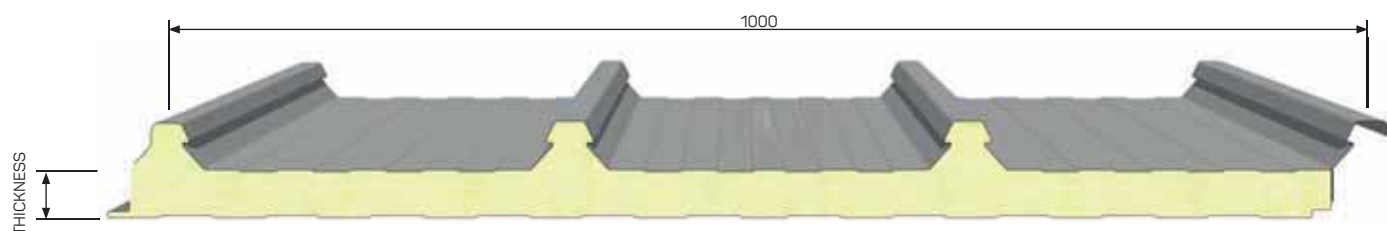
DEVIATION mm	
Length of curvature	± 5 mm with L ≤ 3000 / ± 10 mm with L > 3000
Width	± 2
Thickness	± 2
Chord	± 3 %
Radius of curvature	± 2 %
Coupling (Dev. < 3000mm)	± 4 mm
Coupling (Dev. ≥ 3000mm)	± 5 mm

Isocop Multifunction

Manufactured in: Germany



It is a self-supporting double skin panel, insulated with polyurethane foam, with a tongue-groove joint, and it is available in different thicknesses. On large longitudinal pitches, panel overlapping can be provided for. The panel is composed by 4 ribs that allow to increase the static resistance. The rib shape allows to complement the system with covering or wall accessories with simple and quick operations.



Example with roof accessory



Example with wall accessory



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



FIRE PERFORMANCES

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm								STEEL SHEETS 0,6 / 0,5 mm - Support 120 mm							
UNIFORMLY DISTRIBUTED LOAD kg/m²	 PANEL NOMINAL THICKNESS mm							 PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	30	40	50	60	80	100	120	
	MAX SPANS cm							MAX SPANS cm							
80	295	330	370	400	470	530	590	310	340	390	420	490	550	610	
100	260	305	330	370	430	490	540	260	315	350	380	440	500	550	
120	220	275	300	330	395	435	490	220	290	330	355	400	450	500	
140	195	250	270	295	350	410	460	195	250	295	320	380	420	460	
160	170	220	250	270	320	380	420	170	220	270	290	340	390	430	
180	150	200	230	245	285	340	400	155	200	245	265	310	360	400	
200	140	180	210	225	260	310	360	135	180	225	250	285	330	380	
220	125	165	200	210	240	280	330	125	175	200	230	265	305	350	
250	110	145	180	195	215	250	280	115	150	180	210	235	270	310	

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm						
		30	40	50	60	80	100	120
0,4 / 0,4	kg/m ²	8,1	8,5	8,9	9,3	10,1	10,9	11,7
0,5 / 0,5	kg/m ²	9,9	10,3	10,7	11,2	11,9	12,7	13,5
0,6 / 0,6	kg/m ²	11,7	12,1	12,5	12,9	13,7	14,5	15,3

DIMENSION TOLERANCE (EN 14509)

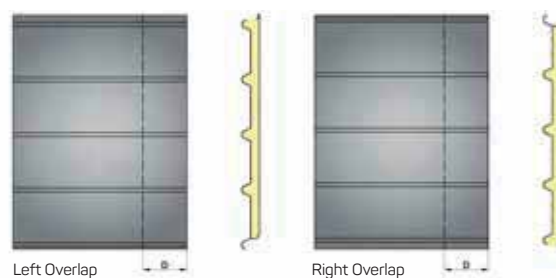
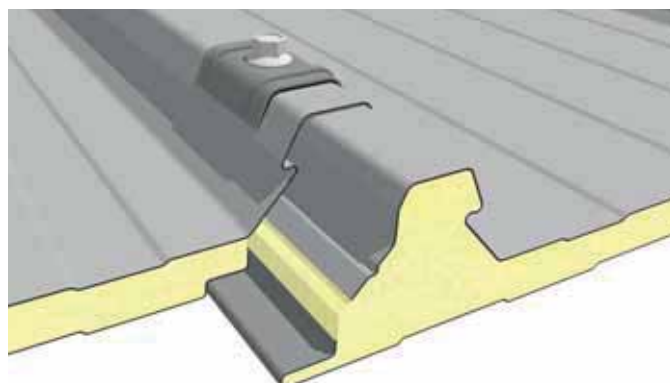
DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length		± 2 mm
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity		6 mm
Misalignment of the internal metal faces		± 3 mm
Bottom sheet coupling		F = 0 + 3 mm

L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION

According to EN 14509 Annex 10

U	PANEL NOMINAL THICKNESS mm						
	30	40	50	60	80	100	120
W/m ² K	0,71	0,54	0,44	0,37	0,28	0,22	0,19
kcal/m ² h °C	0,61	0,47	0,38	0,32	0,24	0,19	0,16



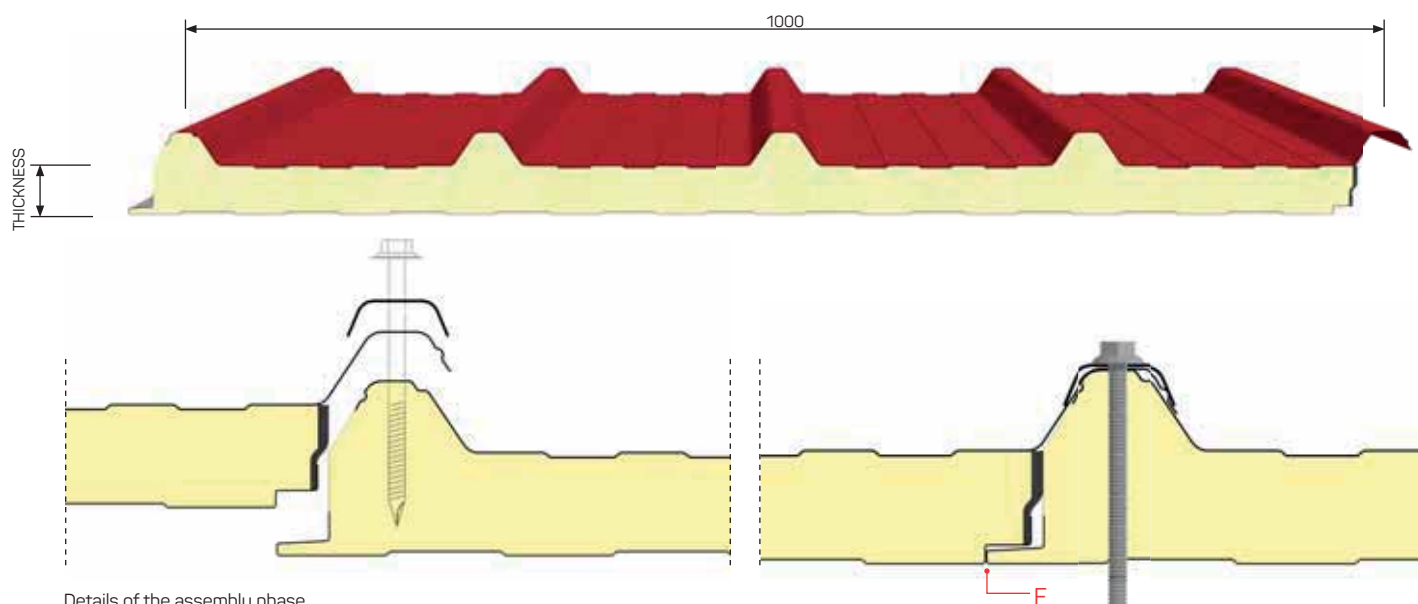
D = mm 100-150-200-250
Other measurement after agreement

Isosmart

Manufactured in: Italy



It is a self-supporting double skin roof panel, insulated with polyurethane foam, with a tongue-and-groove joint. The panel is composed by 5 ribs that allow a good static resistance. It is available in different insulating core thicknesses for building's roofs.



Details of the assembly phase



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



FIRE PERFORMANCES

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,4 / 0,3 mm - Support 120 mm				
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm			
	30	40	50	60
MAX SPANS cm				
80	200	225	250	300
100	190	210	230	280
120	175	200	220	250
140	165	190	210	230
160	155	180	200	215
180	145	170	185	205
200	130	160	175	190
220	125	150	160	180
250	110	130	150	170

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm			
		30	40	50	60
0,4 / 0,4	kg/m ²	8,1	8,5	8,9	9,3
0,5 / 0,5	kg/m ²	9,9	10,3	10,7	11,2
0,6 / 0,6	kg/m ²	11,7	12,1	12,5	12,9

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm	
Length	$L \leq 3 \text{ m} \quad \pm 5 \text{ mm}$
	$L > 3 \text{ m} \quad \pm 10 \text{ mm}$
Working length	$\pm 2 \text{ mm}$
Thickness	$D \leq 100 \text{ mm} \quad \pm 2 \text{ mm}$
	$D > 100 \text{ mm} \quad \pm 2 \%$
Deviation from perpendicularity	6 mm
Misalignment of the internal metal faces	$\pm 3 \text{ mm}$
Bottom sheet coupling	$F = 0 + 3 \text{ mm}$

L = working length, D = panels thickness, F = sheets coupling

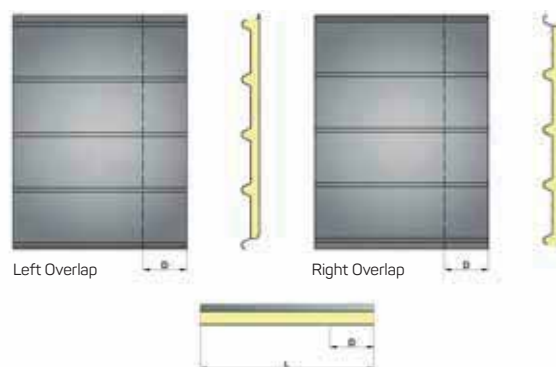
THERMAL INSULATION

According to EN 14509 Annex 10

U	PANEL NOMINAL THICKNESS mm			
	30	40	50	60
W/m ² K	0,71	0,54	0,44	0,37
kcal/m ² h °C	0,61	0,47	0,38	0,32



Dettaglio del giunto e dettagli del sistema di sormonto



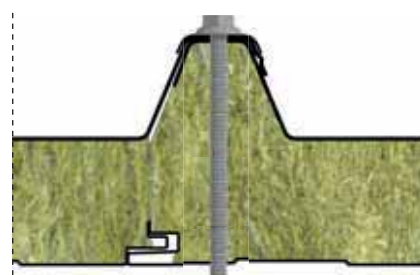
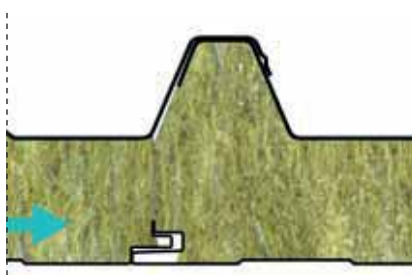
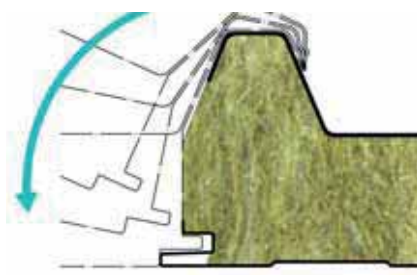
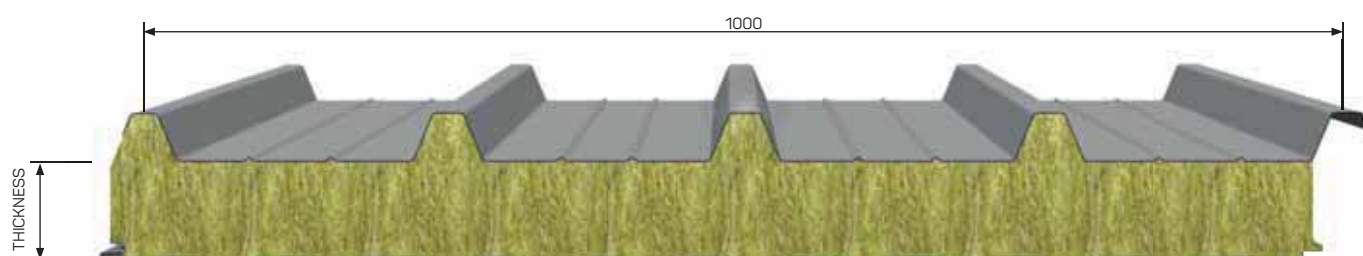
D = mm 100-150-200-250
Other measurement after agreement

Isofire Roof

Manufactured in: Italy



Isofire Roof is a self-supporting double skin panel, insulated with mineral wool fibre made with an exclusive insulation layer composed of mineral wool strips. The fixing system is a penetrating type with the possibility to use exposed caps.



Details of the assembly phase



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

UNIFORMLY DISTRIBUTED LOAD kg/m ²	STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm						STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm					
	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
	MAX SPANS cm						MAX SPANS cm					
80	325	355	415	470	515	550	345	370	425	490	535	595
100	300	325	370	425	480	525	310	335	390	445	495	570
120	270	300	345	390	435	505	290	310	355	405	450	515
140	255	270	315	360	405	470	270	290	325	370	415	490
160	245	265	300	335	380	435	255	270	310	355	390	450
180	225	245	280	315	355	405	245	255	290	325	360	425
200	210	225	270	300	335	390	225	245	280	310	345	400
220	195	215	255	285	315	370	210	235	265	300	335	380
250	175	195	230	270	295	345	190	210	245	280	310	355

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.**PANELS WEIGHT**

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm							
		50	60	80	100	120	150	170	200
0,5 / 0,5	kg/m ²	14,4	15,4	17,4	19,4	21,4	24,4	26,4	29,4
0,6 / 0,6	kg/m ²	16,2	17,2	19,2	21,2	23,2	26,2	28,2	31,2

**FIRE PERFORMANCES**

On client's request, Isofan can provide the following certificates related to the reaction to fire:

FIRE REACTION

A2-S1-D0 (secondo EN 13501-1)

FIRE RESISTANCE

REI 30 - THICKNESS 50 mm (EN 13501-2)

REI 60 - THICKNESS 80 mm (EN 13501-2)

REI 120 - THICKNESS 100 mm (EN 13501-2)

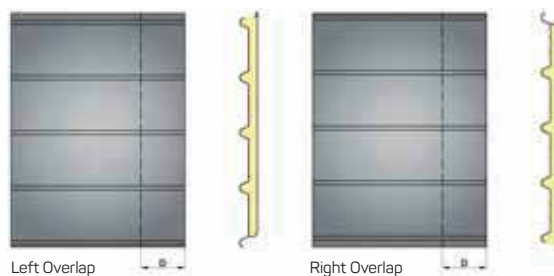
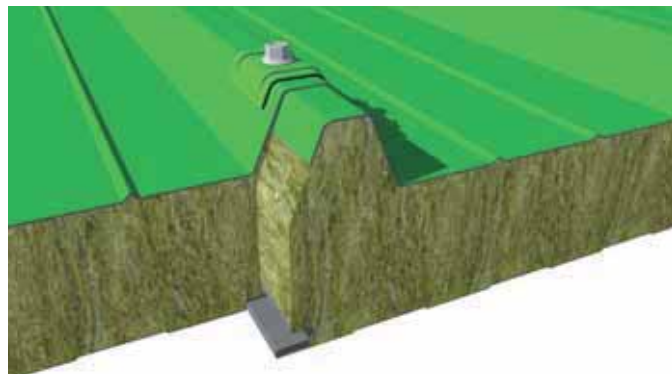
DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Bottom sheet coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION**According to EN 14509 Annex 10**

U	PANEL NOMINAL THICKNESS mm							
	50	60	80	100	120	150	170	200
W/m ² K	0,78	0,66	0,50	0,41	0,34	0,28	0,24	0,20
kcal/m ² h °C	0,67	0,57	0,43	0,35	0,29	0,24	0,21	0,17

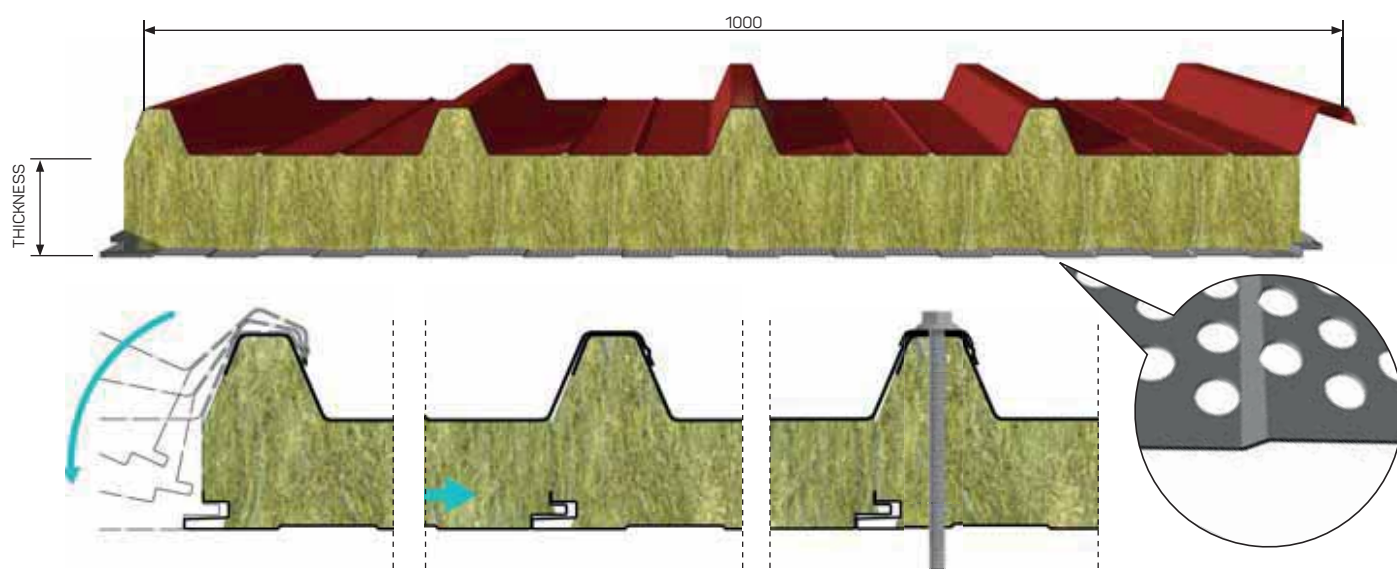
D = mm 100-150-200-250
Other measurement after agreement

Isofire Roof Fono

Manufactured in: Italy



Isofire Roof FONO is a self-supporting double skin panel, insulated with mineral wool fibre made with an exclusive insulation layer composed of mineral wool strips. The fixing system is a penetrating type with the possibility to use exposed caps. The internal sheet is characterised by a micro-drilling that enhances acoustic performances; meaning the sound absorption and insulation.



Details of the assembly phase



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm							STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm					
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
	MAX SPANS cm						MAX SPANS cm					
80	280	305	360	405	440	470	295	315	360	415	455	510
100	260	280	315	360	410	450	265	285	335	380	425	490
120	230	260	295	335	370	435	250	265	305	350	385	440
140	220	230	270	310	350	405	230	250	280	315	360	415
160	210	225	260	285	325	370	220	230	265	305	335	385
180	195	210	240	270	305	350	210	220	250	280	310	360
200	180	195	230	260	285	335	195	210	240	265	295	340
220	170	180	220	245	270	315	180	205	225	260	285	325
250	150	170	200	230	255	295	165	180	210	240	265	305

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.**PANELS WEIGHT**

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm					
		50	60	80	100	120	150
0,5 / 0,5	kg/m ²	13,9	14,9	16,9	18,9	20,9	23,9
0,6 / 0,6	kg/m ²	15,7	16,7	18,7	20,7	22,7	25,7

**ACOUSTIC PERFORMANCES**

On client's request, Isopan can provide the following certificates related to the acoustic behaviour:

ACOUSTIC INSULATION

R_w = 31 dB (Roof - Fono 50 mm)
 R_w = 34 dB (Roof - Fono 100 mm)
 R_w = 35 dB (Roof - Fono 80 mm)

ACOUSTIC ABSORPTIONcoefficient of sound absorption $\alpha_w = 1$ **DIMENSION TOLERANCE (EN 14509)**

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Bottom sheet coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

**FIRE PERFORMANCES**

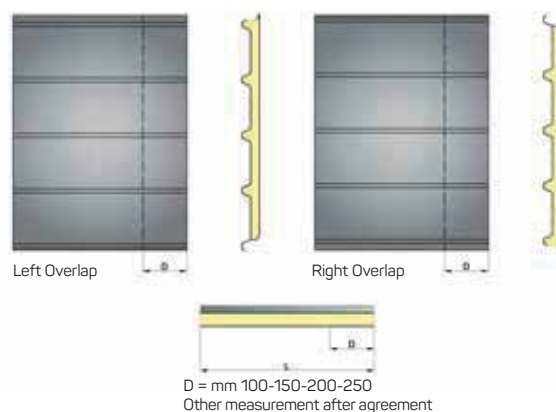
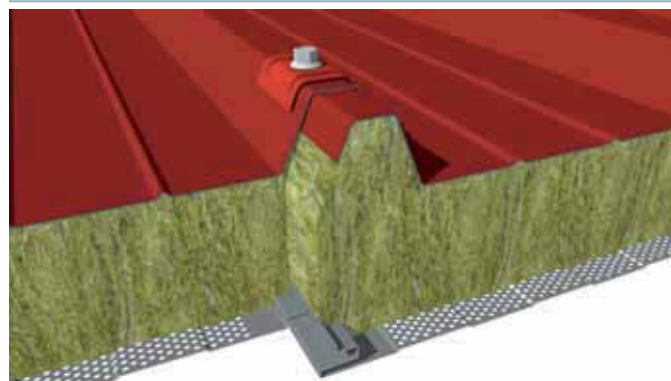
On client's request, Isopan can provide the following certificates related to the reaction to fire:

FIRE RESISTANCE

REI 60 - THICKNESS 80 mm (EN 13501-2)

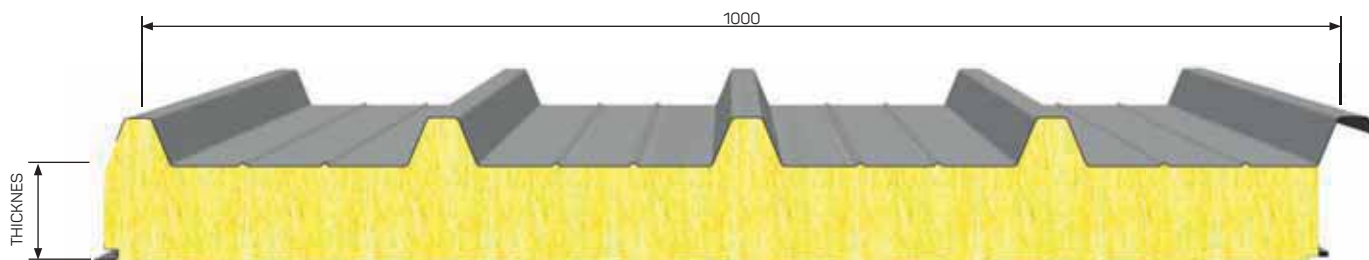
THERMAL INSULATION**According to EN 14509 Annex 10**

U	PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150
W/m ² K	0,78	0,66	0,50	0,41	0,34	0,28
kcal/m ² h °C	0,67	0,57	0,43	0,35	0,29	0,24

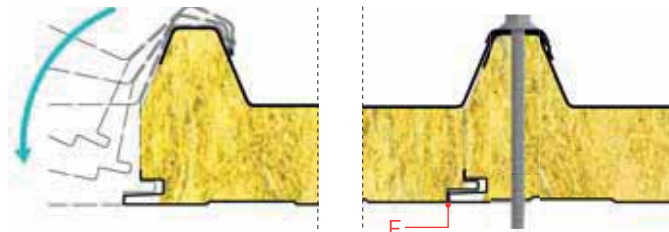


Isofire Roof FG

Manufactured in: Italy



Isofire Roof FG is a self-supporting double skin panel, insulated with **Glass wool**. The fixing system is a penetrating type with the possibility to use exposed caps.



PANELS WEIGHT

THICKNES LAMIERE		PANEL NOMINAL THICKNESS mm							
		50	60	80	100	120	150	170	200
0,5 / 0,5	kg/m ²	11,8	12,4	13,5	14,6	15,7	17,3	18,4	20,1
0,6 / 0,6	kg/m ²	13,6	14,2	15,3	16,4	17,5	19,1	20,2	21,9

THERMAL INSULATION According to EN 14509 Annex 10

U	PANEL NOMINAL THICKNESS mm							
	50	60	80	100	120	150	170	200
W/m ² K	0,75	0,63	0,48	0,38	0,32	0,26	0,23	0,19
kcal/m ² h °C	0,65	0,54	0,41	0,33	0,28	0,22	0,20	0,16

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Bottom sheet coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm							STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm					
UNIFORMLY DISTRIBUTED LOAD	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
	MAX SPANS cm						MAX SPANS cm					
80	290	315	370	420	460	495	310	330	380	440	480	535
100	270	290	330	380	430	470	275	300	350	400	445	510
120	240	270	310	350	390	450	260	275	315	360	405	460
160	220	235	270	300	340	390	225	240	275	315	350	405
200	185	200	240	270	300	350	200	220	250	275	310	360
250	155	175	205	240	265	310	170	185	220	250	275	315

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.



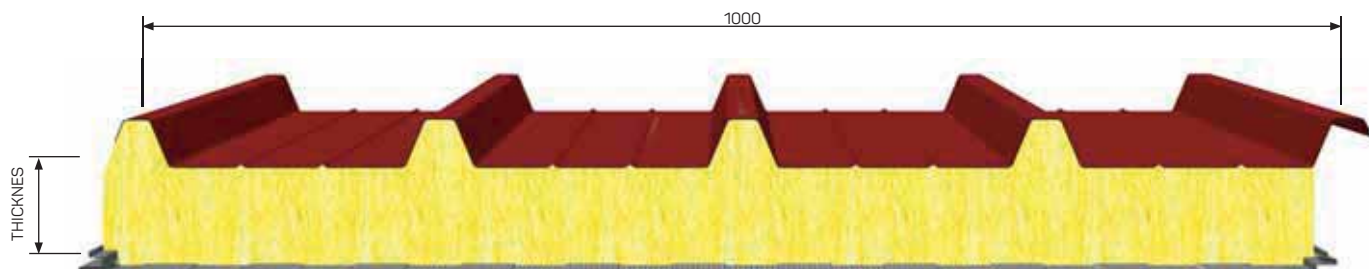
INSTRUCTIONS OF USE: For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



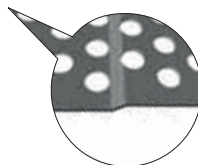
→ see pag. 16

Isofire Roof FG Fono

Manufactured in: Italy



Isofire Roof FONO FG is a self-supporting double skin panel, insulated with **Glass wool**. The fixing system is a penetrating type with the possibility to use exposed caps. The internal sheet is characterised by a micro-drilling that enhances acoustic performances; meaning the sound absorption and insulation.



PANELS WEIGHT

THICKNES LAMIERE		PANEL NOMINAL THICKNESS mm					
		50	60	80	100	120	150
0,5 / 0,5	kg/m ²	11,3	11,9	13	14,1	15,2	16,8
0,6 / 0,6	kg/m ²	13,1	13,7	14,8	15,9	17	18,6

THERMAL INSULATION According to EN 14509 Annex 10

U		PANEL NOMINAL THICKNESS mm					
		50	60	80	100	120	150
W/m ² K		0,75	0,63	0,48	0,38	0,32	0,26
kcal/m ² h °C		0,65	0,54	0,41	0,33	0,28	0,22

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Bottom sheet coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling



ACOUSTIC INSULATION: On client's request, Isopan can provide the following certificates for the acoustic behaviour:

ACOUSTIC INSULATION

R_w = 31 dB (50 mm)
 R_w = 34 dB (100 mm)
 R_w = 35 dB (80 mm)

FONOASSORBIMENTO

coefficiente di assorbimento acustico
 pesato α_w = 1

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm							STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm					
UNIFORMLY DISTRIBUTED LOAD	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
	MAX SPANS cm						MAX SPANS cm					
80	250	270	320	360	395	420	265	280	320	370	405	455
100	230	250	280	320	365	405	235	255	300	340	380	440
120	205	230	265	300	330	390	225	235	270	315	345	395
160	185	200	230	255	290	330	195	205	235	270	300	345
200	160	175	205	230	255	300	175	185	215	235	265	305
250	135	150	180	205	225	265	145	160	185	215	235	270

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.



INSTRUCTIONS OF USE: For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.





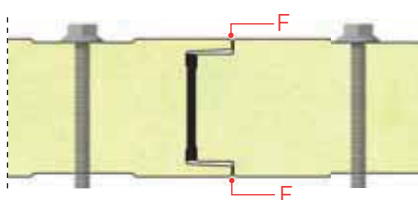
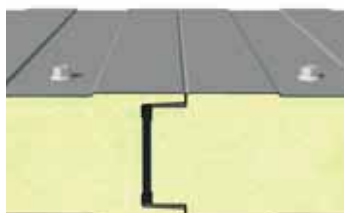
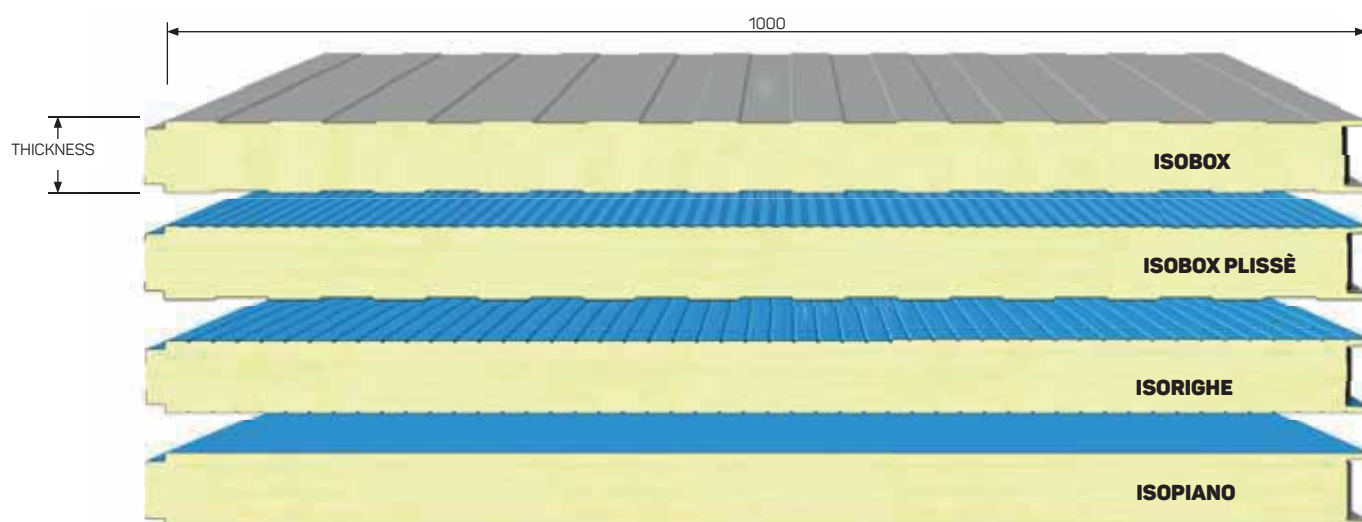
Wall Panels

range **Isobox, Isorighe, Isopiano**

Manufactured in: Italy, Germany, Spain, Romania



It is a self-supporting metal faced panel insulated with polyurethane foam with a tongue-and-groove joint. The fixing elements are exposed. It is available with different types of profile.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm																
UNIFORMLY DISTRIBUTED LOAD kg/m ²	 PANEL NOMINAL THICKNESS mm MAX SPANS cm								 PANEL NOMINAL THICKNESS mm MAX SPANS cm							
	25	30	40	50	60	80	100	120	25	30	40	50	60	80	100	120
	MAX SPANS cm								MAX SPANS cm							
50	220	260	320	380	440	550	640	730	260	300	380	450	520	650	740	800
60	215	240	300	350	410	500	590	680	240	270	340	410	470	590	660	710
80	180	205	260	310	350	440	520	600	200	230	290	350	410	500	550	600
100	155	180	230	275	320	395	470	540	170	200	260	310	360	440	490	510
120	140	165	210	250	290	360	430	490	140	170	230	280	320	390	430	460
140	125	150	190	230	265	330	395	455	130	150	200	250	295	360	390	420
160	115	135	175	210	245	310	370	425	120	130	185	220	265	330	360	385
180	105	125	165	195	230	290	345	400	110	120	160	200	240	305	340	360
200	100	115	155	185	215	270	325	375	100	110	145	180	215	285	315	335

ALUMINIUM SHEETS 0,6 / 0,6 mm - Support 120 mm																
UNIFORMLY DISTRIBUTED LOAD kg/m ²	 PANEL NOMINAL THICKNESS mm MAX SPANS cm								 PANEL NOMINAL THICKNESS mm MAX SPANS cm							
	25	30	40	50	60	80	100	120	25	30	40	50	60	80	100	120
	MAX SPANS cm								MAX SPANS cm							
50	170	200	240	290	330	410	480	550	190	230	290	350	400	490	580	570
60	150	180	230	270	310	380	450	510	175	210	270	320	360	450	530	560
80	135	160	200	240	270	335	390	450	150	185	235	280	320	400	470	540
100	120	145	180	215	245	305	360	400	130	160	210	250	285	360	420	480
120	110	135	165	195	220	280	330	380	120	150	190	225	260	330	390	445
140	105	125	155	185	210	260	310	355	110	135	170	210	240	300	360	410
160	100	115	140	170	195	240	285	335	105	125	160	190	220	280	330	380
180	90	110	135	160	185	230	275	310	95	110	150	180	210	265	310	360
200	85	100	125	150	175	220	260	300	85	100	140	170	195	245	285	335

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm								
		25	30	35	40	50	60	80	100	120
0,4 / 0,4	kg/m ²	7,3	7,5	7,7	7,9	8,3	8,7	9,5	10,3	11,1
0,5 / 0,5	kg/m ²	9,0	9,2	9,4	9,6	10,0	10,4	11,2	12,0	12,8
0,6 / 0,6	kg/m ²	10,6	10,9	11,6	11,3	11,7	12,1	12,9	13,7	14,5

**FIRE PERFORMANCES**

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION**According to EN 14509 Annex 10**

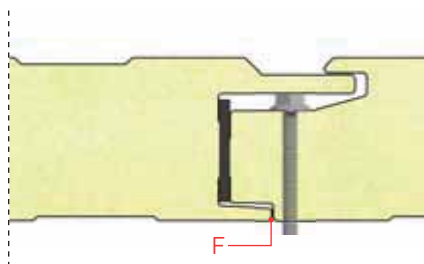
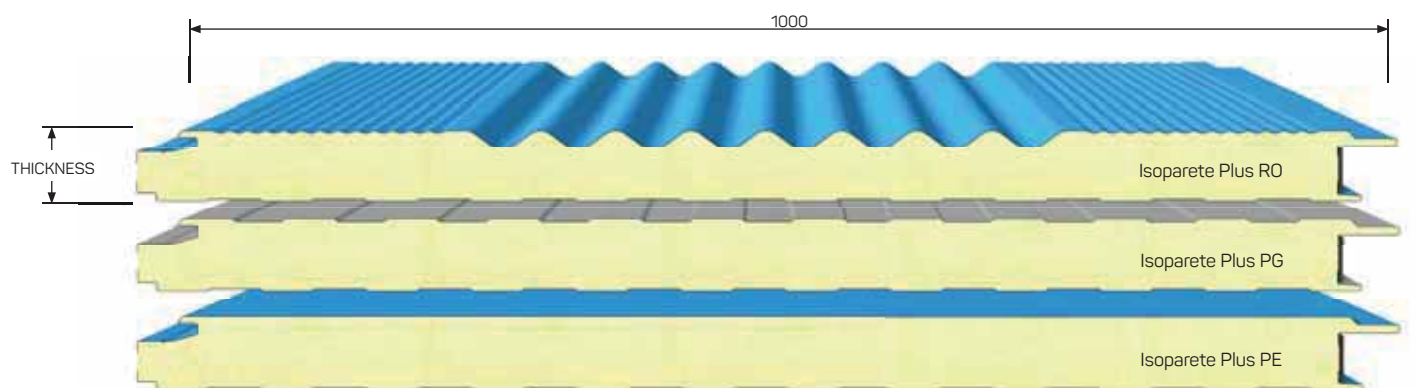
U	PANEL NOMINAL THICKNESS mm								
	25	30	35	40	50	60	80	100	120
W/m ² K	0,83	0,70	0,61	0,54	0,44	0,37	0,28	0,22	0,19
kcal/m ² h °C	0,71	0,60	0,52	0,46	0,38	0,32	0,24	0,19	0,16

Isoparete Plus

Manufactured in: Italy



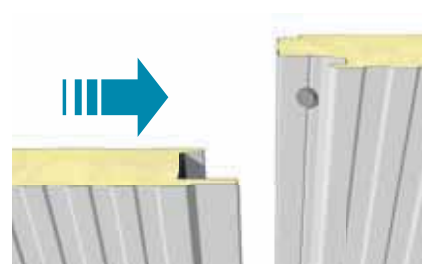
It is a self-supporting metal faced panel insulated with polyurethane foam; the labyrinth configuration and the tongue-and-groove joint with a special place for the screw determine the fully concealed fixing element. The fixing elements are concealed. It is available with different types of profile.



Joint detail



Horizontal installation
(from top to bottom)



Vertical installation



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm										
UNIFORMLY DISTRIBUTED LOAD kg/m ²	 PANEL NOMINAL THICKNESS mm 40 50 60 80 100 MAX SPANS cm					 PANEL NOMINAL THICKNESS mm 40 50 60 80 100 MAX SPANS cm				
	40	50	60	80	100	40	50	60	80	100
50	320	380	440	550	640	380	450	520	650	740
60	300	350	410	500	590	340	410	470	590	660
80	260	310	350	440	520	290	350	410	500	550
100	230	275	320	395	470	260	310	360	440	490
120	210	250	290	360	430	230	280	320	390	430
140	190	230	265	330	395	200	250	295	360	390
160	175	210	245	310	370	185	220	265	330	360
180	165	195	230	290	345	160	200	240	305	340
200	155	185	215	270	325	145	180	215	285	315

ALUMINIUM SHEETS 0,6 / 0,6 mm - Support 120 mm										
UNIFORMLY DISTRIBUTED LOAD kg/m ²	 PANEL NOMINAL THICKNESS mm 40 50 60 80 100 MAX SPANS cm					 PANEL NOMINAL THICKNESS mm 40 50 60 80 100 MAX SPANS cm				
	40	50	60	80	100	40	50	60	80	100
50	240	290	330	410	480	290	350	400	490	580
60	230	270	310	380	450	270	320	360	450	530
80	200	240	270	335	390	235	280	320	400	470
100	180	215	245	305	360	210	250	285	360	420
120	165	195	220	280	330	190	225	260	330	390
140	155	185	210	260	310	170	210	240	300	360
160	140	170	195	240	285	160	190	220	280	330
180	135	160	185	230	275	150	180	210	265	310
200	125	150	175	220	260	140	170	195	245	285

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm				
		40	50	60	80	100
0,4 / 0,4	kg/m ²	8,5	8,9	9,3	10,1	10,9
0,5 / 0,5	kg/m ²	10,3	10,7	11,1	11,9	12,7
0,6 / 0,6	kg/m ²	12,1	12,5	12,9	13,7	14,5

**FIRE PERFORMANCES**

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION**According to EN 14509 Annex 10**

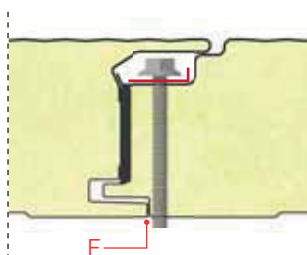
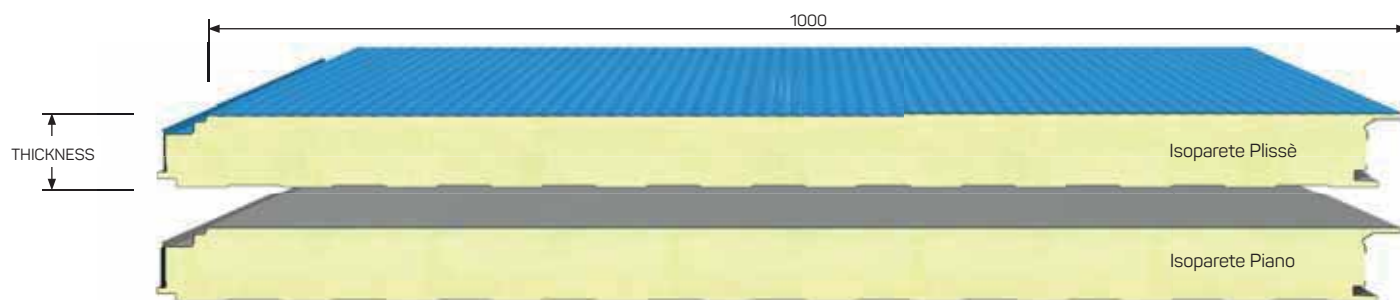
U	PANEL NOMINAL THICKNESS mm				
	40	50	60	80	100
W/m ² K	0,64	0,49	0,41	0,29	0,23
kcal/m ² h °C	0,55	0,42	0,35	0,25	0,20

Isoparete Plissè & Isoparete Piano

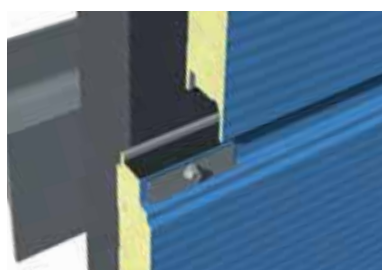
Manufactured in: Italy, Spain, Romania



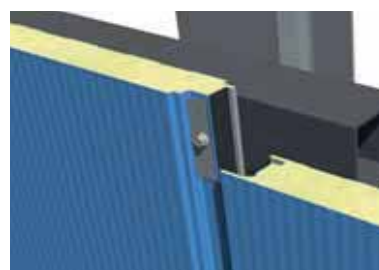
It is a self-supporting metal faced panel insulated with polyurethane foam; the labyrinth configuration and the tongue-and-groove joint with a special place for the screw determine the fully concealed fixing element. The fixing elements are concealed. It is available with different types of profile. It can be combined with the Isoclass panel.



Joint detail



Horizontal installation
(from bottom to the top)



Vertical installation

Isopan recommends, during the assembly phase, the use of a specific steel plate to distribute the tightening loads of the screw. The number and the place of the fixing elements must guarantee the stresses resistance, included depression loads.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm										
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm					PANEL NOMINAL THICKNESS mm				
	40	50	60	80	100	40	50	60	80	100
	MAX SPANS cm					MAX SPANS cm				
50	320	380	440	550	640	380	450	520	650	740
60	300	350	410	500	590	340	410	470	590	660
80	260	310	350	440	520	290	350	410	500	550
100	230	275	320	395	470	260	310	360	440	490
120	210	250	290	360	430	230	280	320	390	430
140	190	230	265	330	395	200	250	295	360	390
160	175	210	245	310	370	185	220	265	330	360
180	165	195	230	290	345	160	200	240	305	340
200	155	185	215	270	325	145	180	215	285	315

ALUMINIUM SHEETS 0,6 / 0,6 mm - Support 120 mm										
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm					PANEL NOMINAL THICKNESS mm				
	40	50	60	80	100	40	50	60	80	100
	MAX SPANS cm					MAX SPANS cm				
50	240	290	330	410	480	290	350	400	490	580
60	230	270	310	380	450	270	320	360	450	530
80	200	240	270	335	390	235	280	320	400	470
100	180	215	245	305	360	210	250	285	360	420
120	165	195	220	280	330	190	225	260	330	390
140	155	185	210	260	310	170	210	240	300	360
160	140	170	195	240	285	160	190	220	280	330
180	135	160	185	230	275	150	180	210	265	310
200	125	150	175	220	260	140	170	195	245	285

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 l . Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm				
		40	50	60	80	100
0,4 / 0,4	kg/m ²	8,1	8,5	8,9	9,7	10,5
0,5 / 0,5	kg/m ²	9,8	10,2	10,6	11,4	12,2
0,6 / 0,6	kg/m ²	11,5	11,9	12,3	13,1	13,9



FIRE PERFORMANCES

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.



ISOCLASS and ISOPARETE UNION

Isoparete Plissè and Isoparete piano can be coupled with Isoclass panel.

Isoclass 72 mm ↔ Isoparete Plissè / Piano 60 mm

Isoclass 92 mm ↔ Isoparete Plissè / Piano 80 mm



DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	$L \leq 3$ m	± 5 mm
	$L > 3$ m	± 10 mm 0
Working length	± 2 mm	
Thickness	$D \leq 100$ mm	± 2 mm
	$D > 100$ mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	$F = 0 + 3$ mm	

L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION

According to EN 14509 Annex 10

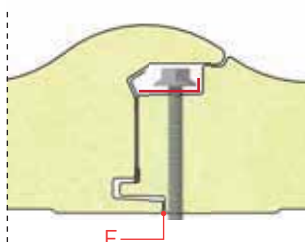
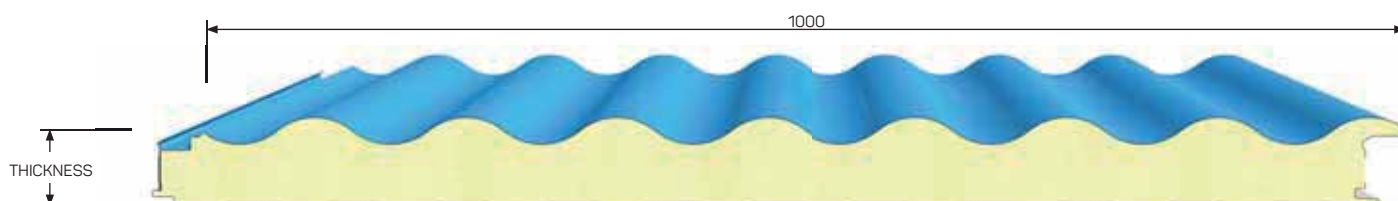
U	PANEL NOMINAL THICKNESS mm					
	40	50	60	80	100	120
W/m ² K	0,64	0,49	0,41	0,29	0,23	0,19
kcal/m ² h °C	0,55	0,42	0,35	0,25	0,20	0,16

Isoclass

Manufactured in: Italy



Isoclass is a self-supporting metal faced panel insulated with polyurethane foam; the labyrinth configuration and the tongue-and-groove joint with a special place for the screw determine the fully concealed fixing element. It can be combined with the Isoparete Plissè panel.



Joint detail



Horizontal installation
(from bottom to the top)



Vertical installation

Isopan recommends, during the assembly phase, the use of a specific steel plate to distribute the tightening loads of the screw. The number and the place of the fixing elements must guarantee the stresses resistance, included depression loads.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm						
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm			PANEL NOMINAL THICKNESS mm		
	72	92	102	72	92	102
	MAX SPANS cm			MAX SPANS cm		
50	400	510	560	470	590	630
60	370	470	520	430	550	580
80	320	410	450	370	480	530
100	290	370	410	330	420	470
120	260	340	370	300	380	420
140	240	310	340	270	350	390
160	220	290	320	250	320	360
180	210	270	300	230	300	330
200	200	250	280	210	280	310

STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm						
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm			PANEL NOMINAL THICKNESS mm		
	72	92	102	72	92	102
	MAX SPANS cm			MAX SPANS cm		
50	420	540	580	500	620	700
60	390	500	540	450	580	640
80	340	430	480	390	500	550
100	300	390	430	340	440	490
120	270	350	390	310	400	440
140	250	320	360	280	360	400
160	235	300	330	255	330	370
180	215	280	310	230	310	340
200	200	260	290	215	290	320

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm		
		72	92	102
0,4 / 0,4	kg/m ²	9,1	9,9	10,3
0,5 / 0,5	kg/m ²	10,9	11,7	12,1
0,6 / 0,6	kg/m ²	12,7	13,5	13,9

**FIRE PERFORMANCES**

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.

**ISOCLASS and ISOPARETE UNION**

Isoparete Plissé and Isoparete piano can be coupled with Isoclass panel.

Isoclass 72 mm ↔ Isoparete Plissé / Piano 60 mm

Isoclass 92 mm ↔ Isoparete Plissé / Piano 80 mm

**DIMENSION TOLERANCE (EN 14509)**

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

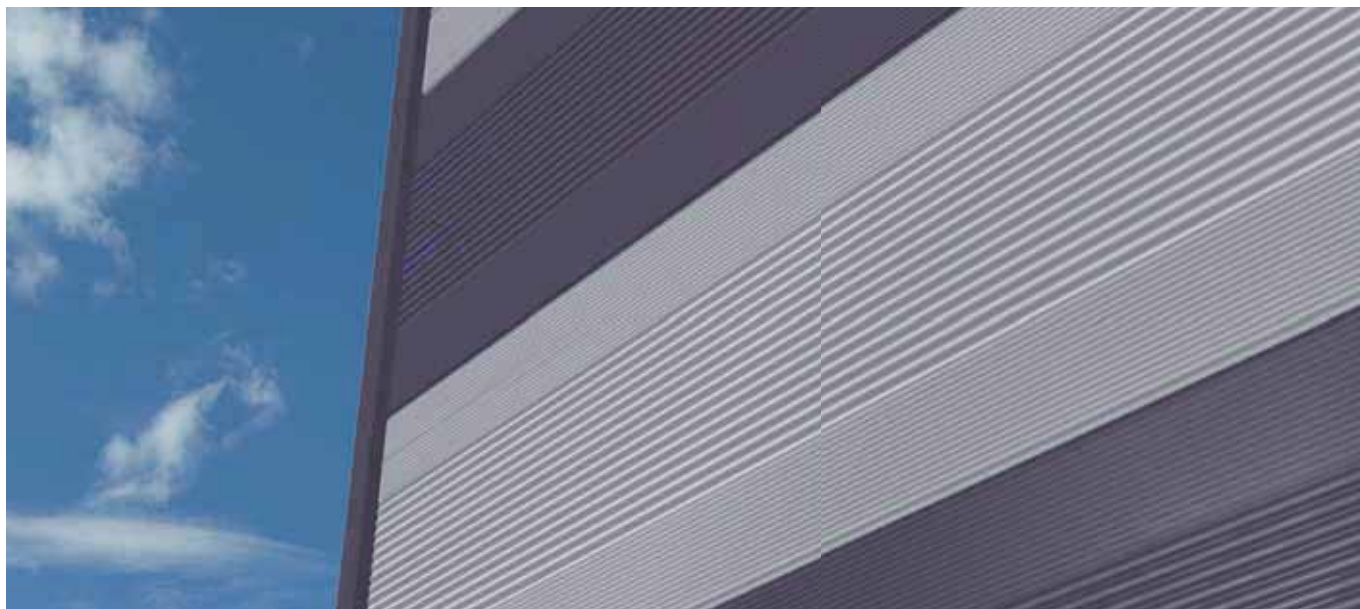
L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION**According to EN 14509 Annex 10**

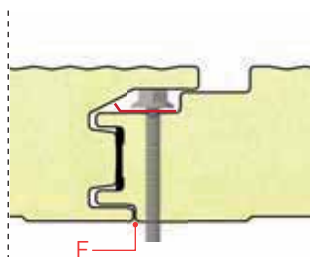
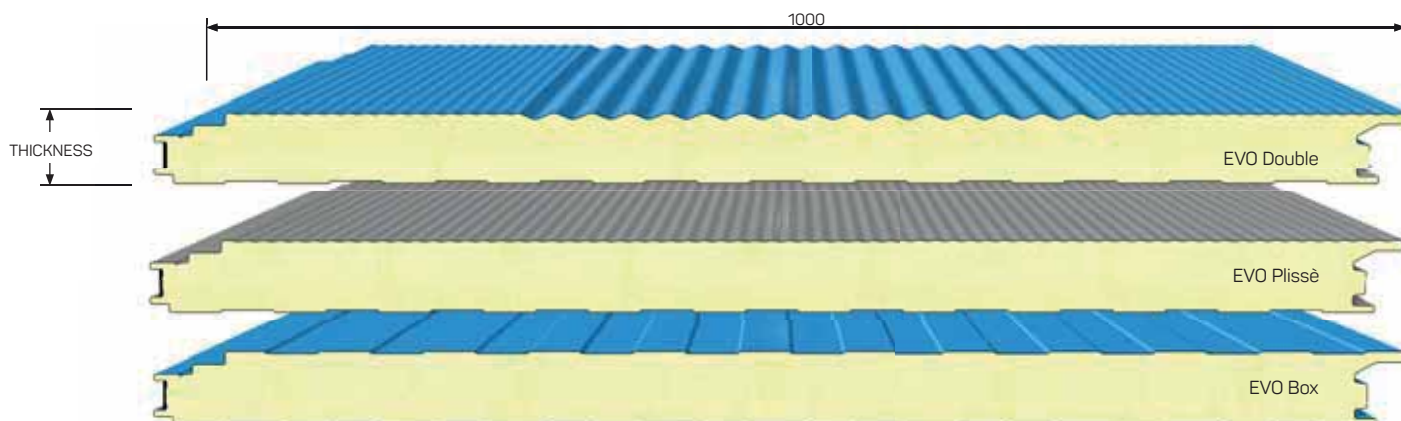
U	PANEL NOMINAL THICKNESS mm		
	72	92	102
W/m ² K	0,34	0,26	0,23
kcal/m ² h °C	0,30	0,23	0,20

Isoparete Evo

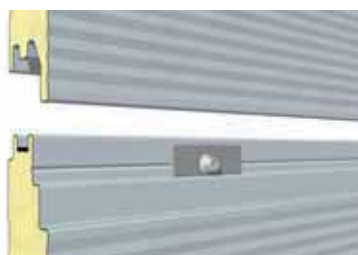
Manufactured in: Germany



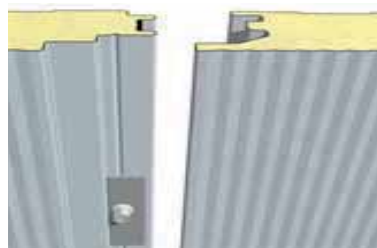
It is a self-supporting metal faced panel insulated with polyurethane foam; the labyrinth configuration and the tongue-and-groove joint with a special place for the screw determine the fully concealed fixing element. The fixing elements are concealed. It is available with different types of profile.



Joint detail



Horizontal installation
(from bottom to the top)



Vertical installation

Isopan recommends, during the assembly phase, the use of a specific steel plate to distribute the tightening loads of the screw. The number and the place of the fixing elements must guarantee the stresses resistance, included depression loads.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm								
CARICO UNIFORMEMENTE DISTRIBUITO	PANEL NOMINAL THICKNESS mm				PANEL NOMINAL THICKNESS mm			
	60	80	100	120	60	80	100	120
	MAX SPANS cm				MAX SPANS cm			
kg/m ²								
50	440	550	640	730	520	650	740	800
60	410	500	590	680	470	590	660	710
80	350	440	520	600	410	500	550	600
100	320	395	470	540	360	440	490	510
120	290	360	430	490	320	390	430	460
140	265	330	395	455	295	360	390	420
160	245	310	370	425	265	330	360	385
180	230	290	345	400	240	305	340	360
200	215	270	325	375	215	285	315	335

ALUMINIUM SHEETS 0,6 / 0,6 mm - Support 120 mm								
CARICO UNIFORMEMENTE DISTRIBUITO	PANEL NOMINAL THICKNESS mm				PANEL NOMINAL THICKNESS mm			
	60	80	100	120	60	80	100	120
	MAX SPANS cm				MAX SPANS cm			
kg/m ²								
50	330	410	480	550	400	490	580	570
60	310	380	450	510	360	450	530	560
80	270	335	390	450	320	400	470	540
100	245	305	360	400	285	360	420	480
120	220	280	330	380	260	330	390	445
140	210	260	310	355	240	300	360	410
160	195	240	285	335	220	280	330	380
180	185	230	275	310	210	265	310	360
200	175	220	260	300	195	245	285	335

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm			
		60	80	100	120
0,4 / 0,4	kg/m ²	9,1	9,9	10,7	11,5
0,5 / 0,5	kg/m ²	10,8	11,6	12,4	13,2
0,6 / 0,6	kg/m ²	12,6	13,4	14,2	15,0

**FIRE PERFORMANCES**

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION**According to EN 14509 Annex 10**

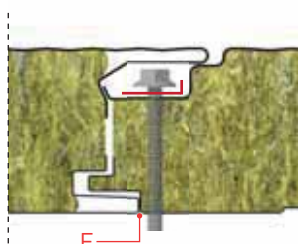
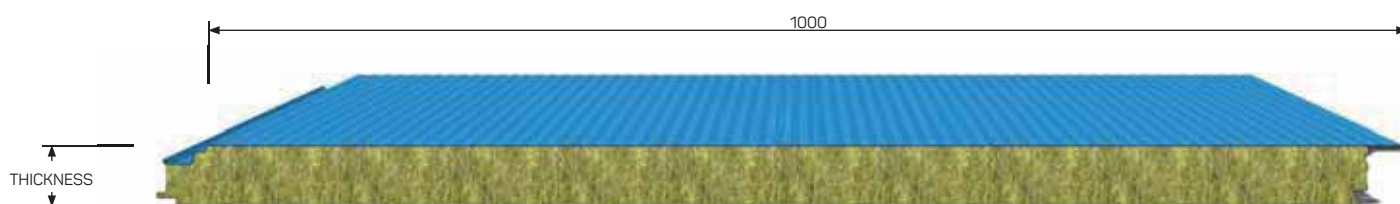
U	PANEL NOMINAL THICKNESS mm			
	60	80	100	120
W/m ² K	0,41	0,29	0,23	0,19
kcal/m ² h °C	0,35	0,25	0,20	0,16

Isofire Wall Plissé

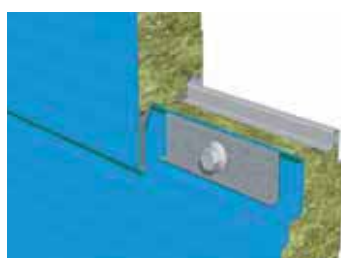
Manufactured in: Italy



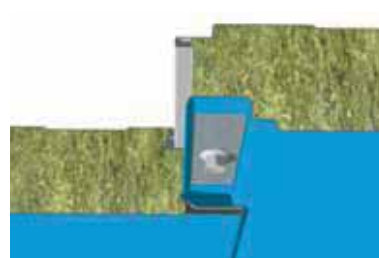
It is a self-supporting metal faced panel insulated with mineral wool; the labyrinth configuration and the tongue-and-groove joint with a special place for the screw determine the fully concealed fixing element. The fixing elements are concealed.



Joint detail



Horizontal installation
(from bottom to the top)



Vertical installation

Isopan recommends, during the assembly phase, the use of a specific steel plate to distribute the tightening loads of the screw. The number and the place of the fixing elements must guarantee the stresses resistance, included depression loads.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm												
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
	MAX SPANS cm						MAX SPANS cm					
50	345	400	475	545	640	665	400	460	525	555	640	695
60	315	365	440	495	545	610	355	420	475	535	570	630
80	270	315	380	430	470	525	305	355	410	450	485	535
100	240	280	345	380	420	470	270	305	365	400	430	470
120	215	250	310	350	380	430	225	275	325	365	390	420
140	195	230	285	325	355	395	210	245	300	335	355	380
160	190	210	270	300	335	375	190	225	280	305	330	355
180	175	190	245	285	315	350	185	205	265	285	305	330
200	155	185	230	275	295	335	165	190	245	275	290	310

STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm												
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
	MAX SPANS cm						MAX SPANS cm					
50	365	420	525	590	650	715	420	485	570	640	685	725
60	335	380	475	545	590	665	375	440	515	570	620	675
80	285	325	410	470	515	580	315	365	440	485	525	570
100	250	285	365	380	450	510	270	315	390	430	460	495
120	220	260	325	380	420	470	240	280	355	390	410	450
140	200	235	325	355	390	440	210	250	325	355	380	410
160	190	215	275	330	365	410	190	230	295	330	355	380
180	180	195	255	305	345	385	180	205	270	305	330	355
200	165	190	235	285	330	370	165	190	250	290	305	330

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm	PANEL NOMINAL THICKNESS mm								
	50	60	80	100	120	150	170	200	
0,5 / 0,5	kg/m ²	13,2	14,2	16,2	18,2	20,2	23,2	25,2	28,2
0,6 / 0,6	kg/m ²	14,9	15,9	17,9	19,9	21,9	24,9	26,9	28,8

**FIRE RESISTANCE**
EW 60 - THICKNESS 100 mm**FIRE REACTION:** A2-S1-D0**DIMENSION TOLERANCE (EN 14509)**

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION**According to EN 14509 Annex 10**

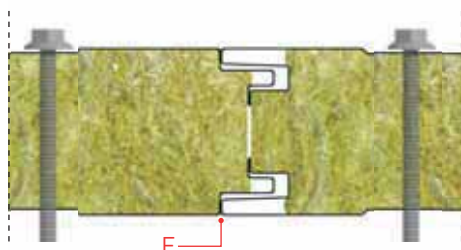
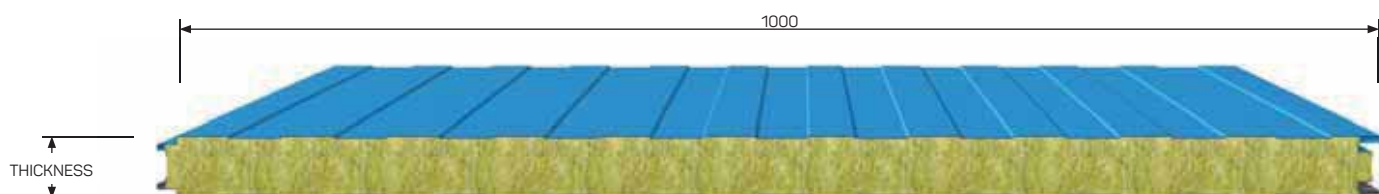
U	PANEL NOMINAL THICKNESS mm							
	50	60	80	100	120	150	170	200
W/m ² K	0,86	0,72	0,52	0,41	0,35	0,28	0,24	0,21
kcal/m ² h °C	0,73	0,62	0,44	0,36	0,30	0,24	0,21	0,18

Isofire Wall

Manufactured in: Italy



It is a self-supporting metal faced panel insulated with mineral wool. The fixing elements are exposed. The fixing elements are exposed.



Joint detail



Vertical installation



Horizontal installation





INSTRUCTIONS OF USE



For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm														
UNIFORMLY DISTRIBUTED LOAD kg/m²	 PANEL NOMINAL THICKNESS mm							 PANEL NOMINAL THICKNESS mm						
	50	60	80	100	120	150	200	50	60	80	100	120	150	200
	MAX SPANS cm							MAX SPANS cm						
50	345	400	475	545	640	665	760	400	460	525	555	640	695	775
60	315	365	440	495	545	610	690	355	420	475	535	570	630	705
80	270	315	380	430	470	525	610	305	355	410	450	485	535	625
100	240	280	345	380	420	470	560	270	305	365	400	430	470	560
120	215	250	310	350	380	430	515	225	275	325	365	390	420	505
140	195	230	285	325	355	395	480	210	245	300	335	355	380	465
160	190	210	270	300	335	375	450	190	225	280	305	330	355	435
180	175	190	245	285	315	350	410	185	205	265	285	305	330	400
200	155	185	230	275	295	335	375	165	190	245	275	290	310	360

STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm														
UNIFORMLY DISTRIBUTED LOAD kg/m²	 PANEL NOMINAL THICKNESS mm							 PANEL NOMINAL THICKNESS mm						
	50	60	80	100	120	150	200	50	60	80	100	120	150	200
	MAX SPANS cm							MAX SPANS cm						
50	365	420	525	590	650	715	780	420	485	570	640	685	725	795
60	335	380	475	545	590	665	720	375	440	515	570	620	675	735
80	285	325	410	470	515	580	635	315	365	440	485	525	570	650
100	250	285	365	380	450	510	595	270	315	390	430	460	495	595
120	220	260	325	380	420	470	540	240	280	355	390	410	450	525
140	200	235	325	355	390	440	505	210	250	325	355	380	410	485
160	190	215	275	330	365	410	485	190	230	295	330	355	380	465
180	180	195	255	305	345	385	450	180	205	270	305	330	355	440
200	165	190	235	285	330	370	420	165	190	250	290	305	330	400

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.**PANELS WEIGHT**

THICKNESS SHEETS mm	PANEL NOMINAL THICKNESS mm							
	50	60	80	100	120	150	170	200
0,5 / 0,5 kg/m ²	13,2	14,2	16,2	18,2	20,2	23,2	25,2	28,2
0,6 / 0,6 kg/m ²	14,9	15,9	17,9	19,9	21,9	24,9	26,9	28,8

**FIRE RESISTANCE**

EI 15 - THICKNESS 50 mm (EN 13501-2)
 EI 60 - THICKNESS 80 mm (EN 13501-2)
 EI 90 - THICKNESS 120 mm (EN 13501-2)
 EI 180 - THICKNESS 150 mm (EN 13501-2)

FIRE REACTION: A2-S1-D0**DIMENSION TOLERANCE (EN 14509)**

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

THERMAL INSULATION**According to EN 14509 Annex 10**

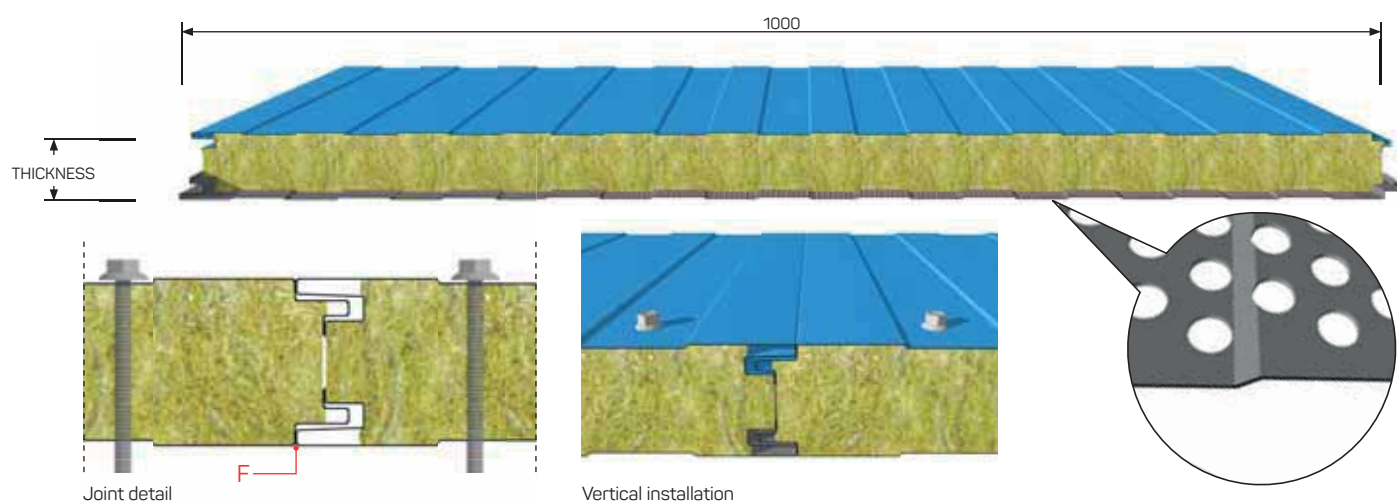
U	PANEL NOMINAL THICKNESS mm							
	50	60	80	100	120	150	170	200
W/m ² K	0,75	0,63	0,49	0,39	0,33	0,27	0,24	0,20
kcal/m ² h °C	0,65	0,54	0,42	0,34	0,28	0,23	0,21	0,17

Isofire Wall - Fono

Manufactured in: Italy



It is a self-supporting metal faced panel insulated with mineral wool. The fixing elements are exposed. The internal sheet is characterised by a micro-drilling that enhances acoustic performances; meaning the sound absorption and insulation.



INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



FIRE PERFORMANCES

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.

**OVERLOAD SPANS**

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm												
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
	MAX SPANS cm						MAX SPANS cm					
50	290	340	400	460	540	560	340	385	440	465	540	585
60	265	305	370	420	460	515	300	355	400	450	480	530
80	225	265	320	360	395	440	260	300	345	380	410	450
100	200	235	290	320	355	395	225	260	305	340	360	395
120	180	210	260	295	320	360	190	230	275	305	330	355
140	165	195	240	275	300	335	180	205	255	280	300	320
160	160	180	225	255	280	315	160	190	235	260	280	300
180	145	160	205	240	265	295	155	175	220	240	260	280
200	130	155	195	230	250	280	140	160	205	230	245	260

STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm												
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
	MAX SPANS cm						MAX SPANS cm					
50	305	355	440	500	545	600	420	525	590	650	715	610
60	280	320	400	460	500	560	380	475	545	590	665	570
80	240	275	345	395	435	490	325	410	470	515	580	480
100	210	240	305	320	380	430	285	365	380	450	510	420
120	185	220	275	320	355	395	260	325	380	420	470	380
140	170	200	275	300	330	370	235	325	355	390	440	345
160	160	180	230	280	305	345	215	275	330	365	410	320
180	150	165	215	260	290	325	195	255	305	345	385	300
200	140	160	200	240	280	310	190	235	285	330	370	280

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm					
		50	60	80	100	120	150
0,5 / 0,5	kg/m ²	12,8	13,9	15,5	17,3	19,5	22,7
0,6 / 0,6	kg/m ²	14,5	15,5	17,2	19	21,4	24,4



ACOUSTIC PERFORMANCES: On client's request, Isopan can provide the following certificates for the acoustic behaviour:

ACOUSTIC INSULATION

Rw = 34 dB (Wall - Fono, spess. 50)
Rw = 35 dB (Wall - Fono, spess. 80)
Rw = 35 dB (Wall - Fono, spess. 100)

ACOUSTIC ABSORPTION

Coefficient of sound absorption
 $\alpha_w = 1$

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

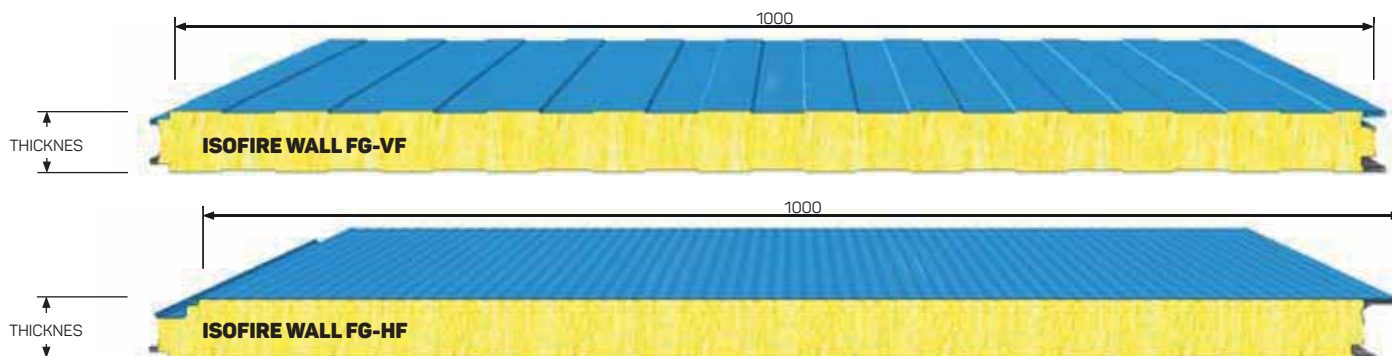
THERMAL INSULATION**According to EN 14509 Annex 10**

U	PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150
W/m ² K	0,75	0,63	0,49	0,39	0,33	0,27
kcal/m ² h °C	0,65	0,54	0,42	0,34	0,28	0,23

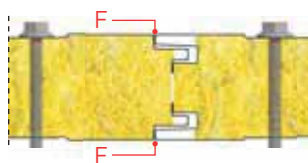
Isofire Wall FG-VF

Isofire Wall FG-HF

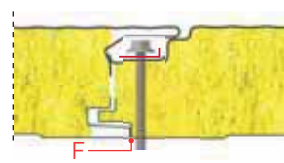
Manufactured in: Italy



Sandwich panels with double metal support and insulated with **Glass wool**. The fixing elements are exposed (Isofire Wall FG-VF) or hidden (Isofire Wall FG-HF).



Wall FG-VF: Dettaglio del giunto



Wall FG-HF: Dettaglio del giunto

THERMAL INSULATION According to EN 14509 Annex 10

ISOFIRE WALL FG-VF

U	PANEL NOMINAL THICKNESS mm							
	50	60	80	100	120	150	170	200
W/m ² K	0,79	0,65	0,48	0,38	0,32	0,26	0,23	0,19
kcal/m ² h °C	0,68	0,56	0,41	0,33	0,28	0,22	0,20	0,16

ISOFIRE WALL FG-HF

U	PANEL NOMINAL THICKNESS mm							
	50	60	80	100	120	150	170	200
W/m ² K	0,97	0,75	0,51	0,40	0,33	0,26	0,23	0,20
kcal/m ² h °C	0,83	0,65	0,44	0,34	0,28	0,22	0,20	0,17

OVERLOAD SPANS

STEEL SHEETS THICKNES 0,6 / 0,6 mm - Support 120 mm						
UNIFORMLY DISTRIBUTED LOAD	PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150
kg/m ²	MAX SPANS cm					
60	335	395	460	510	555	605
80	280	325	395	435	470	510
100	240	280	350	385	410	445
140	185	225	290	315	340	365
180	160	180	240	270	295	315
200	145	170	225	260	270	295

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.

PANELS WEIGHT

THICKNES SHEETS mm	PANEL NOMINAL THICKNESS mm							
	50	60	80	100	120	150	170	200
0,5 / 0,5 kg/m ²	10,9	11,4	12,5	13,6	14,7	16,4	17,5	19,2
0,6 / 0,6 kg/m ²	12,6	13,1	14,2	15,3	16,4	18,1	19,2	20,9

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

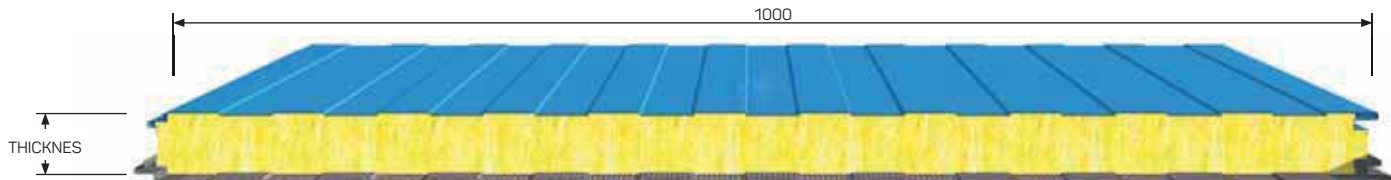
L = working length, D = panels thickness, F = sheets coupling



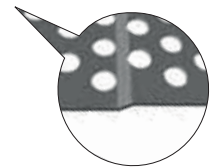
INSTRUCTIONS OF USE: For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.

Isofire Wall FG-VF Fono

Manufactured in: Italy



Sandwich panels with double metal support and insulated with **Glass wool**. The fixing elements are exposed. The internal sheet is characterised by a micro-drilling that enhances acoustic performances; meaning the sound absorption and insulation.



PANELS WEIGHT

THICKNES SHEETS mm		PANEL NOMINAL THICKNESS mm					
		50	60	80	100	120	150
0,5 / 0,5	kg/m ²	10,4	10,9	12	13,1	14,2	15,9
0,6 / 0,6	kg/m ²	12,1	12,6	13,7	14,8	15,9	17,6

THERMAL INSULATION According to EN 14509 Annex 10

U		PANEL NOMINAL THICKNESS mm					
		50	60	80	100	120	150
W/m ² K		0,79	0,65	0,48	0,38	0,32	0,26
kcal/m ² h °C		0,68	0,56	0,41	0,33	0,28	0,22

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm 0
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling



ACOUSTIC INSULATION: On client's request, Isopan can provide the following certificates for the acoustic behaviour:

ACOUSTIC INSULATION
 Rw = 34 dB (FG-VF Fono 50mm)
 Rw = 35 dB (FG-VF Fono 80mm)
 Rw = 35 dB (FG-VF Fono 100mm)

ACOUSTIC ABSORPTION

Coefficient of sound absorption $\alpha_w = 1$

OVERLOAD SPANS

STEEL SHEETS THICKNES 0,6 / 0,6 mm - Support 120 mm												
UNIFORMLY DISTRIBUTED LOAD	PANEL NOMINAL THICKNESS mm						PANEL NOMINAL THICKNESS mm					
	50	60	80	100	120	150	50	60	80	100	120	150
kg/m ²	MAX SPANS cm						MAX SPANS cm					
60	250	285	360	410	450	500	340	425	490	530	595	510
80	215	245	310	355	390	440	290	365	420	460	520	430
100	185	215	270	285	340	385	255	325	340	405	455	375
140	150	180	245	270	295	330	210	290	315	350	395	310
180	135	145	190	230	260	290	175	225	270	310	345	270
200	125	140	180	215	250	275	170	210	255	295	330	250

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.



INSTRUCTIONS OF USE: For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.

Tenuta Castellani - Tregnago



Maneggio - Lodi



Cella Frigo - Romania



Centro logistico - Verona



Special Products



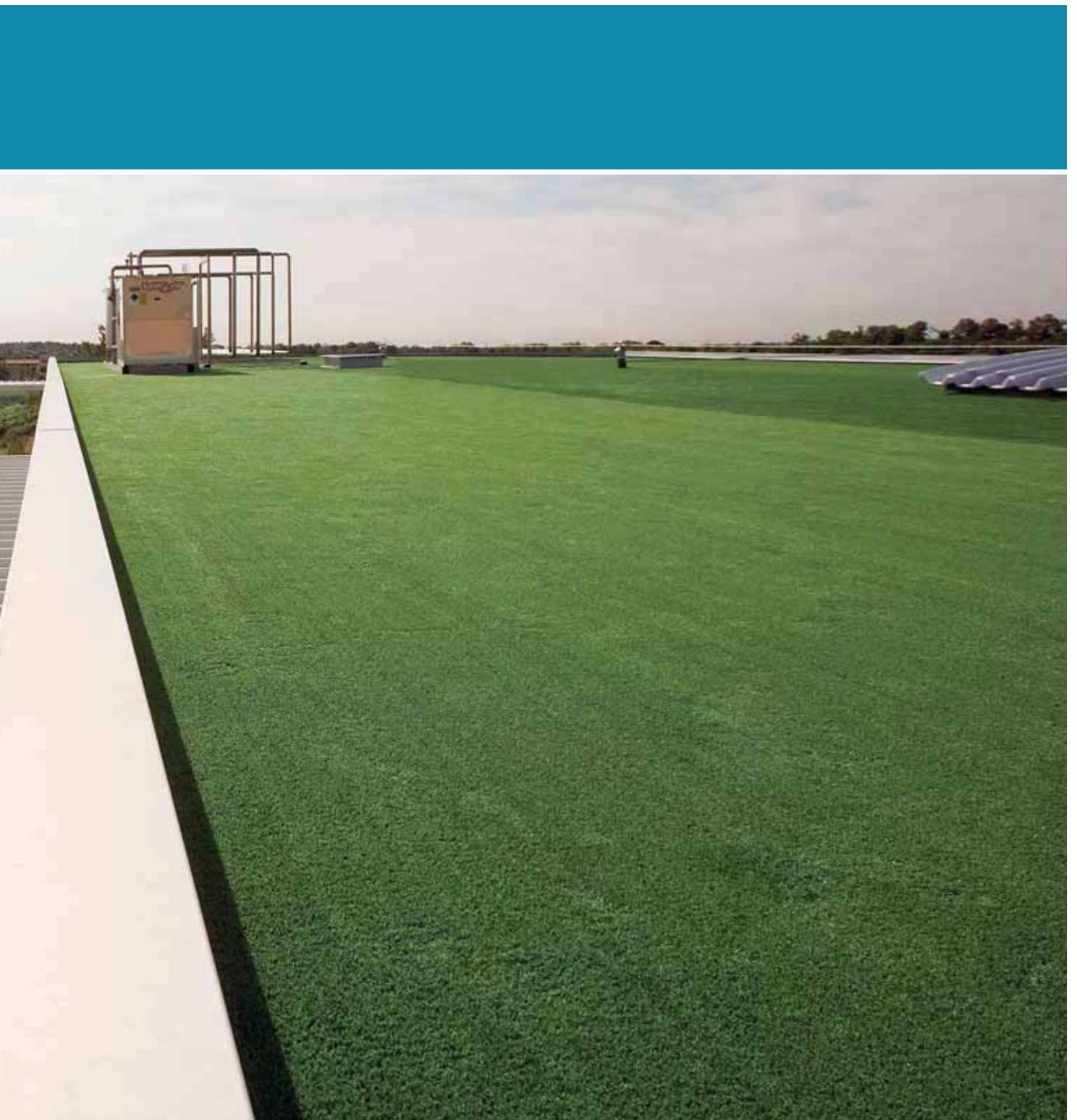
ISOPAN FLAT ROOF



Cantina vinicola



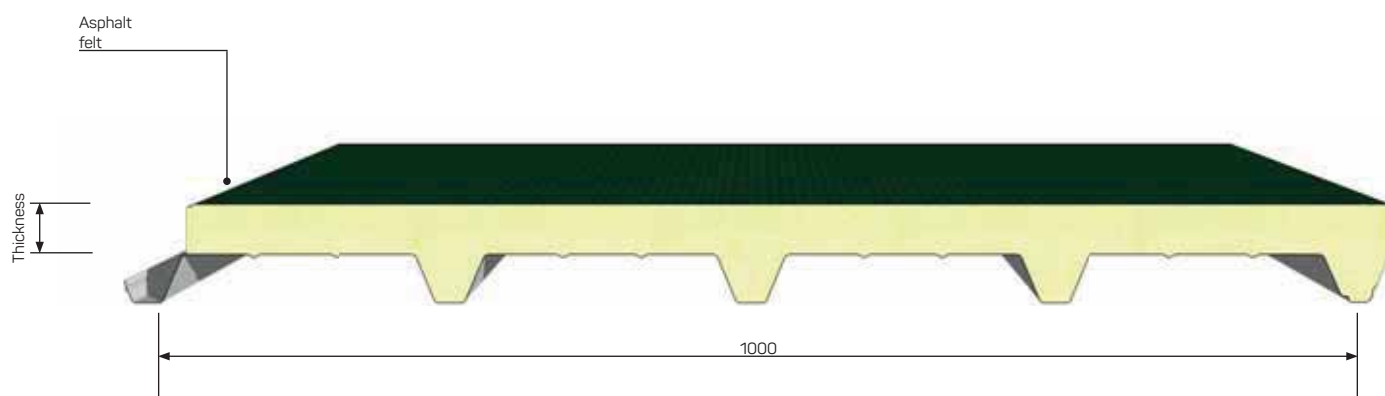
Dettaglio dell'intradosso della copertura



The product range for flat roofs includes the new panels studied by Isopan for the realisation of flat covers. The choice of both the type of metal facing and of the membrane used for the extrados facing gives the product range a high flexibility, thanks to simple skin panels coated with a bituminous membrane or with a PVC membrane and double skin panels. They can be applied for new constructions or to substitute existing roofs. The buildings constructed with these panels are characterised by the speed of installation, the thermal insulation power, the waterproofing capabilities and the flexibility of use.

Isodeck Bit

Panel designed for the construction of flat or slightly pitched roofs, characterised by an excellent waterproofing capacity and, at the same time, high values of thermal insulation. It is a simple skin panel with the second surface made of asphalt felt. It is scheduled for the subsequent application of a second asphalt felt.



APPLICATION

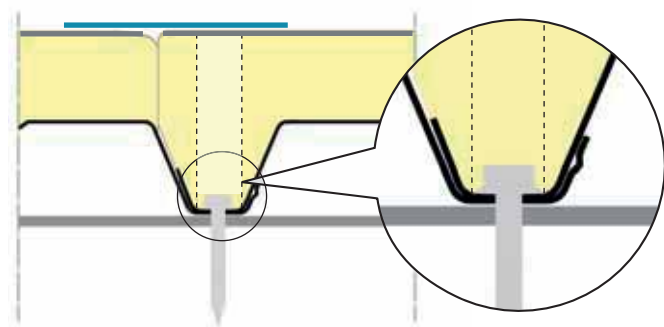
Isodeck Bit is a panel that is particularly appropriate for roof floors, flat or slightly pitched roofs, green roofs and roofs for photovoltaic systems.

CHARACTERISTICS

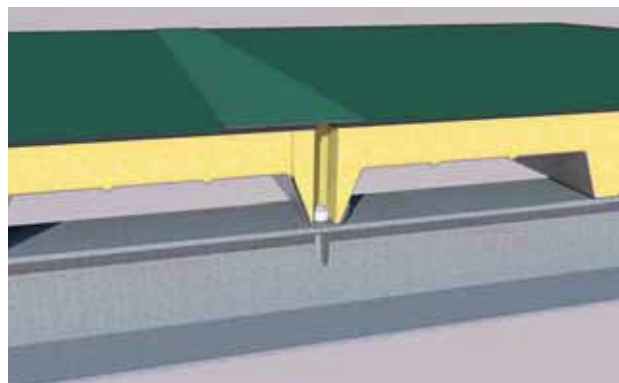
- Internal face: prepainted galvanised steel (EN 10346)
- Insulating core: expanded polyurethane foam
- External face: asphalt felt

ADVANTAGES

- Simple and economic solution
- Lightness since it is a simple skin panel
- Excellent resistance to UV rays guaranteed by the asphalt felt





Dettagli del sistema di fissaggio







→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS										
UNIFORMLY DISTRIBUTED LOAD										
	THICKNESS SHEETS mm					THICKNESS SHEETS mm				
	0,5	0,6	0,7	0,8	1,0	0,5	0,6	0,7	0,8	1,0
kg/m²	MAX SPANS cm					MAX SPANS cm				
60	245	260	275	290	315	275	295	310	325	350
80	220*	235	250	265	285	250*	270	285	295	320
100	200*	220*	235	245	265	220*	245*	260	275	295
120	180*	200*	215*	230	250	200*	225*	240*	260	280
140	165*	185*	200*	215*	235	185*	205*	225*	240*	265
160	155*	170*	185*	200*	225	175*	195*	210*	225*	255
180	145*	160*	175*	190*	215*	165*	180*	200*	210*	240*
200	140*	155*	165*	180*	200*	155*	170*	185*	200*	225*

ALUMINIUM SHEETS										
UNIFORMLY DISTRIBUTED LOAD										
	THICKNESS SHEETS mm				THICKNESS SHEETS mm					
	0,6	0,7	0,8	1,0	0,6	0,7	0,8	1,0		
kg/m²	MAX SPANS cm				MAX SPANS cm					
60	160*	170	180	190	180*	190	200	220		
100*	130*	155*	165	180	160*	175*	190	205		
120	130*	140*	155	170	145*	160*	185	190		
140	120*	130*	140*	160	135*	150*	160*	180		
160	110*	120*	130*	150	125*	140*	150*	170		

* Values with stress limitations. The calculation considers only the snow load, so it is intended to be indicative.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm					
		30	40	50	60	80	100
0,6	kg/m ²	10,4	10,8	11,2	11,6	12,4	13,2
0,7	kg/m ²	11,4	11,8	12,2	12,6	13,4	14,2
0,8	kg/m ²	12,2	12,8	13,2	13,6	14,4	15,2

DIMENSION TOLERANCE

DEVIATION mm	
Length	± 10
Working length	± 5
Thickness	± 2
Orthogonality and rectangularity	± 3

THERMAL INSULATION**According to EN 14509 Annex 10**

U	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
W/m ² K	0,76	0,57	0,45	0,38	0,28	0,22
kcal/m ² h°C	0,61	0,47	0,38	0,32	0,24	0,20

According to the calculation method EN ISO 6946

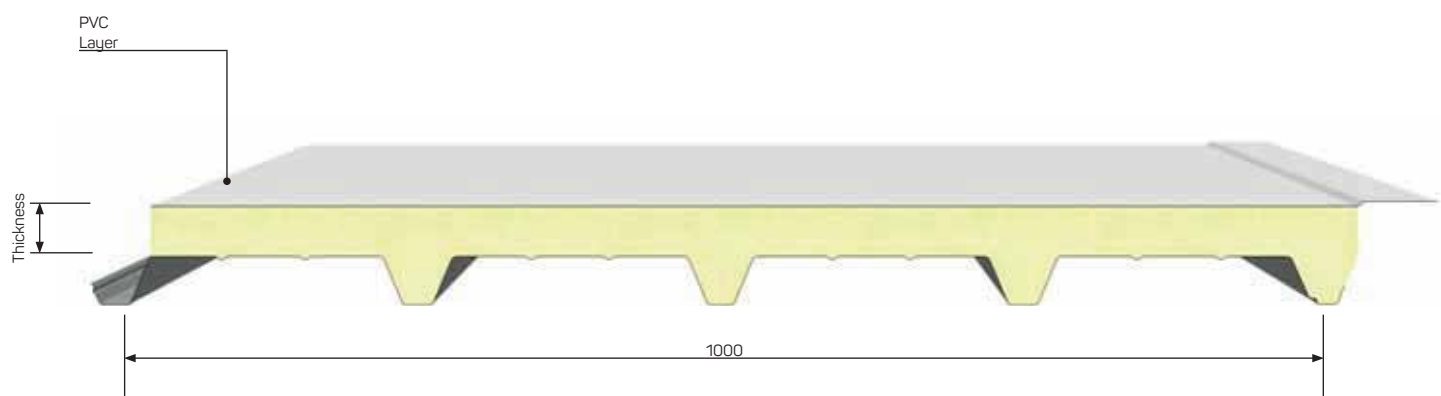
K	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
W/m ² K	0,55	0,44	0,36	0,31	0,25	0,20
kcal/m ² h°C	0,48	0,38	0,32	0,27	0,22	0,17

**INSTRUCTIONS OF USE**

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.

Isodeck Synth

Panel designed for the construction of flat or slightly pitched roofs, characterised by an excellent waterproofing capacity and, at the same time, high values of thermal insulation. It is a simple skin panel with the second surface made of a synthetic PVC layer.



APPLICATION

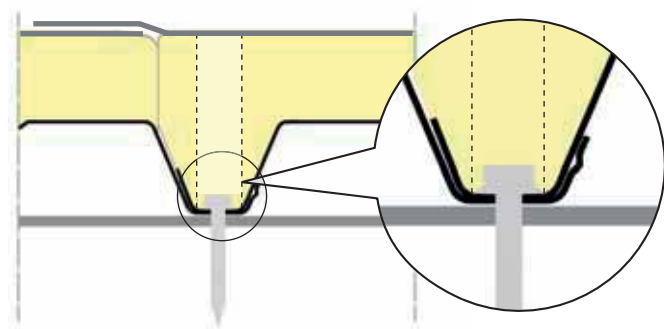
Isodeck Synth is a panel that can be used on any type of loadbearing structure and that offers a great versatility, conferred by the lightness of the panel and the speed of installation. Particularly adapted for flat or slightly pitched roofs and roof floors.

CHARACTERISTICS

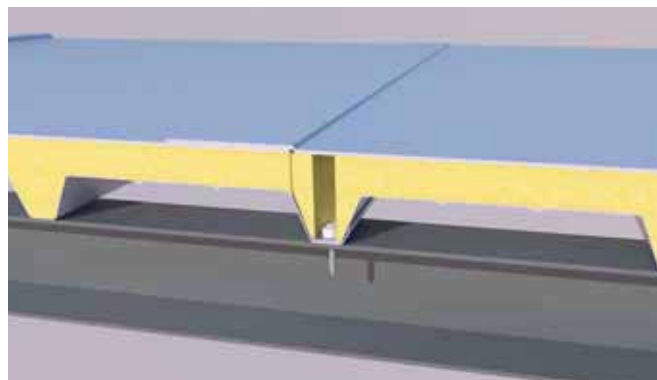
- Internal face: prepainted galvanised steel (EN 10346)
- Insulating core: expanded polyurethane foam
- External face: PVC membrane

ADVANTAGES

- A simple, versatile, quick and economic solution
- Energetic performances are guaranteed by the PVC layer and enhanced in the Energy Plus® variation
- Maximum compatibility with the Flag-Soprema Group systems







Dettagli del sistema di fissaggio





→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS										
UNIFORMLY DISTRIBUTED LOAD										
	THICKNESS SHEETS mm					THICKNESS SHEETS mm				
	0,5	0,6	0,7	0,8	1,0	0,5	0,6	0,7	0,8	1,0
kg/m²	MAX SPANS cm					MAX SPANS cm				
60	245	260	275	290	315	275	295	310	325	350
80	220*	235	250	265	285	250*	270	285	295	320
100	200*	220*	235	245	265	220*	245*	260	275	295
120	180*	200*	215*	230	250	200*	225*	240*	260	280
140	165*	185*	200*	215*	235	185*	205*	225*	240*	265
160	155*	170*	185*	200*	225	175*	195*	210*	225*	255
180	145*	160*	175*	190*	215*	165*	180*	200*	210*	240*
200	140*	155*	165*	180*	200*	155*	170*	185*	200*	225*
ALUMINIUM SHEETS										
UNIFORMLY DISTRIBUTED LOAD										
	THICKNESS SHEETS mm				THICKNESS SHEETS mm					
	0,6	0,7	0,8	1,0	0,6	0,7	0,8	1,0		
kg/m²	MAX SPANS cm				MAX SPANS cm					
60	160*	170	180	190	180*	190	200	220		
100*	130*	155*	165	180	160*	175*	190	205		
120	130*	140*	155	170	145*	160*	185	190		
140	120*	130*	140*	160	135*	150*	160*	180		
160	110*	120*	130*	150	125*	140*	150*	170		

* Values with stress limitations. The calculation considers only the snow load , so it is intended to be indicative.

PANELS WEIGHT

THICKNESS SHEETS mm	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
0,6 kg/m ²	9,0	9,4	9,8	10,2	11,0	11,8
0,7 kg/m ²	10,0	10,4	10,8	11,2	12,0	12,8
0,8 kg/m ²	10,8	11,4	11,8	12,2	13,0	13,8

DIMENSION TOLERANCE

DEVIATION mm	
Length	± 10
Working length	± 5
Thickness	± 2
Orthogonality and rectangularity	± 3

THERMAL INSULATION**According to EN 14509 Annex 10**

U	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
W/m ² K	0,76	0,57	0,45	0,38	0,28	0,22
kcal/m ² h°C	0,61	0,47	0,38	0,32	0,24	0,20

According to the calculation method EN ISO 6946

K	PANEL NOMINAL THICKNESS mm					
	30	40	50	60	80	100
W/m ² K	0,55	0,44	0,36	0,31	0,25	0,20
kcal/m ² h°C	0,48	0,38	0,32	0,27	0,22	0,17

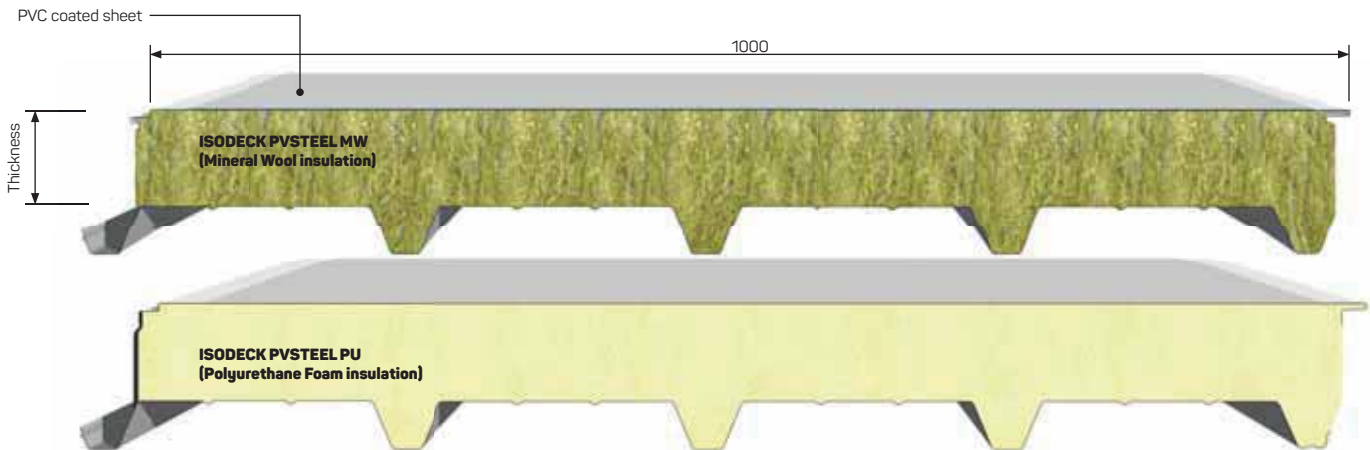
**INSTRUCTIONS OF USE**

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.

Isodeck PVSteel



Double skin panel with metal facing coated with a very resistant thin PVC seal. Isodeck PVSteel is a panel designed for flat roofs to walls or classic roofs.



APPLICATION

Isodeck PVSteel is a roof panel designed for flat or slightly pitched roofs, thanks to its metal PVC coated facing. Thanks to both metal facings, the panel is characterised by a high mechanical resistance.

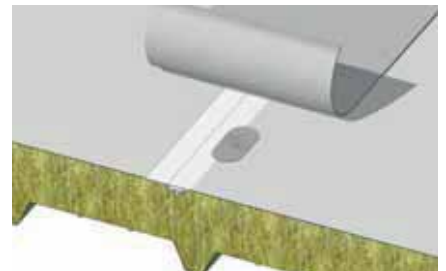
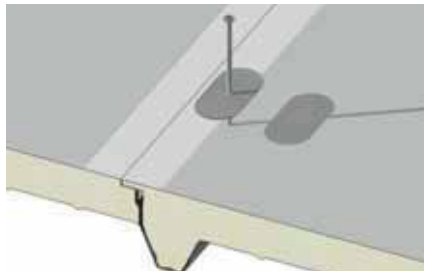
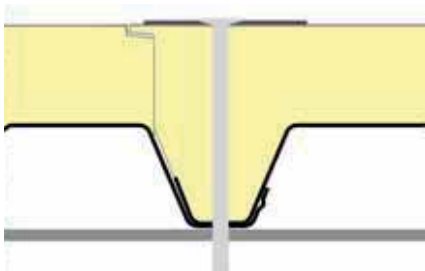
CHARACTERISTICS

- Internal facing: prepainted galvanised steel (EN 10346)
- Insulating core: expanded polyurethane foam or mineral wool
- External face: PVC coated sheet

The insulating core can be made of polyurethane foam or mineral wool. Thanks to its double skin, the panel is more resistant to static and dynamic loads on small or large spans compared to a simple skin product. The panel is installed upside down (the ribbed face is the internal face of the building) in order to realise a flat roof in PVC coated sheet. If it is traditionally installed (extrados profiled face) instead, it is possible to create roofs with the coated face exposed.

ADVANTAGES

- High resistance to static and dynamic loads
- Quick installation
- Excellent resistance to UV rays
- High waterproofing capacity



INSTRUCTIONS OF USE

For informations about panels utilization, technical instructions and and related limits, please consult the Technical Manual, General Sales Terms and Annexes.



→ see pag. 16

OVERLOAD SPANS

Steel 0,6/0,6 mm									ISODECK PVSTEEL MW - Support 120 mm					
UNIFORMLY DISTRIBUTED LOAD	PANEL NOMINAL THICKNESS mm								PANEL NOMINAL THICKNESS mm					
	MAX SPANS cm								MAX SPANS cm					
	30	40	50	60	80	100	120	150	50	60	80	100	120	150
kg/m ²														
80	305	335	385	405	485	495	520	580	295	320	365	380	420	470
100	280	310	360	395	440	450	485	525	265	290	330	350	390	450
120	250	290	325	360	410	425	450	485	250	265	305	320	355	405
140	215	270	305	340	390	400	420	455	230	250	280	290	325	380
160	185	245	300	310	360	370	405	435	215	230	265	280	305	355
180	165	210	280	300	350	355	380	410	210	215	250	255	285	335
200	150	185	235	295	320	340	365	400	190	210	240	240	270	310
220	140	160	215	270	305	320	345	375	175	200	225	235	265	295
250	115	140	180	225	295	305	325	355	160	175	210	220	240	280

Steel 0,6/0,8 mm									ISODECK PVSTEEL MW - Support 120 mm					
UNIFORMLY DISTRIBUTED LOAD	PANEL NOMINAL THICKNESS mm								PANEL NOMINAL THICKNESS mm					
	MAX SPANS cm								MAX SPANS cm					
	30	40	50	60	80	100	120	150	50	60	80	100	120	150
kg/m ²														
80	345	385	465	490	580	660	705	755	340	375	455	460	530	570
100	315	365	440	480	530	600	635	645	305	345	420	445	495	545
120	285	340	395	440	505	580	615	565	290	315	380	405	460	515
140	235	315	360	425	490	560	580	550	250	300	335	380	435	480
160	190	275	355	375	440	520	570	545	235	265	340	345	395	430
180	150	225	340	360	430	510	540	510	220	230	310	325	365	420
200	140	190	270	350	380	500	535	490	205	215	280	315	335	395
220	110	160	240	315	375	465	520	470	195	205	250	295	320	390
250	105	140	190	260	365	450	500	470	175	185	225	260	290	365

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ. Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm			PANEL NOMINAL THICKNESS mm							
			30	40	50	60	80	100	120	150
0,6 / 0,5	kg/m ²	PU	11,7	12,1	12,5	12,9	13,7	14,5	15,3	16,5
0,6 / 0,6	kg/m ²		12,7	13,1	13,5	13,9	14,7	15,5	16,3	17,5
0,6 / 0,8	kg/m ²		14,7	15,1	15,5	15,9	16,7	17,5	18,3	19,5

			PANEL NOMINAL THICKNESS mm					
			50	60	80	100	120	150
MW			15,9	16,9	18,9	20,9	22,9	25,9
			16,8	17,8	19,8	21,8	23,8	26,8
			18,8	19,8	21,8	23,8	25,8	28,8

THERMAL INSULATION

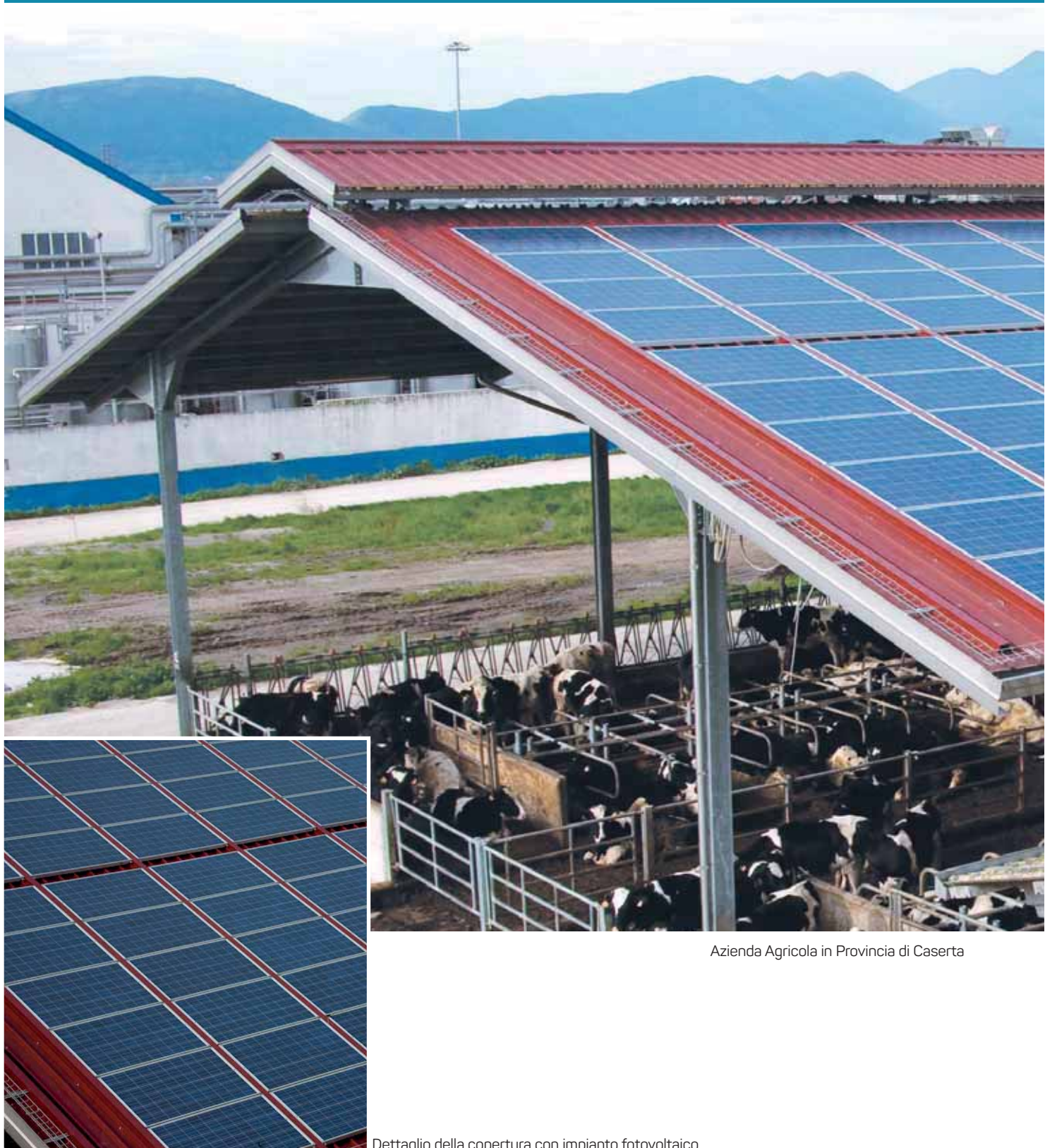
U			PANEL NOMINAL THICKNESS mm						
			30	40	50	60	80	100	120
W/m ² K		PU	0,71	0,54	0,44	0,37	0,28	0,22	0,19
kcal/m ² h °C			0,61	0,47	0,38	0,32	0,24	0,19	0,16

			PANEL NOMINAL THICKNESS mm					
			50	60	80	100	120	150
MW			0,78	0,66	0,50	0,41	0,34	0,28
			0,67	0,57	0,43	0,35	0,29	0,24

DIMENSION TOLERANCE

DEVIATION mm			DEVIATION mm	
Length	L ≤ 3 m	± 5 mm	Working length	± 2 mm
			Deviation from perpendicularity	6 mm
Thickness	D ≤ 100 mm	± 2 mm	Misalignment of the internal metal faces	± 3 mm
			Bottom sheet coupling	F = 0 + 3 mm

Isofarm



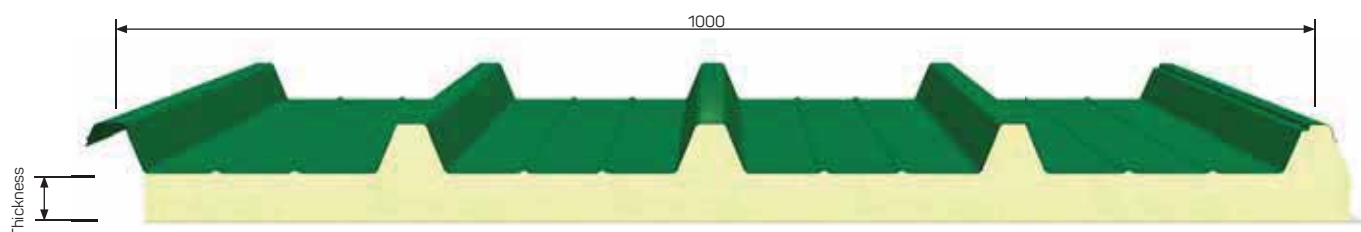
Azienda Agricola in Provincia di Caserta

Dettaglio della copertura con impianto fotovoltaico



Isofarm is the new range of roofs with insulating panels adapted for zootechnical constructions. Economical advantage, resistance to aggressive agents, high aesthetic quality, high load bearing characteristics are only a few of the qualities that promote the multiple solutions available for the professionals who design zootechnical structures and look for products that meet the diverse requirements imposed by the sector. Isofarm is also a valid alternative solution, quick, safe and environmentally friendly to solve the problem of asbestos roofs substitution.

Isovetro



APPLICATION

Isovetro is a self-supporting simple skin metal faced roof panel, with a polyurethane insulating core; its internal face is made of a particular glass-reinforced sheet for exposed use; it is cleanable and is indicated to solve the typical problems of the roofs used in the agricultural and zootechnical sector. The fixing system is a penetrating type with the possibility to use exposed caps.

CHARACTERISTICS

- Internal support: flat glass-reinforced sheet
- Insulating core: expanded polyurethane foam
- External face: prepainted galvanised steel (EN 10346)

ADVANTAGES

- Ideal solution for performance requirements and cost saving project
- Hygienic
- Mildew resistance
- Resistant to aggressive agents





INSTRUCTIONS OF USE



For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS										
UNIFORMLY DISTRIBUTED LOAD										
	THICKNESS SHEETS mm					THICKNESS SHEETS mm				
	0,5	0,6	0,7	0,8	1,0	0,5	0,6	0,7	0,8	1,0
kg/m²	MAX SPANS cm					MAX SPANS cm				
80	220*	235	250	265	285	250*	270	285	295	320
100	200*	220*	235	245	265	200*	245*	260	275	295
120	180*	200*	215*	230	250	200*	225*	240*	260	280
140	165*	185*	200*	215*	235	185*	205*	225*	240*	265
160	155*	170*	185*	200*	225	175*	195*	210*	225*	255

ALUMINIUM SHEETS									
UNIFORMLY DISTRIBUTED LOAD									
	THICKNESS SHEETS mm				THICKNESS SHEETS mm				
	0,6	0,7	0,8	1,0	0,6	0,7	0,8	1,0	
kg/m²	MAX SPANS cm				MAX SPANS cm				
80	160*	170	180	190	180*	190	200	220	
100	140*	155*	165	180	160*	175*	190	205	
120	130*	140*	155	170	145*	160*	185	190	
140	120*	130*	140*	160	135*	150*	160*	180	
160	110*	120*	130*	150	125*	140*	150*	170	

* Values with stress limitations. Deflection limit 1/200 ℓ

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm		
		30	40	50
0,6	kg/m ²	7,3	7,7	8,1
0,7	kg/m ²	8,3	8,7	9,1
0,8	kg/m ²	9,1	9,7	10,1

DIMENSION TOLERANCE

DEVIATION mm	
Length	± 10
Working length	± 5
Thickness	± 2
Orthogonality and rectangularity	± 3

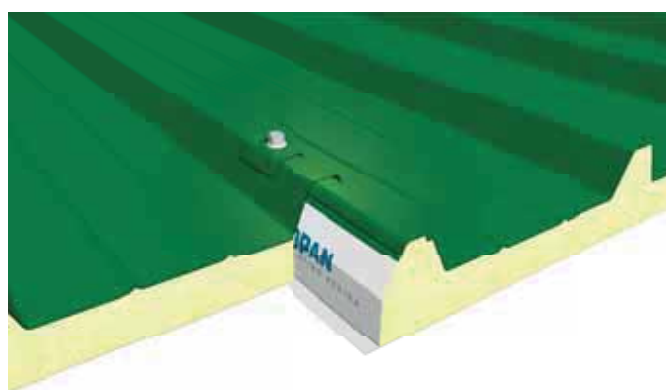
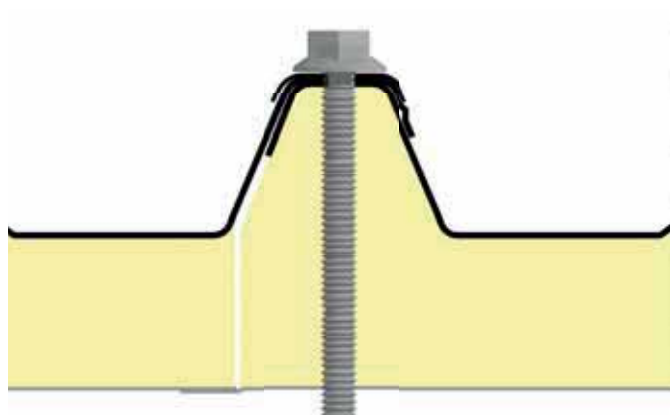
THERMAL INSULATION

According to EN 14509 Annex 10

U	PANEL NOMINAL THICKNESS mm		
	30	40	50
W/m ² K	0.71	0.54	0.44
kcal/m ² h °C	0.61	0.47	0.38

According to the calculation method EN ISO 6946

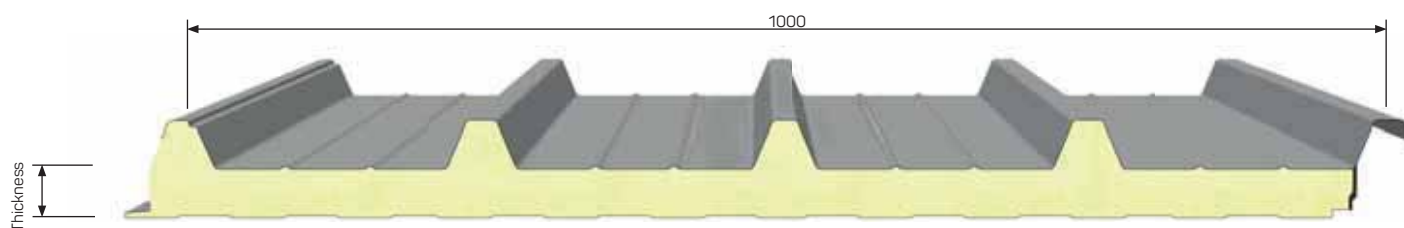
K	PANEL NOMINAL THICKNESS mm		
	30	40	50
W/m ² K	0.55	0.44	0.36
kcal/m ² h °C	0.48	0.38	0.32



Isocop Farm Coat



A roof panel with high aesthetic qualities, characterised by the presence of a specific prepainted internal sheet that is particularly resistant to aggressive agents present in agricultural and zootechnical environments.



APPLICATION

Isocop Farm Coat is a self-supporting double skin panel, insulated with polyurethane foam, with a tongue-and-groove joint. On large longitudinal pitches, the panel overlap can be foreseen. The panel is composed by 5 ribs that allow to increase the static resistance. The internal face is characterised by a specific prepainted sheet that is resistant to aggressive agents present in zootechnical environment. The fixing system is a penetrating type with the possibility to use exposed caps, the number and the place of the fixing elements should guarantee the stress resistance.

CHARACTERISTICS

- Internal support: Specific prepainted sheet resistant to aggressive agents
- Insulating core: expanded polyurethane foam
- External face: prepainted galvanised steel (EN 10346)

ADVANTAGES

- Medium/high load bearing capacities
- Hygienic
- Cleanable
- Resistant to aggressive agents
- Mildew resistant





INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,4 / 0,4 mm - Support 120 mm									STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm							
UNIFORMLY DISTRIBUTED LOAD																
	PANEL NOMINAL THICKNESS mm								PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150	30	40	50	60	80	100	120	150
kg/m²	MAX SPANS cm								MAX SPANS cm							
80	270	290	310	340	390	440	470	500	320	350	390	420	500	570	630	730
100	250	260	280	300	350	390	440	480	295	320	360	390	450	510	580	670
120	230	245	260	280	320	360	400	460	270	300	330	360	420	480	540	620
140	210	230	255	260	290	330	370	420	235	280	315	340	390	450	500	580
160	200	220	230	255	285	310	340	390	210	260	300	320	370	420	480	550
180	185	215	220	230	270	290	320	370	185	235	280	300	355	400	450	520
200	160	200	210	220	260	270	300	340	170	210	250	290	330	380	430	500
220	140	190	200	210	230	260	280	320	150	190	230	270	320	360	410	470
250	115	170	190	200	220	240	260	300	130	170	205	240	300	340	385	445

ALUMINIUM SHEETS 0,6 / 0,6 mm - Support 120 mm								
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
	MAX SPANS cm							
80	255	290	325	370	435	505	565	605
100	225	255	290	315	385	455	510	590
120	205	230	255	285	340	400	460	540
140	190	210	230	255	315	370	420	495
160	170	190	215	230	285	335	385	455
180	155	170	200	215	265	310	360	420
200	145	160	180	200	240	285	335	395
220	130	155	170	190	225	255	310	355
250	110	145	155	165	200	230	275	335

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard. Deflection limit 1/200 ℓ . Thermal load is not considered.

PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm							
		30	40	50	60	80	100	120	150
0,5 / 0,5	kg/m ²	9,9	10,3	10,7	11,2	11,9	12,7	13,5	14,7
0,6 / 0,6	kg/m ²	11,7	12,1	12,5	12,9	13,7	14,5	15,3	16,5

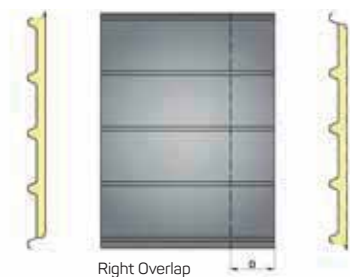
DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	$L \leq 3 \text{ m}$	$\pm 5 \text{ mm}$
	$L > 3 \text{ m}$	$\pm 10 \text{ mm}$
Working width	$\pm 2 \text{ mm}$	
Thickness	$D \leq 100 \text{ mm}$	$\pm 2 \text{ mm}$
	$D > 100 \text{ mm}$	$\pm 2 \%$
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal facing	$\pm 3 \text{ mm}$	
Bottom sheets coupling	$F = 0 + 3 \text{ mm}$	

L = working length, D = panels thickness, F = sheets coupling



Left Overlap



Right Overlap



D = mm 100-150-200-250
Other measurement after agreement

THERMAL INSULATION

According to EN 14509 Annex 10

U	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
W/m ² K	0,71	0,54	0,44	0,37	0,28	0,22	0,19	0,15
kcal/m ² h °C	0,61	0,47	0,38	0,32	0,24	0,19	0,16	0,13

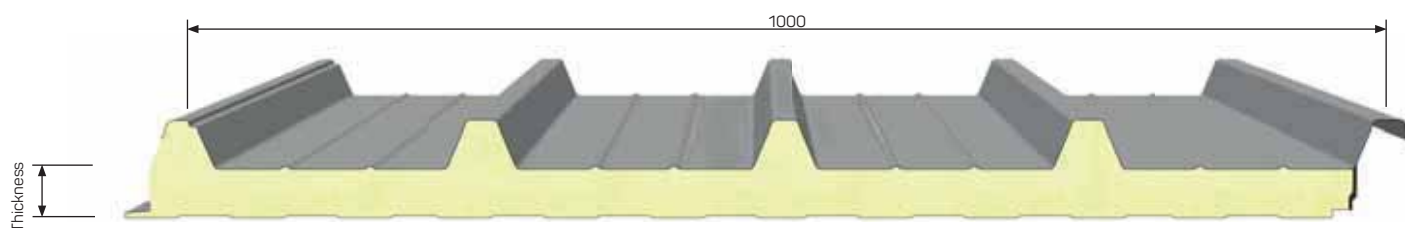
According to the calculation method EN ISO 6946

K	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
W/m ² K	0,55	0,44	0,36	0,31	0,25	0,20	0,17	0,15
kcal/m ² h °C	0,48	0,38	0,32	0,27	0,22	0,17	0,15	0,13

Isocop Topclass



A roof panel with high aesthetic qualities, characterised by the presence of a specific galvanised internal sheet with PVC facing that is particularly resistant to aggressive agents present in agricultural environments.



APPLICATION

Isocop Topclass is a self-supporting double skin panel, insulated with polyurethane foam, with a tongue-and-groove joint. On large longitudinal pitches, the panel overlap can be foreseen. The panel is composed by 5 ribs that allow to increase the static resistance. Different thicknesses of insulating core are available; the internal face is characterised by a specific galvanised sheet with PVC facing that is resistant to aggressive agents in zootechnical environment. The panels can be used for pitched roof, but you can also use it vertically for walls cladding.

CHARACTERISTICS

- Internal support: galvanised steel with PVC facing (EN 10346)
- Insulating core: expanded polyurethane foam
- External face: prepainted galvanised steel (EN 10346)

ADVANTAGES

- Resistant to corrosion in particularly aggressive environments
- Medium high load bearing capacities
- Cleanable
- Resistant to aggressive agents and mildew





INSTRUCTIONS OF USE

For the use of the panels and the related limits, please consult the Technical Manual available on www.isopan.com, General Sales Terms and Annexes defined by ISOPAN.



→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,4 / 0,4 mm - Support 120 mm									STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm							
UNIFORMLY DISTRIBUTED LOAD																
	PANEL NOMINAL THICKNESS mm								PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150	30	40	50	60	80	100	120	150
kg/m²	MAX SPANS cm								MAX SPANS cm							
80	270	290	310	340	390	440	470	500	320	350	390	420	500	570	630	730
100	250	260	280	300	350	390	440	480	295	320	360	390	450	510	580	670
120	230	245	260	280	320	360	400	460	270	300	330	360	420	480	540	620
140	210	230	255	260	290	330	370	420	235	280	315	340	390	450	500	580
160	200	220	230	255	285	310	340	390	210	260	300	320	370	420	480	550
180	185	215	220	230	270	290	320	370	185	235	280	300	355	400	450	520
200	160	200	210	220	260	270	300	340	170	210	250	290	330	380	430	500
220	140	190	200	210	230	260	280	320	150	190	230	270	320	360	410	470
250	115	170	190	200	220	240	260	300	130	170	205	240	300	340	385	445

ALUMINIUM SHEETS 0,6 / 0,6 mm - Support 120 mm								
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
	MAX SPANS cm							
80	255	290	325	370	435	505	565	605
100	225	255	290	315	385	455	510	590
120	205	230	255	285	340	400	460	540
140	190	210	230	255	315	370	420	495
160	170	190	215	230	285	335	385	455
180	155	170	200	215	265	310	360	420
200	145	160	180	200	240	285	335	395
220	130	155	170	190	225	255	310	355
250	110	145	155	165	200	230	275	335

Calculation for static sizing according to the Annex E of the UNI EN 14509 standard.
Deflection limit 1/200 ℓ . Thermal load is not considered.

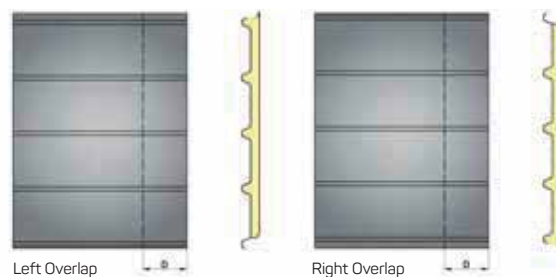
PANELS WEIGHT

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm							
		30	40	50	60	80	100	120	150
0,5 / 0,5	kg/m ²	9,9	10,3	10,7	11,2	11,9	12,7	13,5	14,7
0,6 / 0,6	kg/m ²	11,7	12,1	12,5	12,9	13,7	14,5	15,3	16,5

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	$L \leq 3 \text{ m}$	$\pm 5 \text{ mm}$
	$L > 3 \text{ m}$	$\pm 10 \text{ mm}$
Working width	$\pm 2 \text{ mm}$	
Thickness	$D \leq 100 \text{ mm}$	$\pm 2 \text{ mm}$
	$D > 100 \text{ mm}$	$\pm 2 \%$
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal facing	$\pm 3 \text{ mm}$	
Bottom sheets coupling	$F = 0 + 3 \text{ mm}$	

L = working length, D = panels thickness, F = sheets coupling



D = mm 100-150-200-250
Other measurement after agreement

THERMAL INSULATION**According to EN 14509 Annex 10**

U	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
W/m ² K	0,71	0,54	0,44	0,37	0,28	0,22	0,19	0,15
kcal/m ² h °C	0,61	0,47	0,38	0,32	0,24	0,19	0,16	0,13

According to the calculation method EN ISO 6946

K	PANEL NOMINAL THICKNESS mm							
	30	40	50	60	80	100	120	150
W/m ² K	0,55	0,44	0,36	0,31	0,25	0,20	0,17	0,15
kcal/m ² h °C	0,48	0,38	0,32	0,27	0,22	0,17	0,15	0,13

Cold storage solutions



Cold storages: application

The cold rooms and rooms for conservation and storage of foods can be so called positive and negative. Generally the first ones with temperatures till -1°C and the second ones till -25°C .



Rooms for the conservation of foods where a major temperature change does not require an adequate airtightness.



Rooms where foods are processed, where a medium temperature change does require an adequate airtightness.



Rooms where finished products are stored. These rooms must be well insulated and a greater airtightness is required, thanks to an adequate joint.



Rooms where frozen products are stored and rooms that impose constraining requirements in terms of minimisation of thermal bridges and air permeability.

NOTE

These indications are just a suggestion for use. The designer has to choose the joint, the panel thickness and the other parameters of the Isopan commercial offer, depending on the performances required by the cold room.

Isofrigo Isofrozen

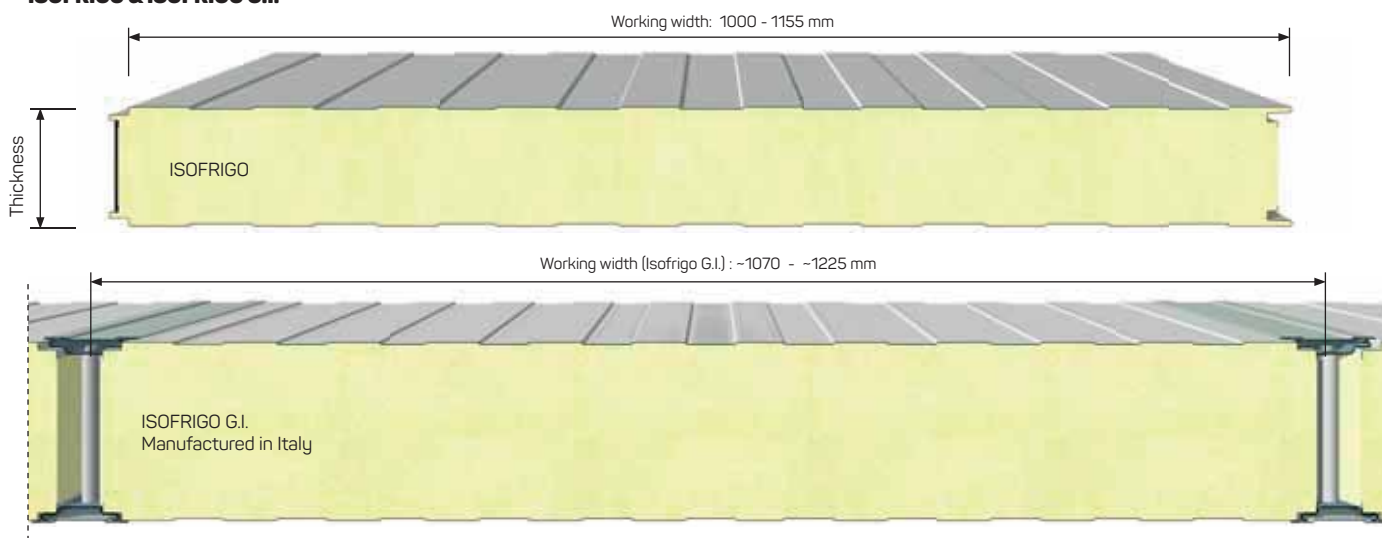
Manufactured in: Italy*, Germany, Spain, Romania
*Only Isofrigo G.I. Version is manufactured in Italy

Manufactured in: Italy

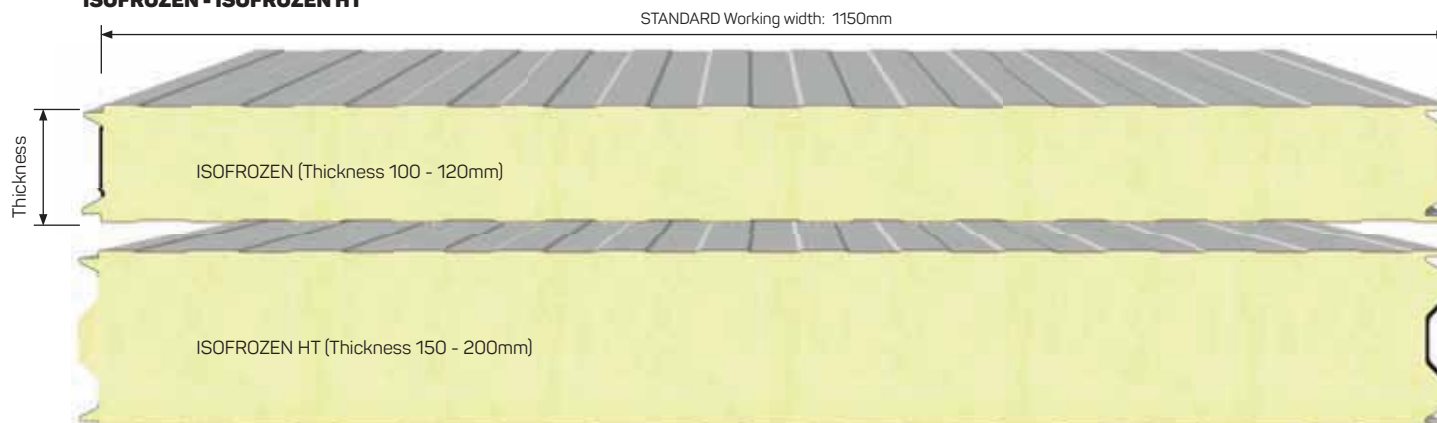


Self-supporting metal faced panels insulated with polyurethane with a tongue-and-groove joint. The very high performances of thermal insulation and the excellent quality of the jointing system make it particularly appropriate for constructions that require a controlled temperature.

ISOFRIGO & ISOFRIGO G.I.



ISOFROZEN - ISOFROZEN HT





→ see pag. 16

OVERLOAD SPANS

STEEL SHEETS 0,5 / 0,5 mm - Support 120 mm								
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm				PANEL NOMINAL THICKNESS mm			
	100	120	150	200	100	120	150	200
	MAX SPANS cm				MAX SPANS cm			
50	630	700	850	920	740	840	900	960
60	580	660	750	900	650	770	870	920
80	500	580	680	840	580	670	790	850
100	450	510	610	760	510	640	680	730
120	410	470	560	690	460	590	590	630
140	340	430	510	640	410	530	530	560
160	320	400	480	600	380	470	480	500
180	320	370	440	560	350	430	435	445
200	300	350	420	520	320	400	400	410

STEEL SHEETS 0,6 / 0,6 mm - Support 120 mm								
UNIFORMLY DISTRIBUTED LOAD kg/m ²	PANEL NOMINAL THICKNESS mm				PANEL NOMINAL THICKNESS mm			
	100	120	150	200	100	120	150	200
	MAX SPANS cm				MAX SPANS cm			
50	650	760	850	980	760	850	920	970
60	610	700	820	950	660	790	880	925
80	530	610	720	890	600	660	810	860
100	470	540	640	800	530	610	710	740
120	420	490	580	730	470	540	620	660
140	390	450	530	660	430	500	550	560
160	360	410	500	620	390	450	490	500
180	330	380	460	580	350	420	440	450
200	310	360	430	550	330	390	400	400

Calculation for static sizing according to the Annex E of the EN 14509 standard. Deflection limit 1/200 ℓ . Values in load tables don't consider thermal load.**PANELS WEIGHT**

THICKNESS SHEETS mm		PANEL NOMINAL THICKNESS mm			
		100	120	150	200
0,5 / 0,5	kg/m ²	12,2	13,0	14,2	16,2
0,6 / 0,6	kg/m ²	13,9	14,7	15,9	17,9

**FIRE CHARACTERISTICS**

Regarding the specifications related to the fire characteristics, please consult the synthesis available in the catalogue or on the website.

**INSTRUCTIONS OF USE**

For the use of the panels and the related limits, please consult the Technical Manual, General Sales Terms and Annexes.

DIMENSION TOLERANCE (EN 14509)

DEVIATION mm		
Length	L ≤ 3 m	± 5 mm
	L > 3 m	± 10 mm
Working length	± 2 mm	
Thickness	D ≤ 100 mm	± 2 mm
	D > 100 mm	± 2 %
Deviation from perpendicularity	6 mm	
Misalignment of the internal metal faces	± 3 mm	
Sheets coupling	F = 0 + 3 mm	

L = working length, D = panels thickness, F = sheets coupling

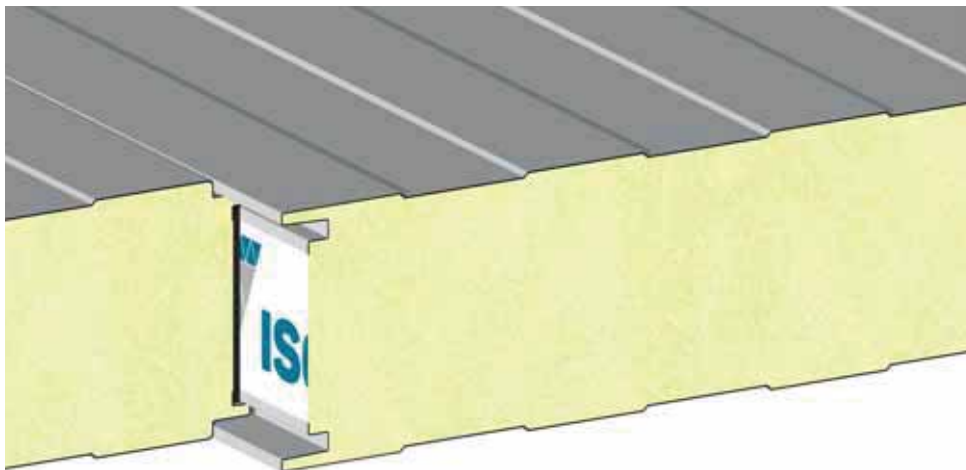
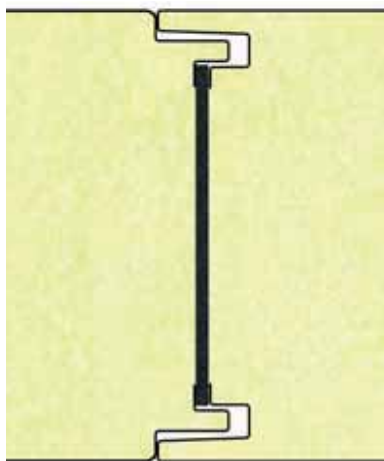
THERMAL INSULATION (In accordance with EN 14509 Annex 10)

U	PANEL NOMINAL THICKNESS mm			
	100	120	150	200
W/m ² K	0,22	0,18	0,15	0,11
kcal/m ² h °C	0,19	0,16	0,13	0,09

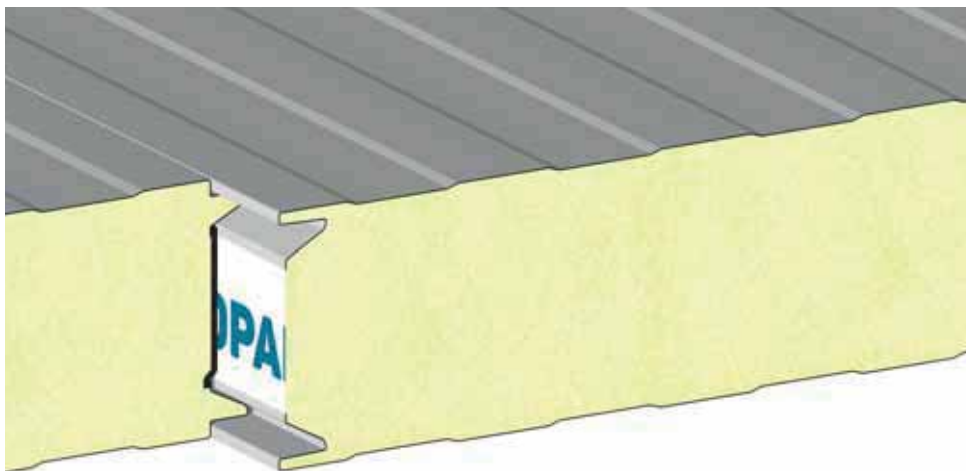
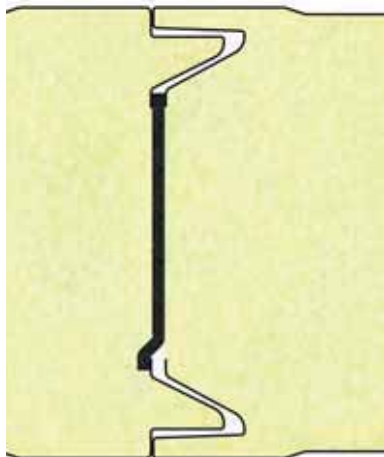
Dry joint

Standard solution. The dry joint is designed for use at positive temperature, with low thermal gradient.

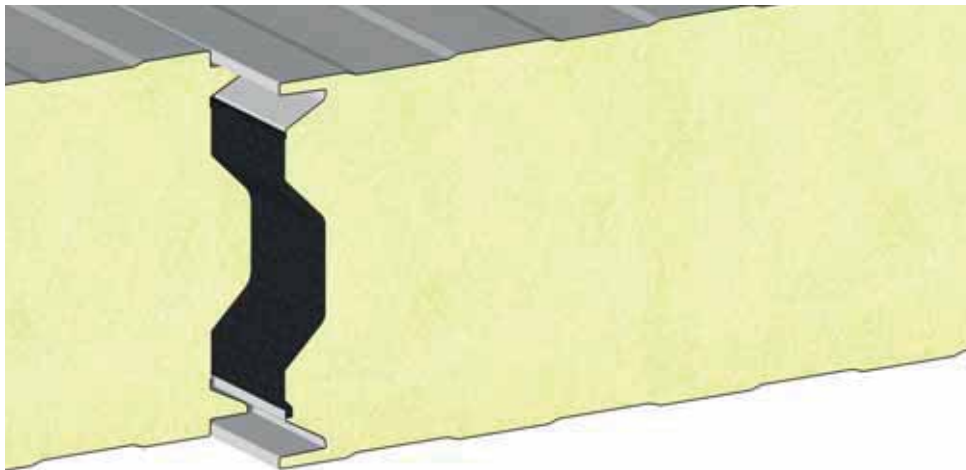
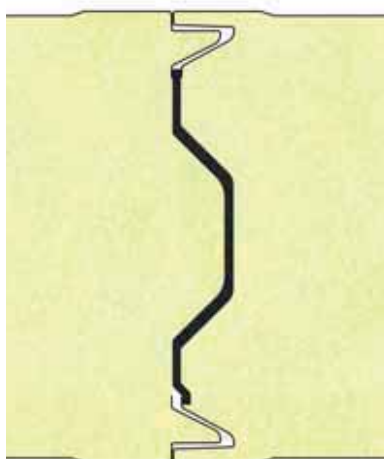
ISOFRIGO



ISOFROZEN (Thickness 100 -120 mm)



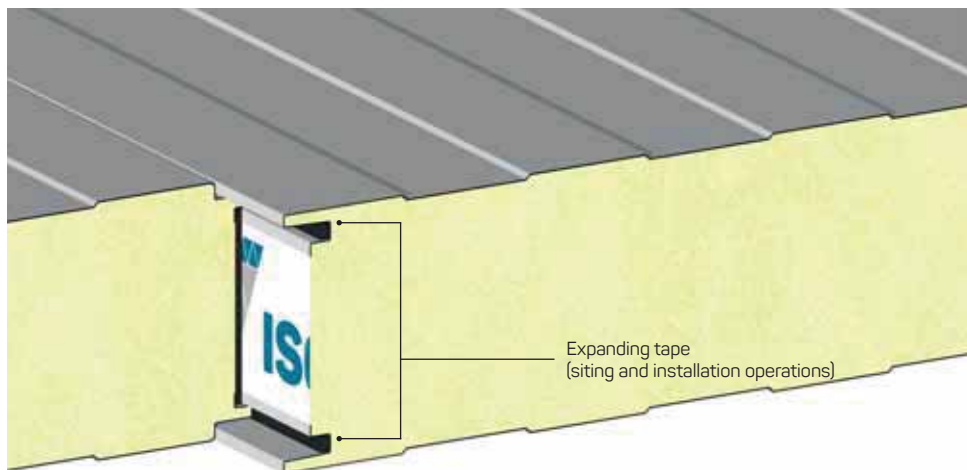
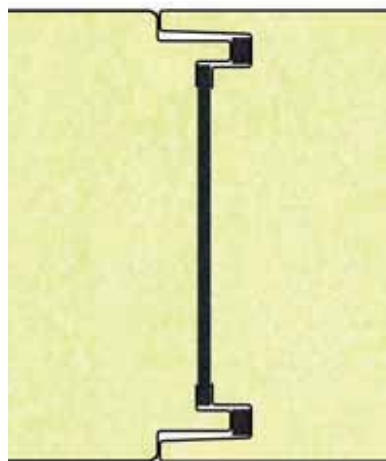
ISOFROZEN HT (Thickness 150 -200 mm)



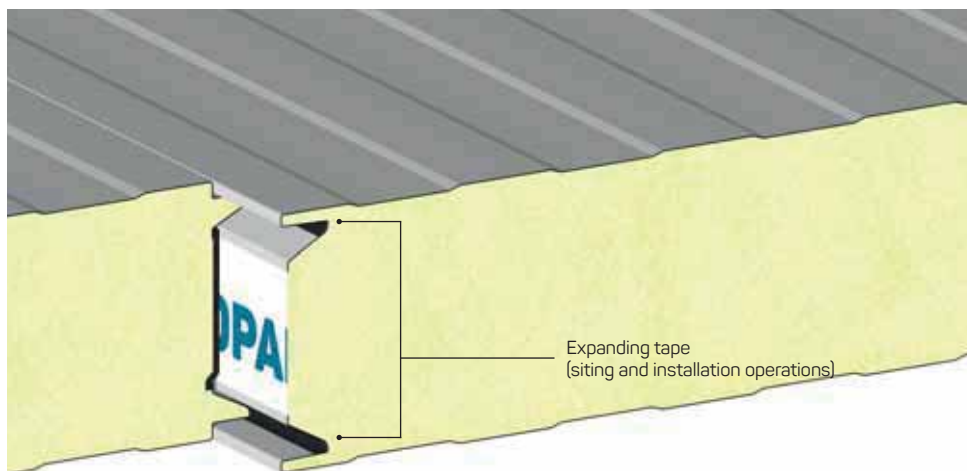
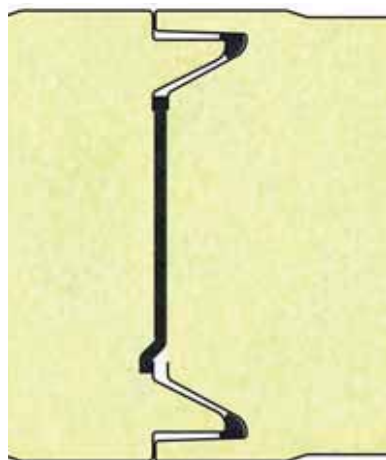
Expanding tape

The joint with bituminous expanding tape offers a good airtightness. Thanks to the two thermo-expanding tapes, the capacity to prevent air flow between the inner and outer wall is increased.

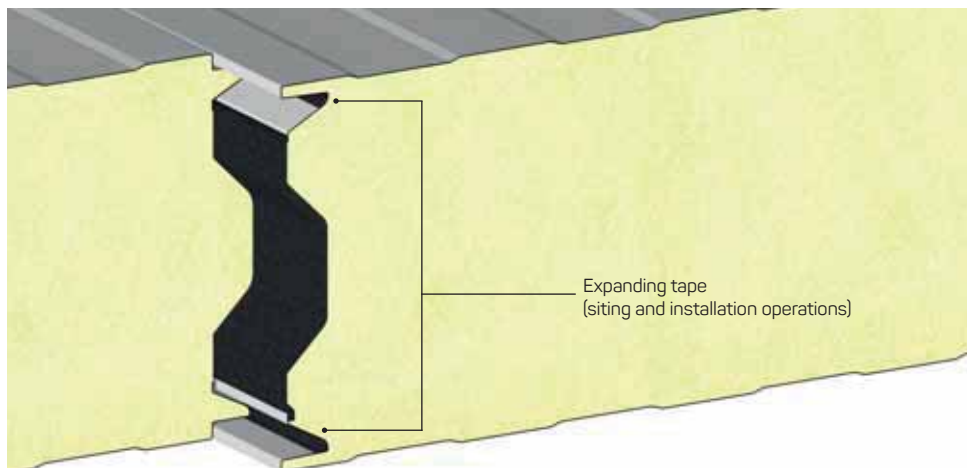
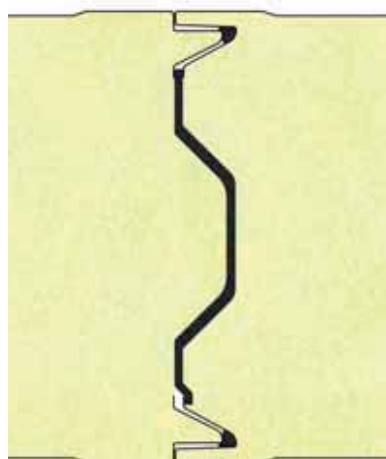
ISOFRIGO



ISOFROZEN (Thickness 100 -120 mm)



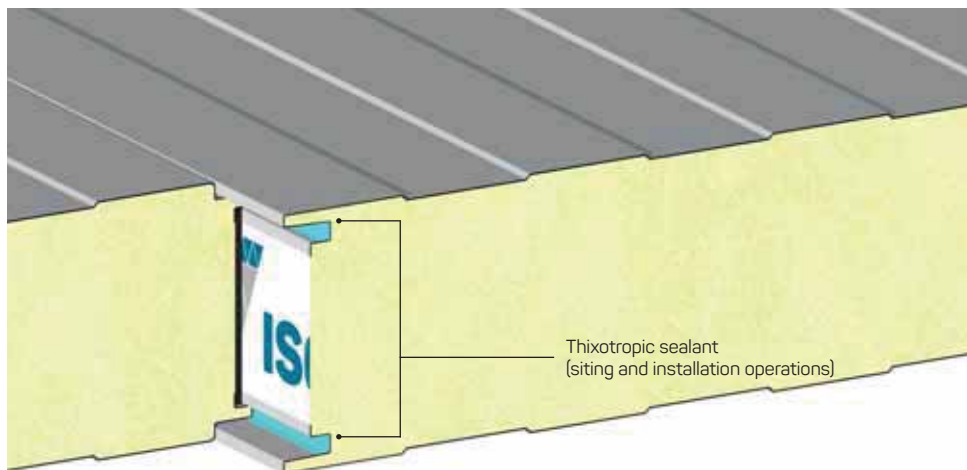
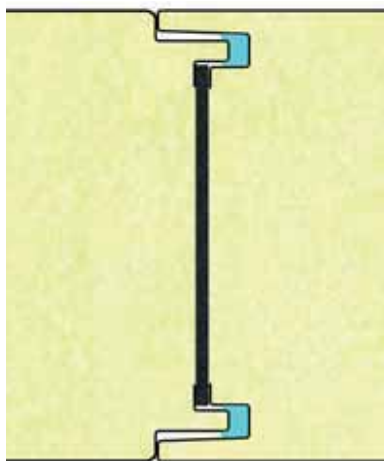
ISOFROZEN HT (Thickness 150 -200 mm)



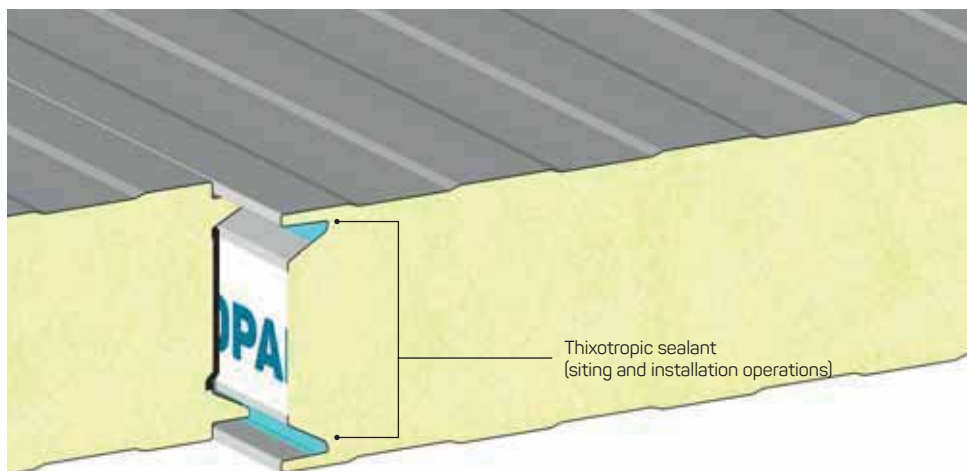
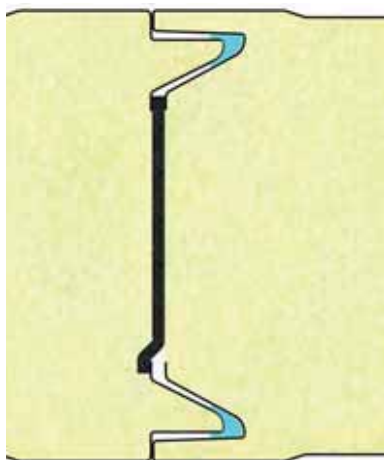
Thixotropic sealant

The airtightness is excellent, thanks to the lack of cracks guaranteed by the sealant, whose thixotropic characteristic offers an excellent airtightness without impacting on the assembly easiness.

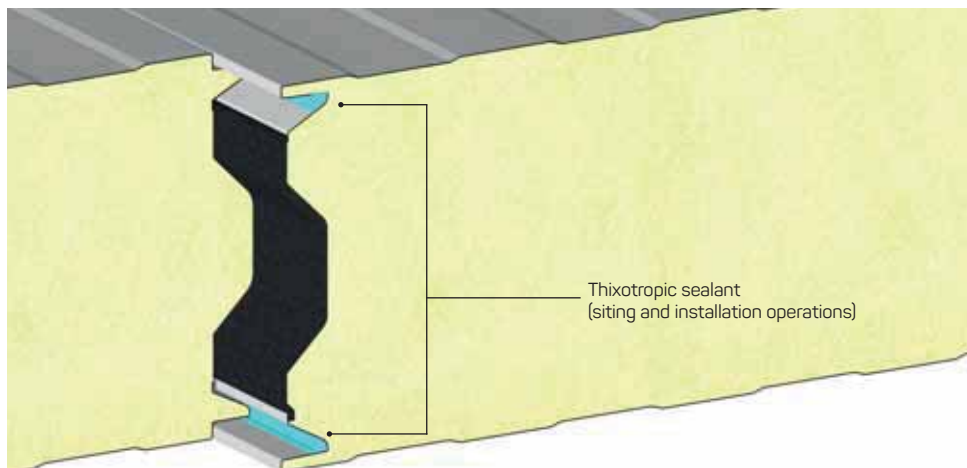
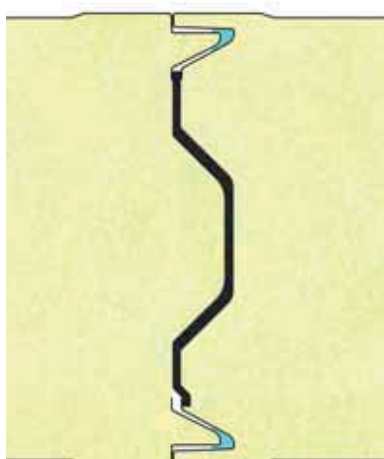
ISOFRIGO



ISOFROZEN (Thickness 100 -120 mm)

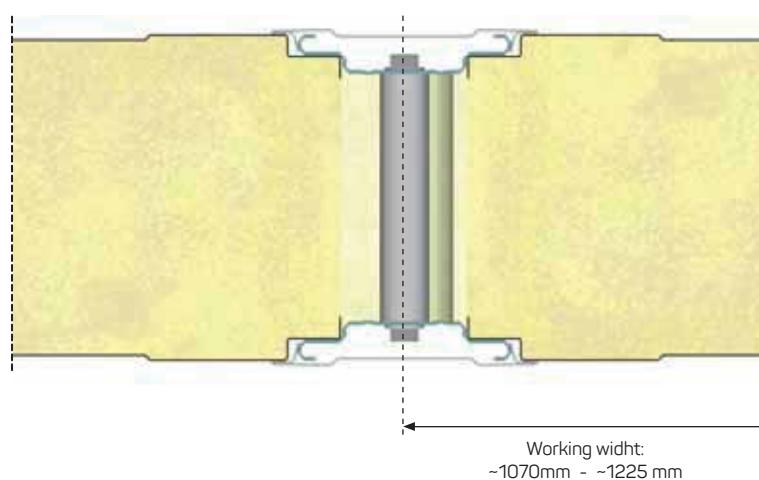
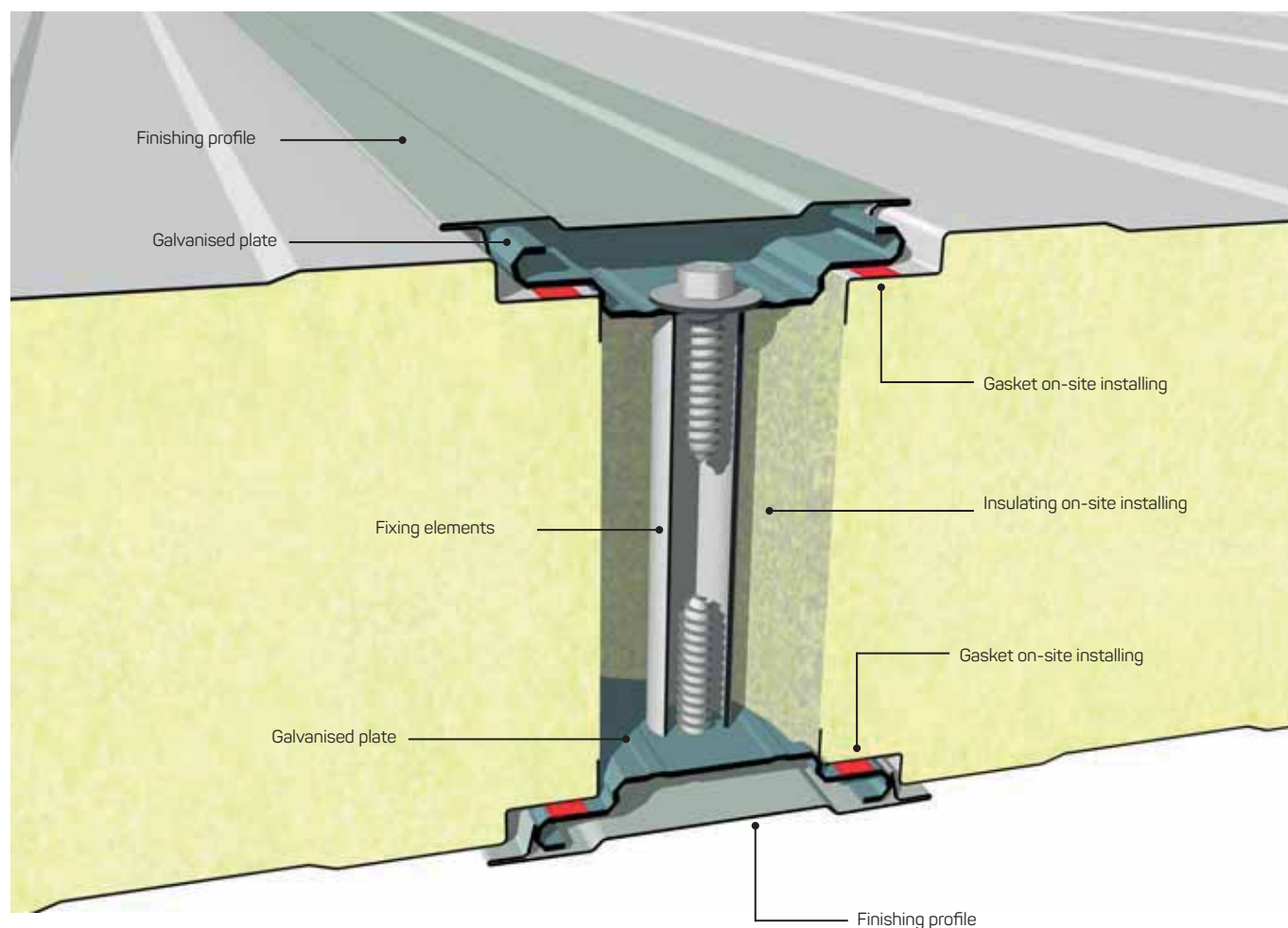


ISOFROZEN HT (Thickness 150 -200 mm)

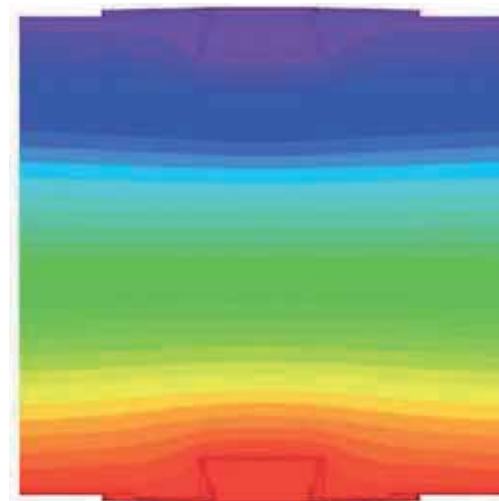


ISOFRIGO G.I. (Foamed joint)

Thanks to the lack of cracks and the use of PVC gaskets under the plates, an optimal airtightness is obtained and consequently all thermal bridges caused by the joints are eliminated.



HEAT LOSS IN THE JOINT:
 $U_f = 0,119 \text{ W/m}^2 \text{ K}$



Building technical systems





Isocappotto

Thanks to this Product, Isopan can offer its customers a fast laying system with an insulating power alike to a sandwich-structured composite. Its aesthetic and performance are similar to traditional EIFS walls. ISOCAPPOTTO system is similar to an EIFS wall, but it differs from a classic traditional wall system because it has a double metal cladding insulating panel covered in different materials. This way you can conceal the sandwich-structured composite and have a wall which looks like a classic plastered wall. ISOCAPPOTTO system can be applied to any kind of building, to new industrial or manufacturing buildings (office buildings, factories, warehouses) and to housing estates like condomini and cottages as well. This system is also a valuable solution when refurbishing or modernizing existing buildings.



ISOPAN PRIMER - It is a primer obtained by blending synthetic resin, special asphalt and quartz filler. The mix obtained, once dried, is highly elastic, it adheres to the support and it is waterproof

ISOPAN PLASTER - It is a pre-mixed plaster made of lime, concrete, selected aggregates and additives that make this plaster highly breathable and easy to work with. Applying the Product in a consistent and uniform manner is mandatory in order to obtain a high quality finish.

ISOPAN FINISH - It is a decorative ready-to-use cladding made of synthetic resin in water emulsion, coloured oxides, fine and selected quartz aggregates and additives that make the product easier to work with. Using light and alkali resistant pigments ensures the dye's stability even when exposed to bad weather or sunlight radiations. The cladding is highly elastic and tight-fitting to the supports.

Special solutions

METAL SHEET - PERFORATED SHEETS FOR FACADES



Ark-wall metal Sheet is a system of metallic facades made of perforated sheets, an innovative and versatile product used to customize the buildings with a trendy new language that is emerging between professionals companies for the sense of freshness and novelty that it communicates with immediacy; it is a perfectly suited system to the advanced requirements of the contemporary architecture, which is looking for new expressive models, and for new opportunities for visual communication.

R.A.C. - INSULATED ANGULAR SHEETS



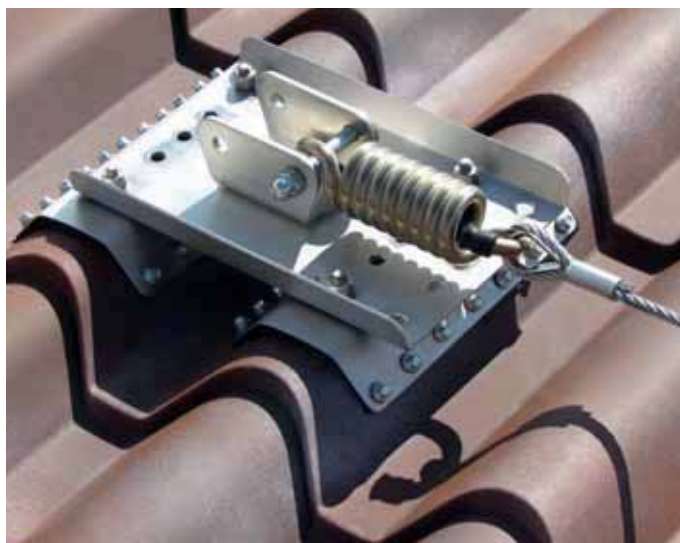
The R.A.C. systems (insulated angular sheets) are angular elements, especially studied to be fitted on Isopan sandwich panels facades.

The insulated angular sheets are made upon a technical design, on demand of the building site: in so doing it is possible to obtain a practical, elegant finishing, tailor-made for the project.

Isopansafe

Isopansafe brand's objective is to solve any problem related to working at heights. In the construction industry, working at heights expose the workers to high risks concerning their health and safety, in particular fall risks and other serious work injuries which represent a high percentage of fatal injuries.

Every property manager, employer and manager could be involved in a criminal or civil procedure if violations or omissions of the current legislation emerge. In accordance with the most severe national and European legislations, Isopansafe includes a series "linea vita" and accessories, which are adaptable to every building need and type, in order to ensure the workers a high degree of safety during building operations and maintenance. The experiences made on the field and the substantial knowledge of Isopan, Sistemi certificati S.r.l and Ejot allowed the development of innovative technologies and Products concerning both the installed systems' safety and their adaptability and compatibility with every supporting structure



ISOPANSAFE anti-fall systems guarantee worker safety when working at heights on roofs and allow them complete freedom of movement during interventions; the devices are EC type marked and certified according to UNI EN 795 2002 regulation.

ISOPAN has created in particular two Product lines which, depending on the needs, can be used on industrial, commercial and private housing buildings of any size. Both systems are cheap and quick to install. The differences between this two systems consist of Isopansafe Structural being recommended in ridge operations, while ISOPANSAFE BASE is recommended when installing anti-fall systems to work on slopes.

The collaboration between ISOPAN S.p.A. and EJOT (fixing technology specialist) allows the customer to have an EJOT technician at his disposal for inspection on the construction site, who then will be able to recommend the best technical solution for the intervention.

ISOPANSAFE STRUCTURAL RIDGE FIXING SYSTEM



ISOPAN SAFE STRUCTURAL system is a flat-base ridge fixing system used on wooden, metal or concrete beams. This horizontal device can be used by four workers simultaneously and it is made of external poles (100m distance at most) spaced out by internal poles at 15 m of interaxle distance at most. If needed, the latter allow to redirect the path (bent poles). The base plate dimensions are 150mm x 250mm, while the pole is available in different heights depending on the roof set; they are both made of INOX or zinc-coated steel.

ISOPANSAFE BASE SLOPE FIXING SYSTEM

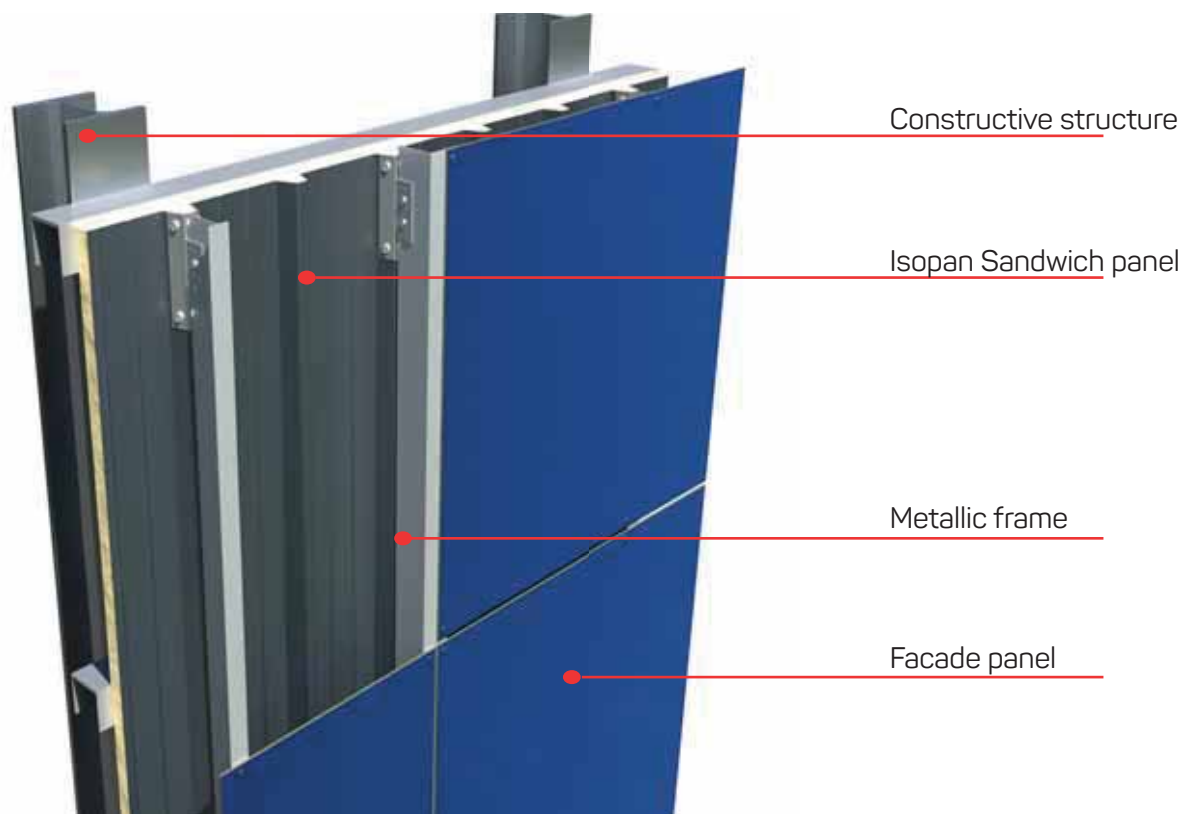


ISOPAN SAFE BASE is a slope fixing system that can be used only with roof made of ISOCOP-5 1000 or ISODOMUS panels; 3 fixing models are available, the superstructure fixing, the substructure fixing and the hybrid. This system can be used by four workers simultaneously and it can be installed in a kit up to 100m with internal span interaxle of 15m at most. ISOPAN SAFE BASE is completely waterproof thanks to the seals inserted on the screws' head and caps and to the seals deployed before the trestles. The plate dimensions are 195mm x 300mm; the dimensions of the trestle are 250mm x 56mm with a 25mm interaxle when used with an ISOCOP-5 1000 panel, and 250mm x 137mm with 200mm interaxle when used with ISODOMUS panel. All components are made with INOX steel.

ARK WALL

Ark-Wall is a technological system constituted by several layers, mechanically fixed to the building by means of metallic supports, that, applied to the external walls of the buildings guarantees two fundamental conditions for the well-living: insulation and transpirability. From the structural point of view ARK-WALL is made out of three main components:

- sandwich panel with double metal support, which ensures thermal and acoustic insulation thanks to its internal insulating mass made of high-density polyurethane foam or mineral wool;
- facade panel, strong and of a high aesthetic quality. At disposal in the HPL version, so as in pressed mineral wool;
- fixing systems to the wall.



ADVANTAGES

- Thermal insulation;
- Acoustic insulation;
- technical spaces easy to obtain from the air gap;
- Completeness and stability of the system, due to the insulating sandwich panel and to the facade panel;
- Big weight reduction of the structure on the building due to the use of light materials;
- Elimination of detachment problems, thanks to the mechanical fixing system;
- Elimination of the risk to break the cladding, thanks to the thermal expansion of all components;
- Easy cleaning of the walls;
- Resistance to earthquakes;
- High architectural and aesthetic value;
- Great possibility to customize the system, due to a wide range of thickness of the sandwich panel so as of the facade colours..

ARK WALL

REALIZATIONS

A close-up photograph of a modern building's exterior. The facade is composed of large, bright blue rectangular panels. A prominent yellow structural beam, possibly part of a canopy or walkway, extends from the left side of the frame. The sky is a clear, vibrant blue.

A photograph of a modern building with a striking red-orange rectangular volume. A small balcony with a glass railing is attached to the upper part of this volume. To the right, a grey section of the building features a circular window. The building is set on a green lawn under a blue sky with scattered clouds.

A photograph of a large commercial building, identified by the 'PIAZZAITALIA' signage on its facade. The building has a grey, horizontally-slatted exterior and a row of rectangular windows. It is situated on a street corner with a parking lot in the foreground and a utility pole visible on the left. The sky is overcast.

SPECIAL PRODUCTS

101



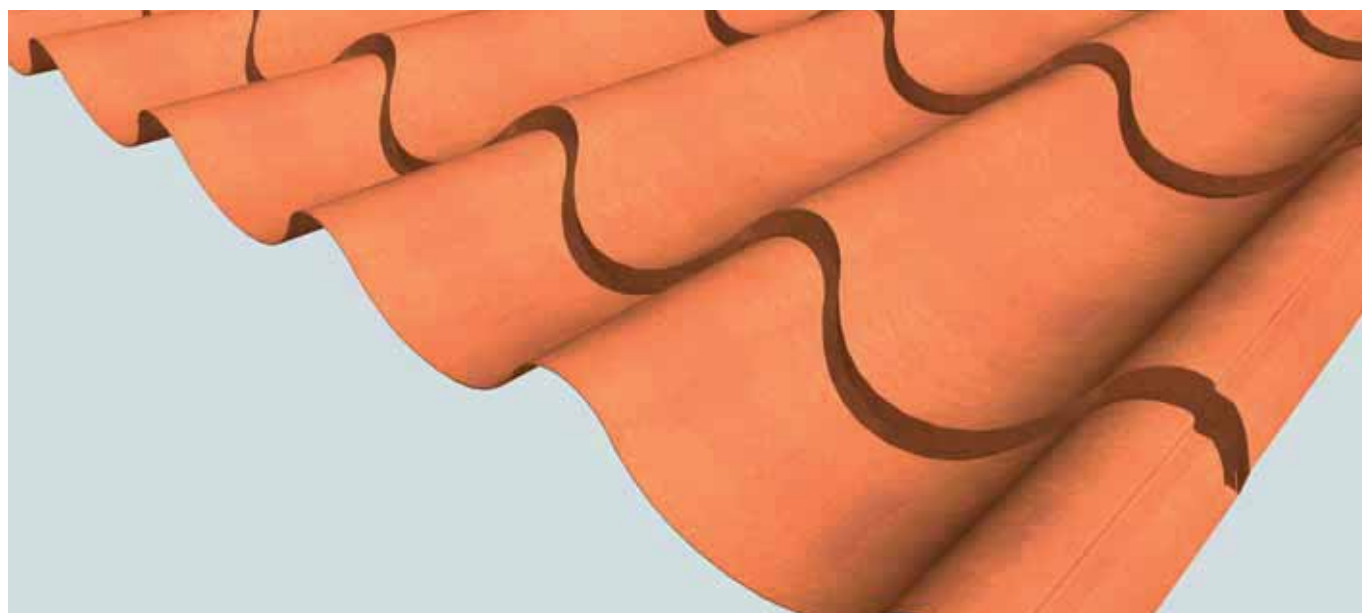
A close-up photograph of a corrugated metal roof or wall. The image shows the characteristic wavy pattern of the metal. Two vertical metal fasteners or clips are visible, securing the sheets. The lighting creates strong highlights and shadows, emphasizing the texture of the metal. A semi-transparent teal banner is overlaid at the bottom, containing the text "Corrugated Sheets".

Corrugated Sheets

LG 50

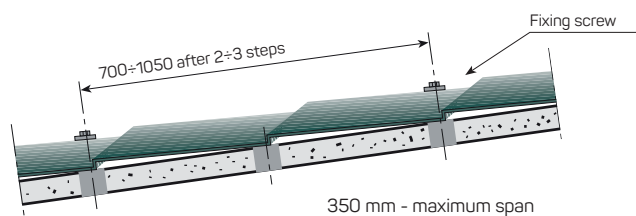
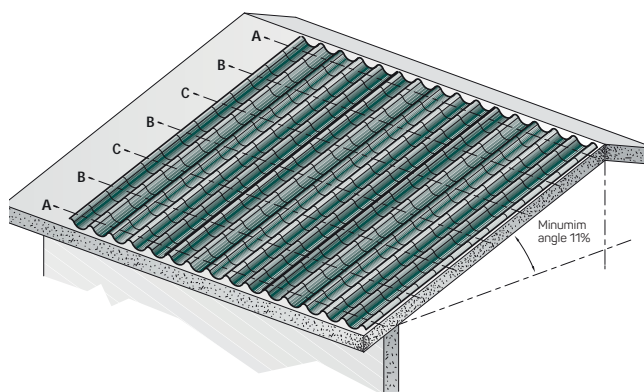
Manufactured in: Italy

It is a profiled sheet with a tile shape, that represents the best aesthetic evolution of a roof sheet made for public construction. The design, with a standard tile shape, allows for the creation of functional roofs that are aesthetically pleasing, light, extremely easy to install and waterproof.



Standard length mm

1200 2250 2950 4000 4700 5050 5750 6100 6450



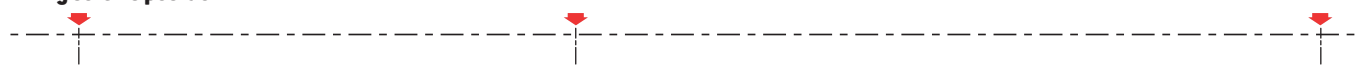
DEVIATION mm

Length	± 10 mm
Working width	± 5 mm

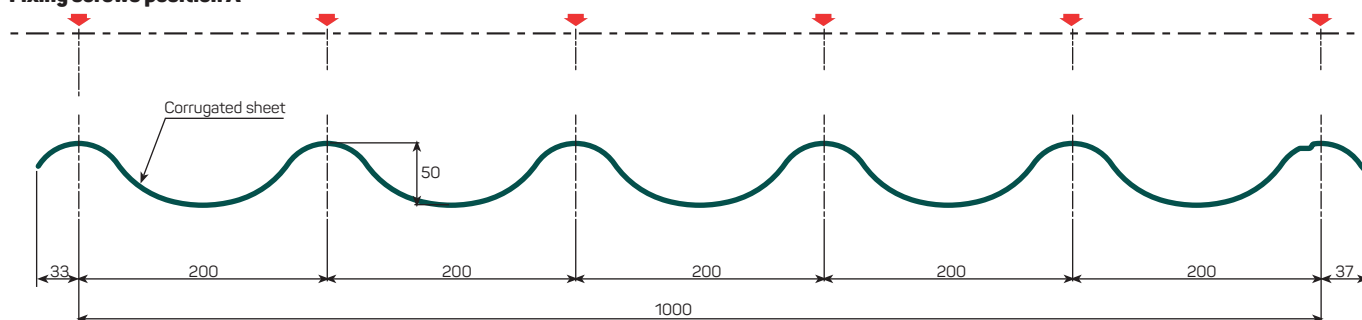
Fixing screws position C



Fixing screws position B



Fixing screws position A



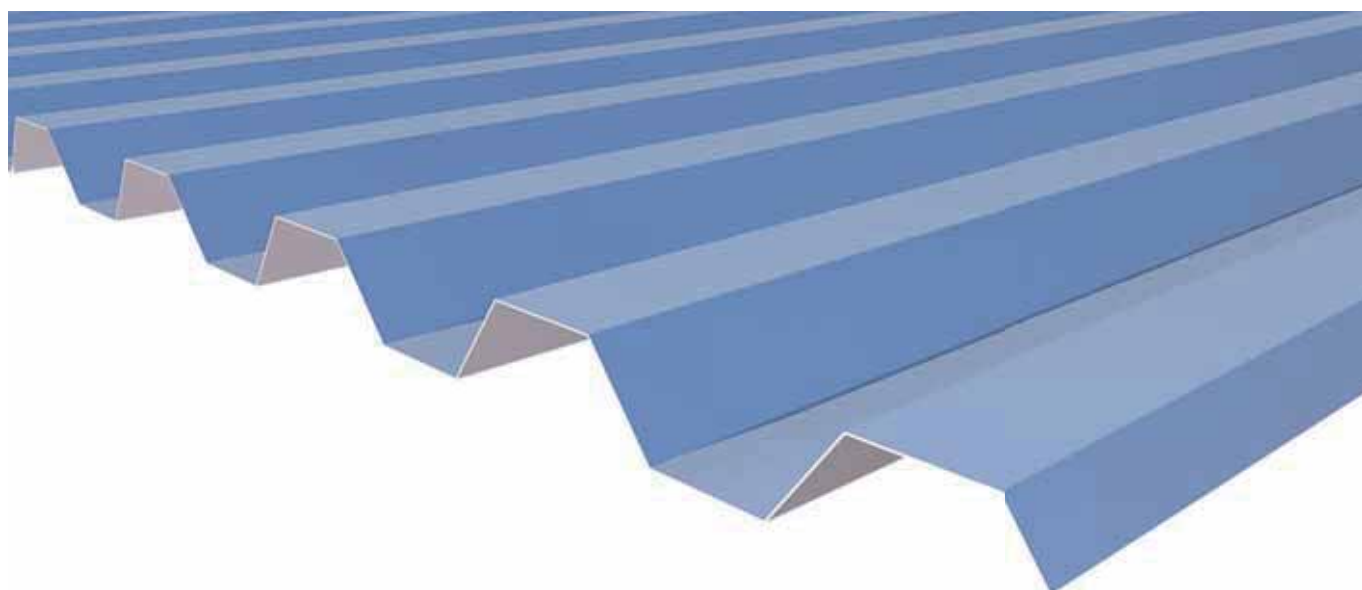
The sheet can be provided with anticondensation material whose major characteristics are defined in the "technical data" section (only on request).



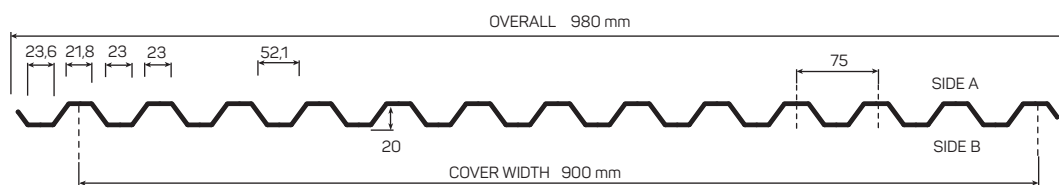
LG 20 - LG 28

Manufactured in: Italy

The Venti and Ventotto systems are particularly easy to handle and install, with straight and curved sheets; if they are made of aluminium, they can be curved on site, depending on the thickness.



VENTI 13 - STANDARD



DIMENSION TOLERANCE

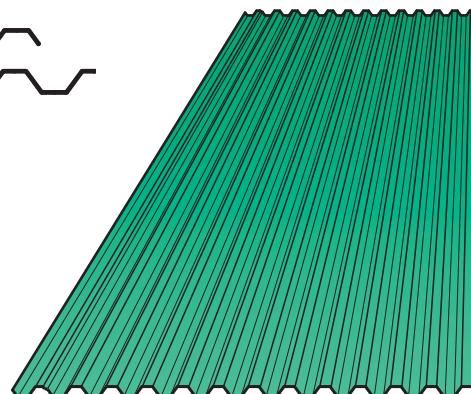
Length	+10 mm up to 3000 mm +20 mm over 3000 mm -5 mm for all length
Cover width	± 5 mm
Deviation from cutting line squareness	$S \leq 0,5\%$ Cover width

SVILUPPO 1250 mm

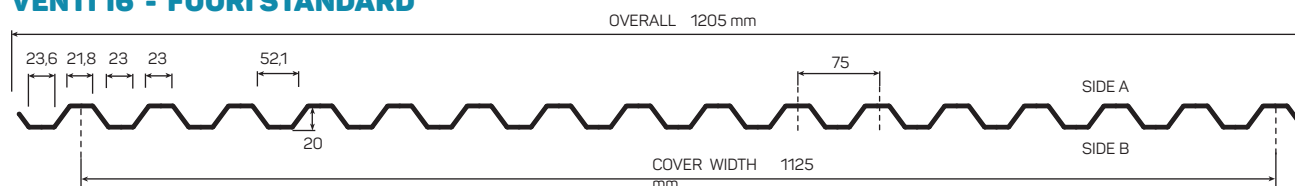


Overlap example

Venti 13

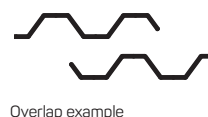


VENTI 16 - FUORI STANDARD



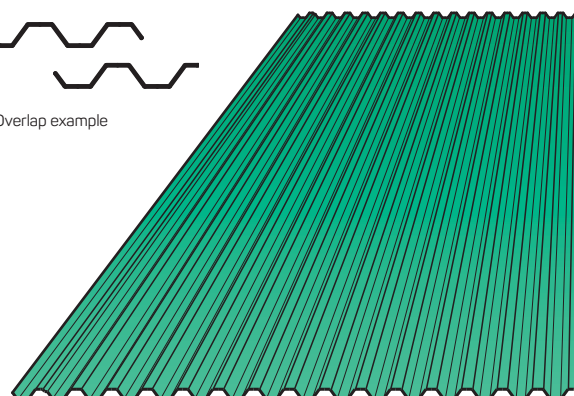
Section Characteristics

	THICKNESS mm			
	0,5	0,6	0,7	0,8
Weight (steel) (kg/m ² gross)	4,89	5,87	6,85	7,83
Weight (aluminium) (kg/m ² gross)	1,69	2,03	2,37	2,71
J (cm ⁴ /m)	3,74	4,57	5,41	6,24
W (cm ³ /m)	3,66	4,45	5,23	6,00



Overlap example

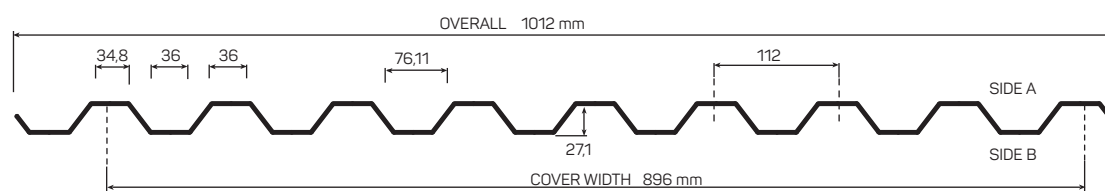
Venti 16



SVILUPPO 1500 mm

UNIFORMLY DISTRIBUTED MAXIMUM LOAD kg/m ² LG 20													
THICKNESS mm	STEEL - SPAN m							ALUMINIUM - SPAN					
	1,00	1,25	1,50	1,75	2,00	2,25	2,50	1,00	1,25	1,50	1,75	2,00	2,25
0,5	430	220	128	80	54	38	28	138	70	41	26	17	12
0,6	530	270	155	100	65	45	34	168	86	50	31	21	15
0,7	630	320	185	115	78	55	40	200	102	58	37	25	17
0,8	700	370	215	135	90	62	45	230	118	68	43	29	20

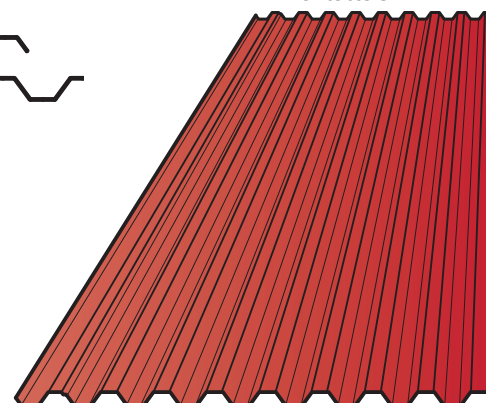
VENTOTTO 9 - STANDARD



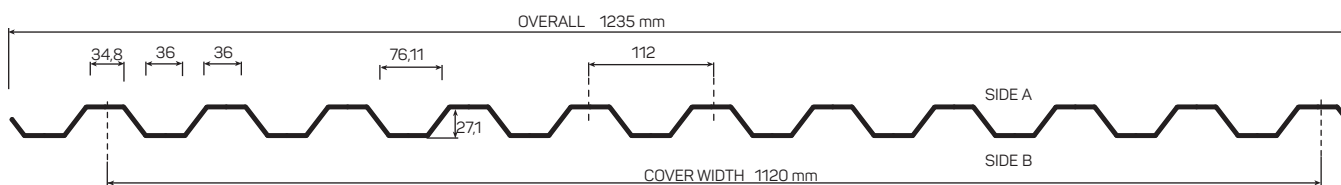
Ventotto 9

Length	+10 mm up to 3000 mm +20 mm over 3000 mm -5 mm for all length
Cover width	± 5 mm
Deviation from cutting line squareness	$S \leq 0,5\%$ della Cover width

SVILUPPO 1250 mm

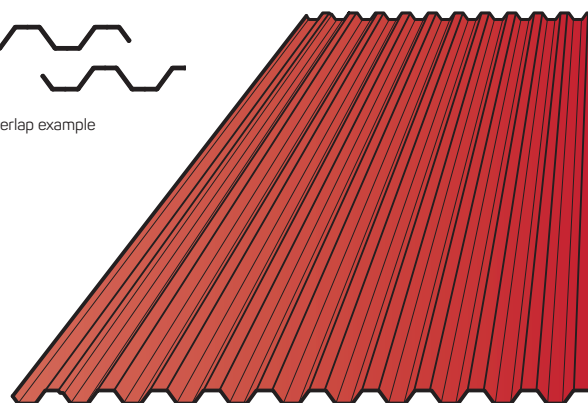


VENTOTTO 11 - FUORI STANDARD



Ventotto 11

	THICKNESS mm			
	0,5	0,6	0,7	0,8
Weight (steel) (kg/m2 gross)	4,77	5,73	6,68	7,64
Weight (aluminium) (kg/m2 gross)	1,65	1,98	2,32	2,65
J (cm ⁴ /m)	5,96	7,29	8,62	9,94
W (cm ³ /m)	4,10	4,99	5,88	6,76

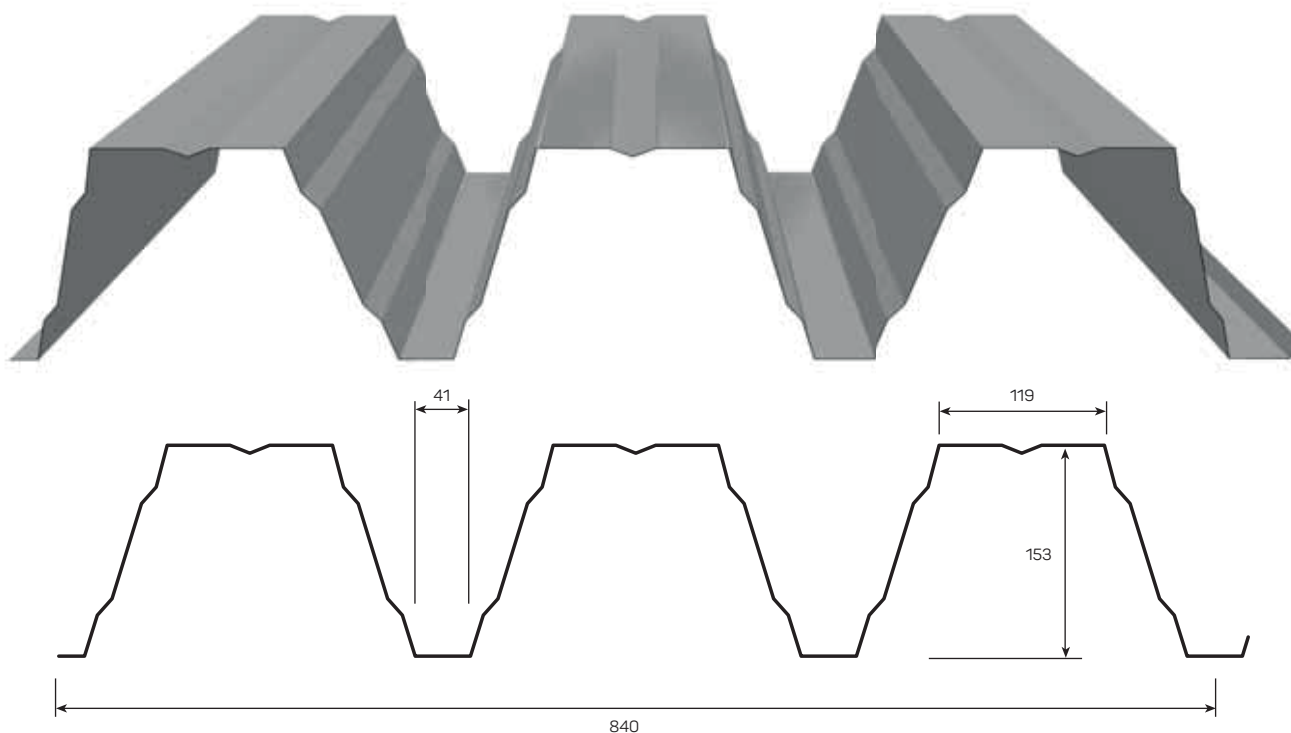


SVILUPPO 1500 mm

UNIFORMLY DISTRIBUTED MAXIMUM LOAD kg/m ² LG 28													
THICKNESS mm	STEEL - SPAN m							ALUMINIUM - SPAN					
	1,00	1,25	1,50	1,75	2,00	2,25	2,50	1,00	1,25	1,50	1,75	2,00	2,25
0,5	690	350	205	128	85	60	44	220	112	65	41	28	19
0,6	820	430	250	155	105	74	53	268	138	80	50	34	24
0,7	1000	510	290	185	125	88	63	315	160	94	60	40	28
0,8	1110	580	340	215	145	100	75	365	185	108	68	46	32




LG 153

Manufactured in: Romania



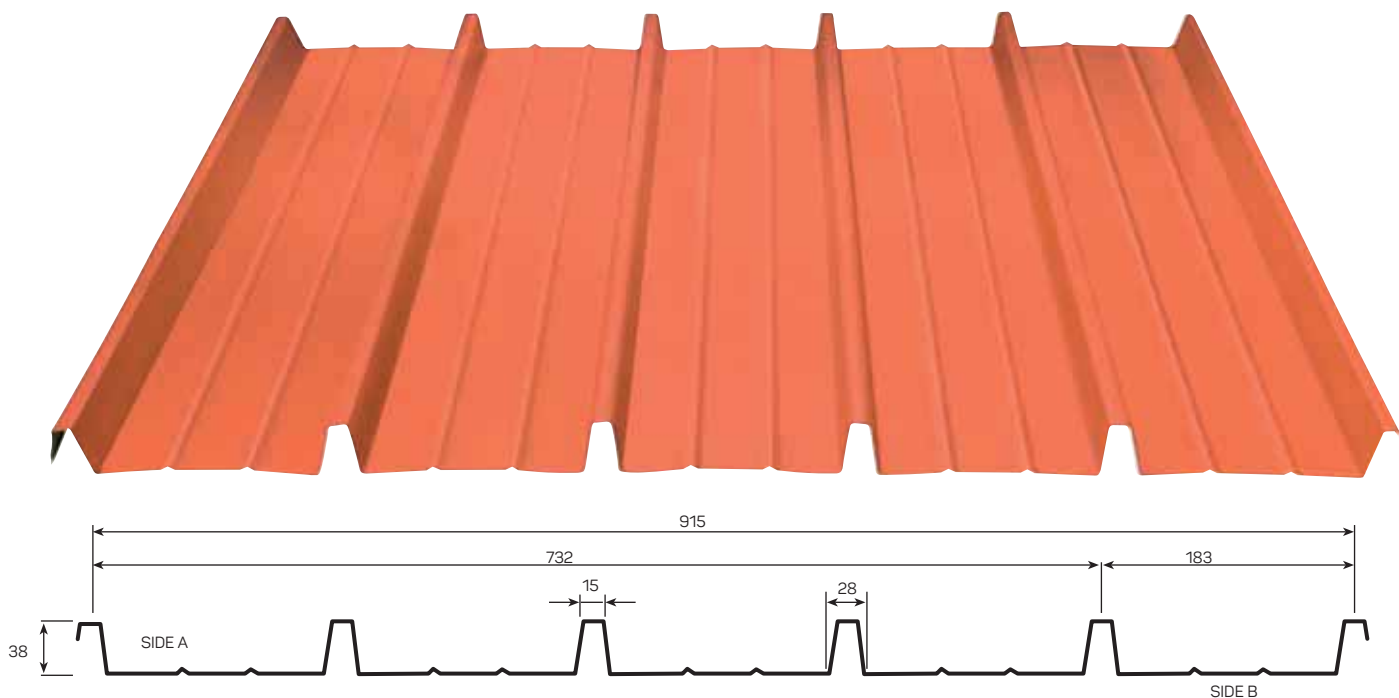
Section Characteristics

	THICKNESS mm			
	0,75	0,88	1,00	1,25
Weight (steel) (kg/m ² gross)	10,51	12,34	14,02	17,52

UNIFORMLY DISTRIBUTED MAXIMUM LOAD kg/m ² LG 153 - f=L/200																	
THICKNESS mm	INTERASSE m																
	4,00	4,25	4,50	4,75	5,00	5,25	5,50	5,75	6,00	6,25	6,50	6,75	7,00	7,25	7,50	7,75	8,00
	0,75	466	387	324	274	233	200	173	151	131	115	101	89	79	70	62	55
	0,88	564	467	392	332	282	243	209	182	158	138	123	108	95	84	75	67
	1,00	655	543	455	385	328	282	243	211	184	161	142	125	111	98	88	78
	1,25	822	682	572	484	412	353	305	265	231	202	178	157	139	124	111	98
	0,75	1141	950	799	677	579	499	432	377	331	291	258	229	204	183	164	148
	0,88	1377	1145	963	817	699	602	522	455	399	352	311	277	247	221	198	178
	1,00	1597	1328	1117	947	811	698	605	528	463	408	361	321	286	256	230	207
	1,25	2007	1671	1404	1191	1018	878	761	664	582	513	454	404	360	322	289	261
	0,75	904	752	632	535	457	394	341	297	260	229	203	180	160	144	129	115
	0,88	1091	908	763	647	553	476	412	359	314	277	245	217	194	173	155	139
	1,00	1266	1053	886	751	642	552	479	416	365	321	284	252	225	201	180	162
	1,25	1590	1322	1111	943	805	693	601	524	459	404	357	317	282	253	226	203

LG 38/915 - 732

Manufactured in: Italy



Section Characteristics

		THICKNESS mm				
		0,5	0,6	0,7	0,8	1,0
WEIGHT	(kg/m ²)	5,28	6,42	7,49	8,57	10,72
J	(cm ⁴ /m)	10,3	13,7	16,0	18,3	22,8
W	(cm ³ /m)	3,53	4,71	5,51	6,32	7,94

DIMENSION TOLERANCE

Length	+10 mm up to 3000 mm +20 mm over 3000 mm -5 mm for all length
Cover width	± 5 mm
Deviation from cutting line squareness	S ≤ 0,5% della Cover width

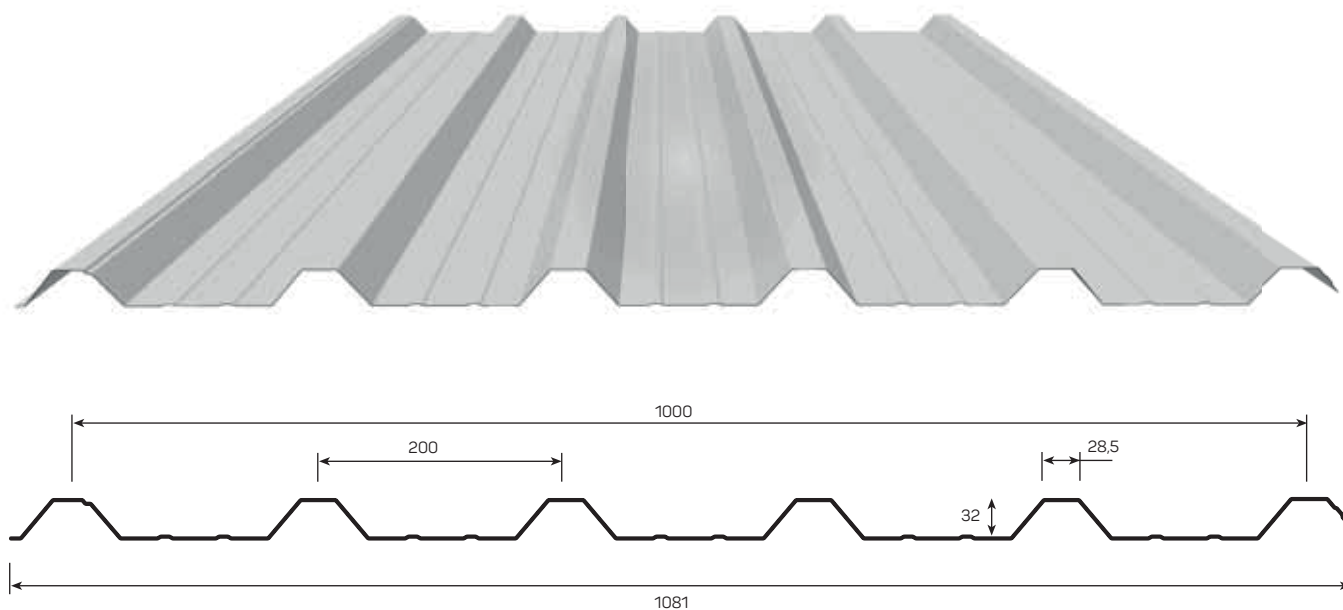
UNIFORMLY DISTRIBUTED MAXIMUM LOAD kg/m² LG 38/915-732

THICKNESS mm	INTERASSE m										
	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50
0,5	305	200	140	100	75	55	45	40			
0,6	520	330	230	170	125	90 100	65 80	60	50		
0,7	610	390	270	195	150	105 115	75 90	55 75	60		
0,8	700	445	305	225	170	120 130	85 105	60 85	70		
1,0	880	560	385	280	210	150 165	110 130	80 110	60 90	75	
0,5	390	250	180	150	100	75	60	50	40		
0,6	650	415	285	210	160	125	100	80	60 65		
0,7	765	490	335	245	185	145	115	95	70 80	55 65	
0,8	875	560	385	280	215	165	135	110	80 90	65 75	50 65
1,0	1100	700	485	350	270	210	170	135	100 110	80 95	60 80

Red values don't consider deflection limits

LG 32

Manufactured in: Spain





Section Characteristics

	THICKNESS mm				
	0,5	0,6	0,7	0,8	1,0
WEIGHT (kg/m ²)	4,70	5,66	6,60	7,55	9,45

DIMENSION TOLERANCE

Length	+10 mm up to 3000 mm +20 mm over 3000 mm -5 mm for all length
Cover width	± 5 mm
Deviation from cutting line squareness	S ≤ 0,5% della Cover width

UNIFORMLY DISTRIBUTED MAXIMUM LOAD kg/m ² LG 32									
THICKNESS mm	INTERASSE m								
	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00
	0,5	300	200	140	120	80	60		
	0,6	380	240	180	140	105	60		
	0,7	440	280	200	150	115	80		
	0,8	520	320	220	160	120	90	60	
	1,0	600	420	260	200	140	100	80	60
	0,5	400	260	200	140	120	80	60	
	0,6	500	320	220	180	135	100	90	60
	0,7	580	380	260	200	150	120	95	65
	0,8	660	440	300	220	160	130	100	80
	1,0	800	540	400	260	200	140	120	95

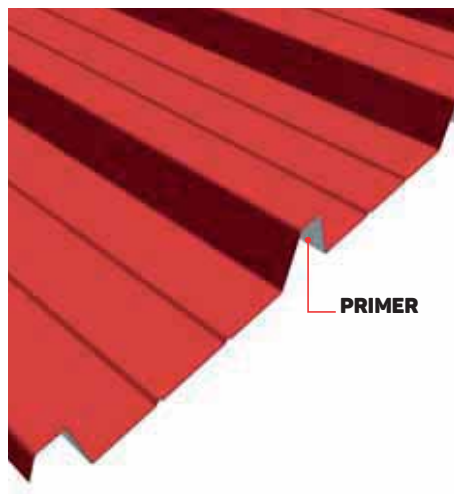
LG 40 - LG 40R

Manufactured in: Italy, Romania

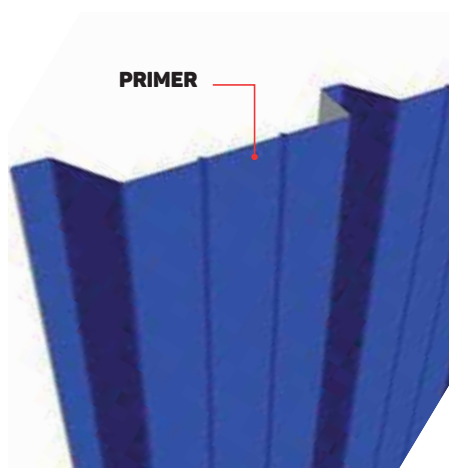
The LG40 system is particularly easy to handle and install, with straight and curved sheets; if it is made of aluminium, it can be curved on site, depending on the thickness.



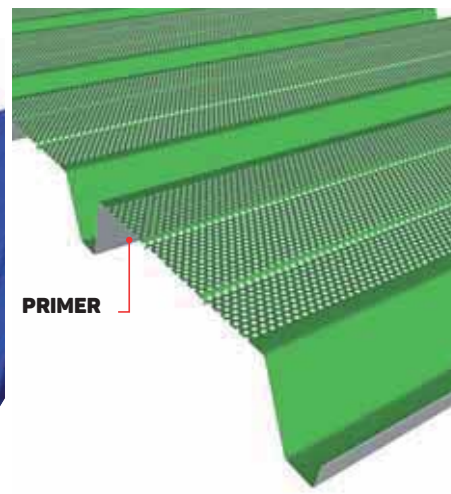
LG 40



LG 40R
N.B. LG 40R can be used for
facade installations

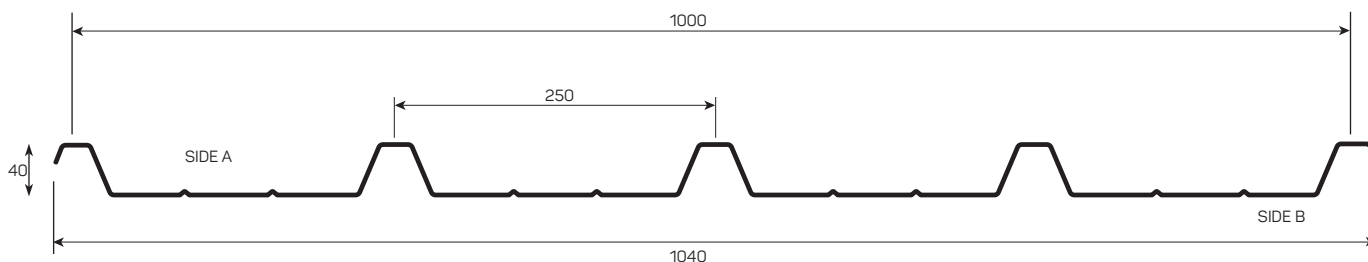


LG 40 forata

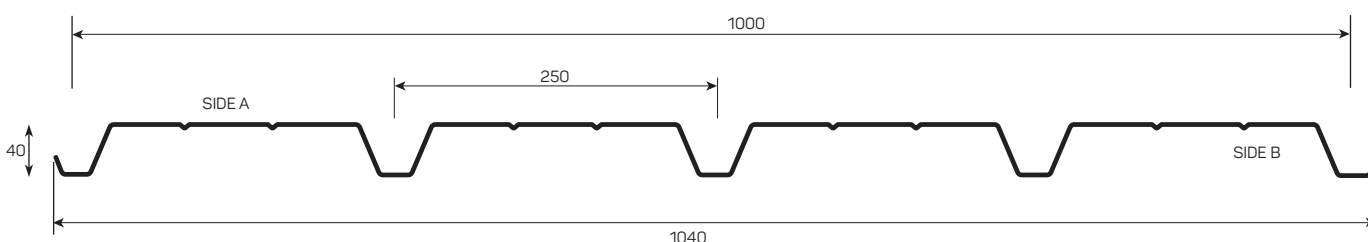


LG 40 - LG 40R

LG 40



LG 40R





Section Characteristics

		THICKNESS mm				
		0,5	0,6	0,7	0,8	1,0
WEIGHT	(kg/m ²)	4,9	5,89	6,87	7,85	9,81
J	(cm ⁴ /m)	12,3	16,05	18,72	21,40	26,75
W	(cm ³ /m)	3,92	5,30	6,18	7,07	8,83

DIMENSION TOLERANCE

Length	+10 mm up to 3000 mm +20 mm over 3000 mm -5 mm for all length
Cover width	± 5 mm
Deviation from cutting line squareness	S ≤ 0,5% della Cover width

UNIFORMLY DISTRIBUTED MAXIMUM LOAD kg/m²

LG 40															LG 40r														
THICKNESS mm	INTERASSE m														INTERASSE m														
	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,5	3,75	4	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,5	3,75	4			
	0,5	439	281	185	143	109	86	63 70	47 58	36 48					360	230	152	104 117	84 109	59 74	37 57	27 47							
	0,6	614	393	273	200	153	115 121	84 98	63 81	48 68	38 58					504	322	224	145 164	97 126	68 99	49 80	37 66						
	0,7	716	458	318	234	179	135 141	98 114	73 94	57 79	67 44	35 58					603	386	268	178 196	119 150	84 119	61 96	46 79	35 66				
	0,8	820	524	364	267	205	154 162	112 131	84 108	65 91	51 77	41 67	33 58					701	449	311	214 229	143 175	100 138	73 112	55 92	42 78	33 65	27 56	
	1,0	1024	655	455	334	256	193 202	140 163	105 135	81 113	64 97	51 83	41 72	34 64	903	578	401	289 295	194 225	136 178	99 144	74 119	57 100	45 85	36 73	29 64	24 56		
	0,5	570	365	252	180	141	111	90	67 73	51 62	40 53					467	300	207	147	115	83 91	61 73	41 60	30 51					
	0,6	768	491	341	251	192	152	123	101	81 85	64 72	51 62					630	403	280	205	157	113 124	83 100	62 83	48 70				
	0,7	896	573	398	292	224	177	143	118	95 99	74 84	59 73	48 63					754	482	335	246	188	140 148	102 120	76 99	59 83	46 71	37 61	
	0,8	1025	656	455	334	256	202	164	135	108 113	85 97	68 83	55 72	45 64	877	561	389	286	219	168 173	122 140	92 116	71 97	55 83	44 71	36 62			
	1,0	1280	819	569	418	320	253	204	169	135 142	106 121	85 104	69 91	57 80	1129	722	502	368	282	223	165 180	124 149	95 125	75 106	60 92	49 80	40 70		

Red values don't consider deflection limits

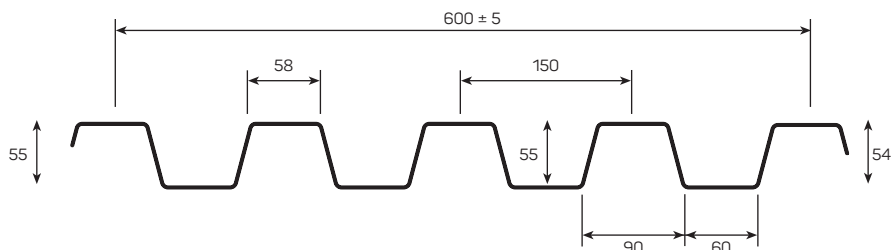
LG 55/600 - 750

Manufactured in: Italy

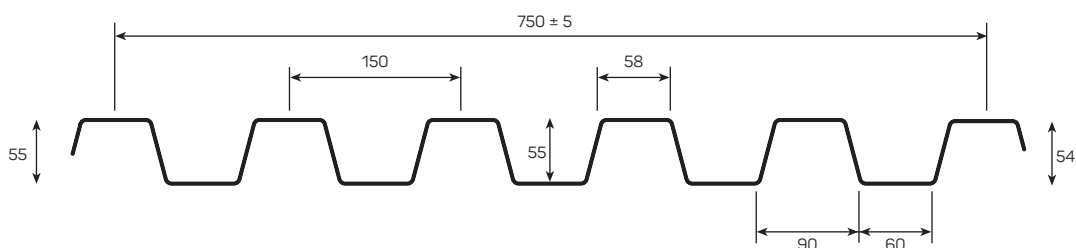


LG 55/600 - 750

LG 55/600



LG 55/750





Section Characteristics

		THICKNESS mm				
		0,6	0,7	0,8	1,0	1,25
Peso	(kg/m ²)	7,8	9,1	10,5	13,1	16,3
J	(cm ⁴ /m)	38,8	47,2	55,8	73,7	96,3
W	(cm ³ /m)	11,3	13,9	16,8	23	31,3

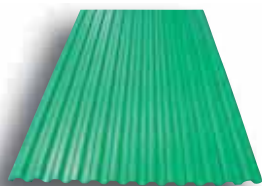
DIMENSION TOLERANCE

Length	+10 mm up to 3000 mm +20 mm over 3000 mm -5 mm for all length
Cover width	± 5 mm
Deviation from cutting line squareness	S ≤ 0,5% della Cover width

UNIFORMLY DISTRIBUTED MAXIMUM LOAD kg/m²

UNIFORMLY DISTRIBUTED MAXIMUM LOADkg/m² LG 55/600-750																		
THICKNESS mm	INTERASSE 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	4,25	4,50	4,75	5,00	
	0,6	1433	914	633	463	352	266 277	192 223	183 142	108 152	83 128	65 110	51 94	41 82	33 72	26 63	21 56	17 50
	0,7	1776	1133	784	573	436	324 343	233 276	173 226	131 188	101 159	79 136	62 117	49 102	40 89	32 78	25 69	20 61
	0,8	2142	1367	946	693	528	385 415	278 334	206 275	157 229	121 194	95 166	75 143	60 124	49 109	39 96	32 85	26 76
	1,0	2929	1871	1295	948	730 723	509 569	368 459	273 377	208 315	161 266	126 228	101 197	81 172	65 151	53 133	43 116	36 106
	1,25	3990	2548	1765	1293	955 986	666 776	482 626	358 515	272 430	211 364	166 312	132 270	106 235	86 207	70 183	57 163	47 145
	0,6	1794	1145	793	580	442	348	280	230	185 192	144 163	114 139	91 120	73 105	60 92	49 81	41 72	34 64
	0,7	2224	1420	984	721	550	433	349	287	227 240	177 203	140 174	112 151	91 132	75 116	62 102	51 91	43 81
	0,8	2680	1711	1185	868	662	521	420	346 351	268 289	208 245	165 210	132 181	107 158	88 139	72 123	60 109	50 98
	1,0	3685	2341	1622	1189	907	714	576	464 474	354 397	276 336	219 288	176 249	143 218	117 192	97 170	80 151	67 135
	1,25	4991	3189	2210	1620	1237	974	786	607 647	464 541	362 459	287 394	230 341	187 298	153 262	127 232	106 207	88 185

Red values don't consider deflection limits



STRAIGHT PROFILED SHEETS

It is possible to profile the sheets of the Venti and Ventotto systems.

Characteristics:

- minimum working thickness: 0,5 mm;
- maximum working thickness: 0,8 mm;
- maximum working length: 14.000 mm;
- minimum working length: 1.000 mm.

CURVED SHEETS

It is possible to bend the sheets of the Venti and Ventotto systems with a die.

Characteristics:

- sheet minimum length 1.000 mm;
- minimum radius of curvature 700 mm;
- sheet maximum length 6.000 mm.

For sheets with different dimensions than the indicated ones, we recommend to contact Isopan's technical office in order to valuate the feasibility.

BENT SHEETS WITH DIES

It is possible to bend the sheets with the Venti and Ventotto profiles with customized dies.

Characteristics:

- sheet minimum length 1.000 mm;
- sheet maximum length 6.000 mm.

For sheets with different dimensions than the indicated ones or very complex sheets (with more than one curve or with different angles), we recommend to contact Isopan's technical office in order to valuate the feasibility.

FOR RIDGE USE



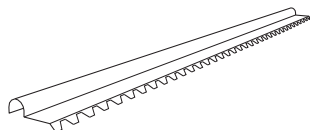
SYMMETRIC ROOF/WALL JOINT



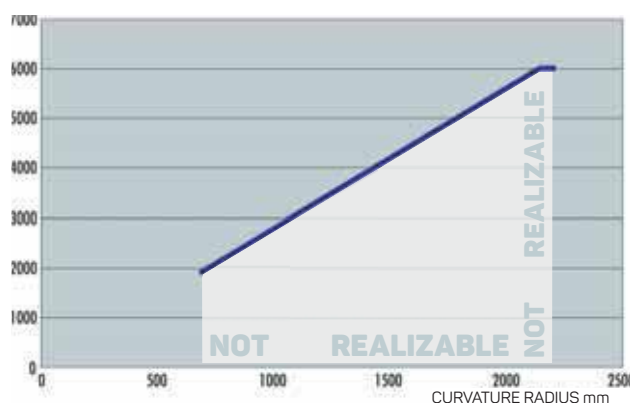
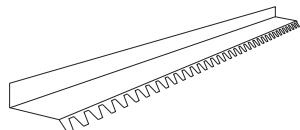
ASYMMETRIC ROOF/WALL JOINT



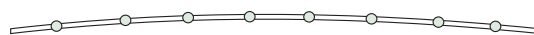
DIE-CUT HINGED RIDGE



DIE-CUT FLASHING



CURVED SHEET



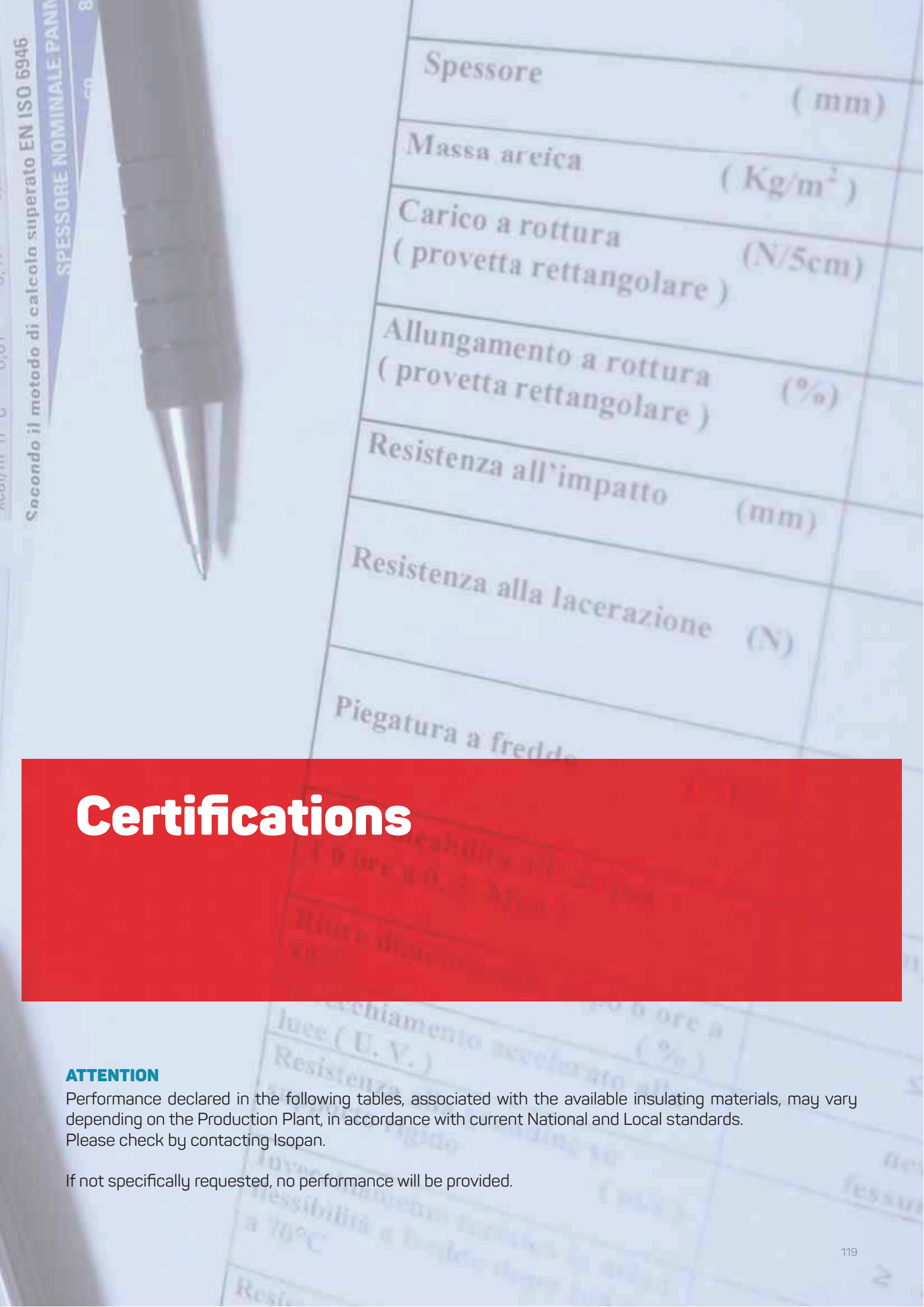
SPECIAL CURVED SHEET PARTIALLY BENT WITH DIE



TABLE OF THE TECHNICAL CHARACTERISTICS OF THE ANITCONDENSATION FELT APPLICABLE DURING THE PRODUCTION PHASE

Colour	bianco grigio		
Thickness - felt	DIN EN ISO 9073 - 2	mm	1
Water absorption		g/m ²	> 900
Reaction to fire	DIN 4102/1		B 1
Sound absorption	DIN EN 20354	125 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz	Reduction 2% Reduction 4% Reduction 4% Reduction 1,2% Reduction 4,2%
Heat conductivity	DIN 52612	W/mK	0,045





Secondo il metodo di calcolo superato EN ISO 6946
SPESSORE NOMINALE PANNELLO

Spessore	(mm)
Massa areica	(Kg/m ²)
Carico a rottura (provetta rettangolare)	(N/5cm)
Allungamento a rottura (provetta rettangolare)	(%)
Resistenza all'impatto	(mm)
Resistenza alla lacerazione	(N)
Piegatura a freddo	

Certifications

ATTENTION

Performance declared in the following tables, associated with the available insulating materials, may vary depending on the Production Plant, in accordance with current National and Local standards. Please check by contacting Isopan.

If not specifically requested, no performance will be provided.

Fire Performance Roof Panels

Indications

	Not produced		Without certification		Certified performance		Performance available (Certification extension)		Performance available (Technical declaration)
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FIRE REACTION	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
A2 s1 d0	Mineral Wool	Isofire Roof				✓	✓			✓		✓		✓	✓	✓		✓
B s1 d0 (1)	PIR	Isocop	✓		✓	✓	✓			✓		✓		✓	✓			
		Isosmart	✓		✓	✓	✓											
		Isodomus, Isodomus classic	✓		✓	✓	✓			✓								
		Isovela, Isovela classic					✓	✓		✓								
		Isotego	✓		✓	✓	✓			✓		✓		✓				
		Isotap	✓		✓	✓	✓			✓		✓						
B s2 d0	PIR	Isocop	✓		✓	✓	✓			✓		✓		✓	✓			
		Isovela					✓	✓		✓								
B s3 d0	PU	Isocop	✓		✓	✓	✓											
C s3 d0	PU	Isocop								✓		✓		✓	✓			
		Isotego								✓		✓		✓				
		Isotap	✓		✓	✓	✓			✓		✓		✓				
		Isodomus Classic	✓		✓	✓	✓	✓		✓								

Fire reaction Class achieved according to EN 13501-1 and EN 14509/2013.

(1) SPECIAL FORMULA - For further information, please contact Isopan.

FIRE RESISTANCE	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
REI 120	Mineral Wool	Isofire Roof										✓		✓	✓	✓		✓
	Mineral Wool	Isodeck PVSteel MW ⁽¹⁾												✓	✓			
REI 60	Mineral Wool	Isofire Roof								✓								
		Isofire Roof-Fono								✓		✓		✓	✓	✓		✓
REI 30	Mineral Wool	Isofire Roof				✓	✓											
	PIR	Isocop ⁽¹⁾										✓		✓	✓			
REI 15	PIR	Isodeck PVSteel ⁽¹⁾										✓		✓	✓			
	PIR	Isocop ⁽¹⁾					✓			✓								
	PU	Isocop					✓			✓		✓		✓	✓			

Fire Resistance Class achieved according to 13501-2 and EN 14509/2013

(1) Performance achievable according to Assembly Instruction

Broof	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
Broof (t3)	PU	Isocop	✓		✓	✓	✓			✓		✓		✓				
		Isodomus Classic			✓	✓	✓			✓								
		Isogrecata	✓		✓	✓	✓			✓								
		Isoray			✓	✓	✓			✓		✓						
Broof (t4)	PU	Isocop	✓		✓	✓	✓			✓		✓		✓				

If not specifically requested, Product provided will have no Fire Performance.

Fire Performance Wall Panels

LEGENDA

 Not produced	 Without certification	 Certified performance	 Performance available (Certification extension)	 Performance available Technical declaration)
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FIRE REACTION	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
A2 s1 d0	Mineral Wool	Isofire Wall				✓	✓			✓		✓		✓	✓	✓		✓
		Isofire Wall Plissé				✓	✓			✓		✓		✓	✓	✓		✓
B s1 d0⁽¹⁾	PIR	Isofrigo, Isofrozen, Isofrozen HT								✓		✓		✓	✓		✓	✓
		Isobox, Isopiano, Isorighe	✓	✓	✓	✓	✓			✓		✓		✓				
		Isoparete Plus			✓	✓	✓			✓		✓						
		Isoparete (Plissé, Piano, Box)			✓	✓	✓			✓		✓		✓				
		Isoparete Evo					✓			✓		✓		✓				
		Isoclass							✓		✓		✓					
B s2 d0	PIR	Isobox, Isopiano, Isorighe	✓	✓	✓	✓	✓			✓		✓		✓				
		Isoparete (Plissé, Piano, Box)			✓	✓	✓			✓		✓		✓				
		Isoparete Evo					✓			✓		✓		✓				
		Isoparete Plus			✓	✓	✓			✓		✓						
		Isoclass							✓		✓		✓					
	PU	Isofrigo, Isofrozen, Isofrozen HT								✓		✓		✓	✓		✓	✓
		Isofrigo G.I. (Foamed Joint)										✓		✓	✓		✓	✓
		Isoparete (Plissé, Piano, Box)			✓	✓	✓			✓		✓		✓				
B s3 d0	PU	Isobox, Isopiano, Isorighe	✓	✓	✓	✓	✓			✓		✓		✓				

Fire reaction Class achieved according to EN 13501-1 and EN 14509/2013.

(1) SPECIAL FORMULA - For further information, please contact Isopan.

FIRE RESISTANCE	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
EI 180	Mineral Wool	Isofire Wall													✓	✓		✓
EI 120⁽¹⁾	Mineral Wool	Isofire Wall										✓		✓	✓	✓		✓
EI 90	Mineral Wool	Isofire Wall												✓	✓	✓		✓
EI 60	Mineral Wool	Isofire Wall								✓		✓						
EI 60⁽¹⁾	PIR	Isofrigo, Isofrozen, Isofrozen HT																✓
EI 30⁽¹⁾	Mineral Wool	Isofire Wall				✓	✓											
	PIR	Isoparete (Plissé, Piano)										✓		✓				
		Isoparete Evo								✓		✓		✓				
		Isofrigo, Isofrozen, Isofrozen HT										✓		✓	✓		✓	
EI 20⁽¹⁾	PIR	Isobox, Isopiano, Isorighe					✓			✓		✓		✓				
		Isoparete (Plissé, Piano)								✓		✓		✓				
		Isoparete Evo								✓		✓		✓				
		Isofrigo, Isofrozen, Isofrozen HT								✓								
EI 15	Mineral Wool	Isofire Wall				✓	✓											
	PIR	Isobox, Isopiano, Isorighe (ceiling)					✓			✓		✓		✓				
EW 60⁽¹⁾	PU	Isobox, Isopiano, Isorighe								✓		✓		✓				

Fire Resistance Class achieved according to 13501-2 and EN 14509/2013

(1) Performance achievable according to Assembly Instruction

If not specifically requested, Product provided will have no Fire Performance.

Acoustic Performance

LEGENDA

	Not produced		Without certification		Certified performance		Performance available (Certification extension)		Performance available (Technical declaration)
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ROOF PANELS

SOUND INSULATION	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
RW = 35 dB	Mineral Wool	Isofire Roof FONO								✓								
RW = 34 dB	Mineral Wool	Isofire Roof FONO										✓		✓	✓	✓		✓
RW = 31 dB	Mineral Wool	Isofire Roof FONO				✓	✓											
RW = 30 dB	Mineral Wool	Isofire Roof FONO				✓												
RW = 29 dB	PIR	Isocop										✓		✓	✓			
RW = 24 dB	Polyurethane	Isodomus Classic			✓	✓	✓			✓								

SOUND ABSORPTION	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
αW = 1	Mineral Wool	Isofire Roof FONO				✓				✓		✓						































































WALL PANELS

SOUND INSULATION	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
RW = 35 dB	Mineral Wool	Isofire Wall FONO								✓		✓		✓	✓	✓		✓
RW = 34 dB	Mineral Wool	Isofire Wall FONO				✓	✓											
RW = 30 dB	Mineral Wool	Isofire Wall								✓		✓		✓	✓	✓		✓
RW = 29 dB	PIR	Isoparete Plissé										✓						

SOUND ABSORPTION	INSULATING MATERIAL	PANEL	PANEL NOMINAL THICKNES - mm															
			30	35	40	50	60	70	72	80	92	100	102	120	150	170	180	200
αW = 1	Mineral Wool	Isofire Wall FONO				✓				✓		✓						

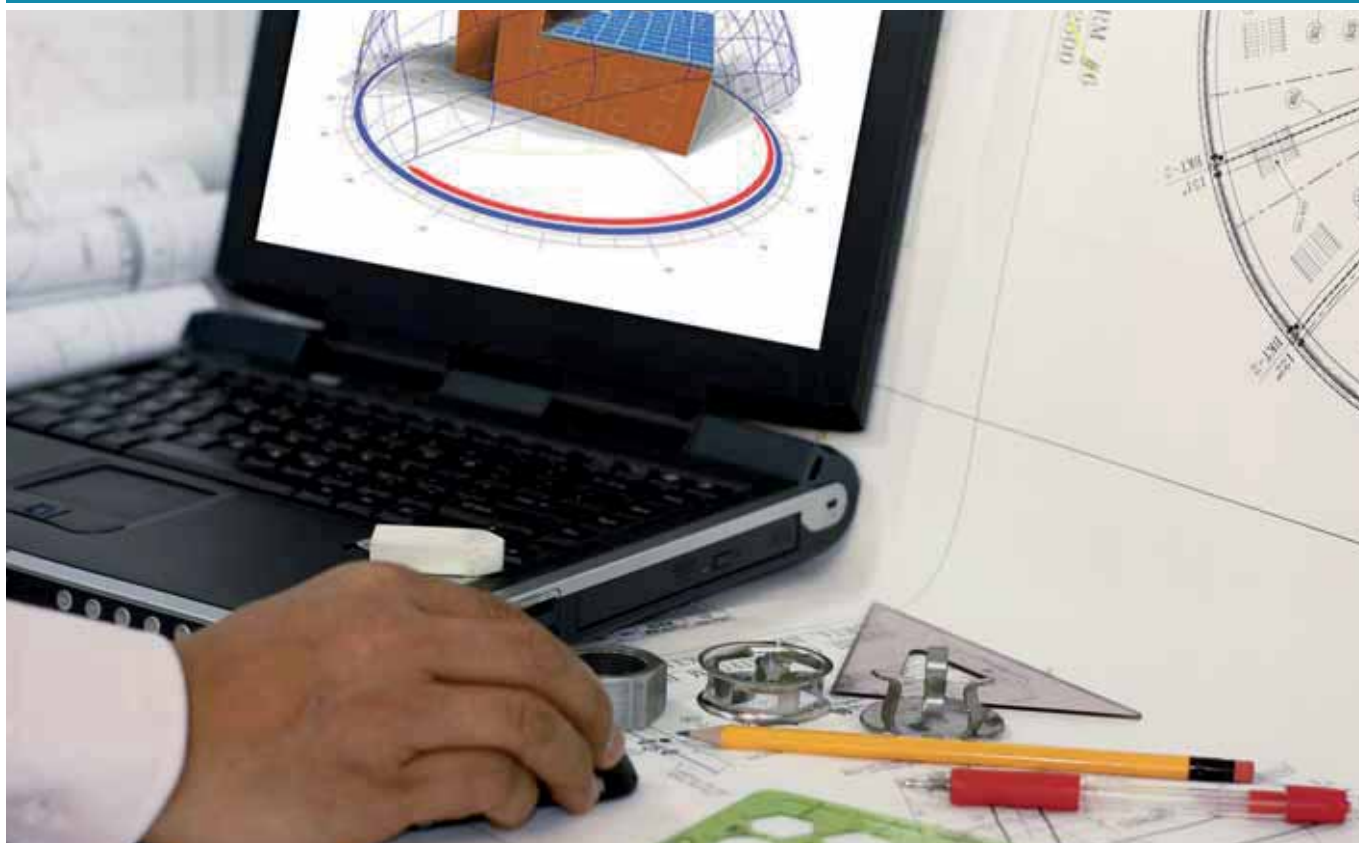
General Technical data

Colour range

Colours available - ITALY Colours match the original colours within the limitations of printing		ROOF PANELS		WALL PANELS	
		EXTERNAL SHEET	INTERNAL SHEET	EXTERNAL SHEET	INTERNAL SHEET
	Bianco Puro simil-9010				
	Bianco simil-9002				
	Bianco grigio				
	Avorio Chiaro simil-1015				
	Grigio Alluminio simil-9006				
	Grigio Antico				
	Grigio Antracite simil-7016				
	Rosso Fuoco simil-3000				
	Rosso Ossido simil-3009				
	Testa di Moro				
	Blu Genziana simil-5010				
	Blu grigiastro simil-5008				
	Verde oliva simil-6003				
	Verde Muschio simil-6005				
	Giallo Cadmio simil-1021				
	Rosso Coppo				
	Reale Antico				
	Antichizzato				
	Alvero Ellenico				
	Finto Legno Chiaro				
	Finto Legno Scuro				

IMPORTANT: The colours listed above represent the range available for Isopan Italy. For information about the current stock availability, support thicknesses that can be produced, non-standard colours, guarantees and types of supports, contact Isopan Spa. The colours may differ depending on the production lot, therefore the uniformity of shades can be guaranteed only on a single production lot.
 The number code indicates the more similar RAL-code.

Services



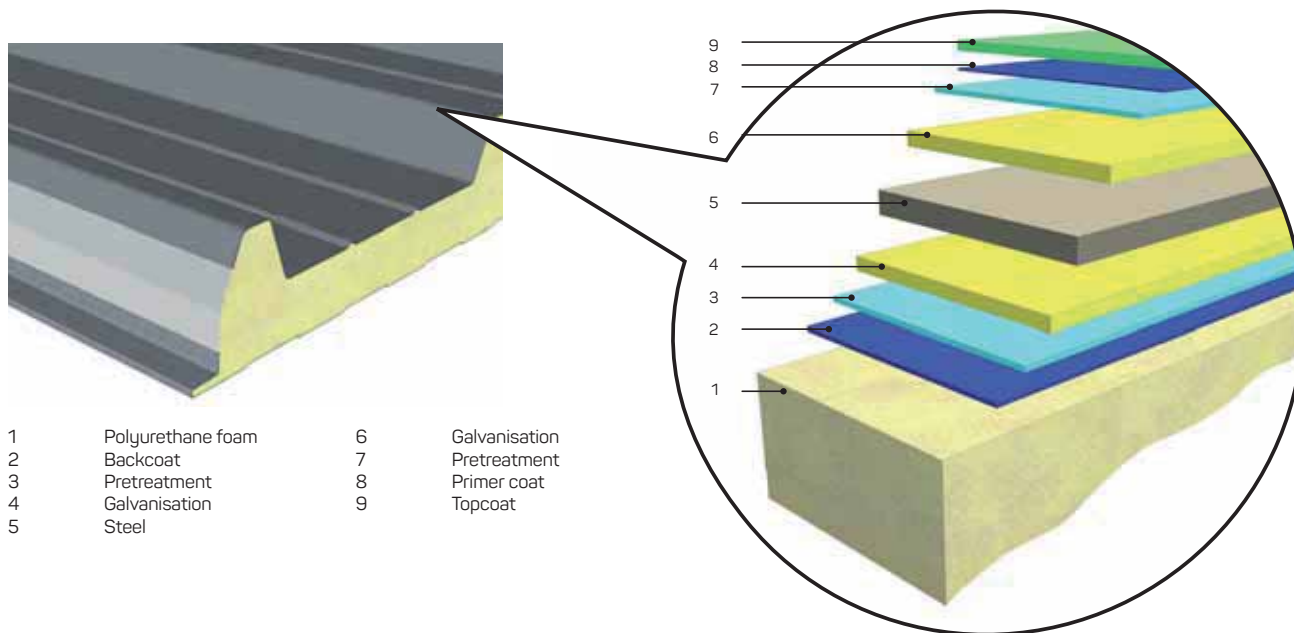
1. Architectonical consulting on design
2. Static consulting on design
3. Consulting on the facing choice
4. Static tests on real scale
5. Technical consulting on product specificities
6. Technical consulting on product certifications
7. Technical consulting on product assembly and fixing
8. Technical consulting on certifications and REI product use
9. Calculation and sizing systems for thermal insulation with calculation report
10. Calculation and static sizing of sandwich panels in compliance with the UNI EN 14509 standard
11. Bending test (resistance to uniformly distributed load) on the product with test report
12. Bending test (resistance to concentrated load) on the product with test report
13. Bending test (resistance to permanent load) on the product with test report
14. Conditioning test in climatic room (temperature-time cycles) on the product with test report
15. Technical assistance on construction site with verification report

The services mentioned above are to be considered as an aid for designing; and in no case they can be considered as project executive elements.

Isopan S.p.A is absolutely not responsible if these services are used or integrated in a project without prior authorization.

Guide to choose the perpainted facing

A steel pre-painted product is generally composed of a steel substrate with a galvanised coating, of a surface treatment, a coat of paint called primer and a topcoat called finishing.



THE COATED FACES AND THE CHOICE OF USE

The final user and/or the designer must be helped to choose the fundamental characteristics of the panel and of its metal faces as defined in the "chose the pre-painted facing" section of the catalogue.

The choice of the organic coating and its colour must be made considering the final-use of the product with a careful initial design.



CORROSION



CHEMICAL
AGGRESSIONS



CONDENSATION




UV RAYS



ABRASION

BOTH METAL FACES

The designer must take into account that both panel faces are in contact with two very different environments. The external face will be in contact with the atmospheric pollution, the wind, the sun and the UV rays of the solar spectrum that, in addition to raising the temperature of the external metal face, have a chemical and physical action on the organic coatings. The internal surface will have a significantly lower temperature thanks to the thermal insulation of the panel, and will not be affected by the action of UV rays and by the direct action of the weather, but will have to do with the internal environment in terms of pollutants due to the production lines, condensation, contact with chemicals used in washing or coming from the vapours, and an



environment also completely different from the outside. The user must then consider these aspects before deciding the panel type and, above all, the metal face to use.

The choice of metal must be done according to some considerations, like the durability related to the environment where the constructions will be installed, the aesthetics and the economic aspect.

A wide range of metal faces can be offered by Isopan :

- 1) hot dip galvanized steels with different ranges of zinc, aluminium-zinc steels, prepainted steels.
- 2) Natural or prepainted aluminium, copper, stainless steel

THE PANEL PREPAINTED SHEETS

The prepainted sheets can be supplied on hot dip galvanized substrate or on aluminium.

General considerations: The prepainted steel sheets are part of the panel structural characteristics, thanks to the quality of the steel used, but significantly contribute to the panel durability, protecting the insulating core and giving a unique aesthetic value to the panel and the building, like the colour, the aesthetic and the long-lasting performances. The environmental changes together with the increase of industrial production and the urban pollution, made necessary a higher resistance to corrosion than for natural metals; for this reason, different solutions are available for each requirement and project.

The Isopan products are made with metal substrates faced with materials as described in the diagram.

The organic coating quality must be chosen following the diagram below, depending on the environment where the panels will be installed.

For further information, the designers and our clients are invited to consult our manual for the choice of prepainted metal faces.

ISOPAN S.P.A GENERAL SALES TERMS FOR RIBBED SHEETS, INSULATED METAL PANELS AND ACCESSORIES

THE DOCUMENT HAS BEEN EDITED ACCORDING TO "AIPPEG GENERAL SALES TERMS"

1. SUBJECT AND PARTIES TO THE CONTRACT

The General Sales Terms hereby rule all the sales of products (from now on the "Products") manufactured or sold by the manufacturing company or the supplier (from now "The Seller") to the customer owner of the related invoices (from now on "The Customer") and take priority on every different clause or forecast (even though not specifically disputed by THE SELLER) which is inserted in modules, offerings or other documents. The Sellers reserves the right to change its Products - at any time and without notification - or to improve them as it sees fit or necessary.

2. ORDER – APPROVAL

The Customer's order, that must be written using the ordering forms prepared by THE SELLER, must be considered as a proposal and it is irrevocable from The Customer for 30 (Thirty) days after it has been sent to The Seller.

The order becomes binding once the Customer receives the written order confirmation from the Seller, which has approval value and it is the only document binding the two parts and ruling the contractual relationship, concerning everything not stated in the "General Sales Terms" hereby.

If the order confirmation includes the supply of different type of Products and/or multiple shipping, every type and/or shipping is to be considered autonomous in respect to the other by virtue of contract.

3. MATERIAL DELIVERY, SHIPPING AND TRANSPORT

The delivery terms stated in the order confirmation are calculated in working days, they are not essential and they can be subject to changes; the Seller will notify the Customer those changes as soon as possible. Anyway a tolerance of 15 days is allowed. Moreover, partial deliveries are always allowed.

The Seller will not be held responsible to the Customer for delays, losses, damages, costs or expenses caused by - for instance, but not limited to - industrial actions (even if business strikes), lockouts, transport blocks or suspensions, chance, fires, import prohibitions, raw material delays or lack of supply, power source limitations, raw material scarcity or absence, adaptation to law regulation, government measures, rightful or not, insurrections, war or similar, natural catastrophes, embargo, and any circumstances beyond reasonable control.

The Seller will not be held responsible for those events not even if, when they happened, the delivery were already late in respect to the contractual terms.

If the causes of the delay last beyond 30 (thirty) days, the Seller will have the option to rescind the contract, without this implying the Customer's right to be refunded for the loss attributable directly or not to the delay.

When the agreed terms of delivery expire, within 15 (fifteen) calendar days from the reception of the Product-ready notification, the Customer will have to pick up the ordered Products, or, in case of recipient delivery, the Customer will have to request the shipping.

Once this date is expired, the Products can be stocked outdoors, and this will relieve the Seller of any responsibility for the Product contingent flaws in consequence of the exposition to the weather; any warranty for the Customer will expire and he will be charged extra movement and stocking cost of 1% of the Product value per stocking week.

The sellers has also the right to ship the Products in a port assigned to the Customer, or to stock them at the expense of the Customer, or, finally, to sell the Products that were not picked up promptly by the Customer to third parties charging the former for possible payments or greater damage.

After 8 (eight) days from the issuing of the ready Product notification, the invoice will be issued anyway and the payment terms will transpire. Possible evident flaws or missing Products must be reported at the delivery taking note on the customer receipt, or the warranty will expire.

4. PACKAGING AND PROTECTION

The Products are provided without packaging. Possible packaging must be requested when issuing the order and they will be charged in the invoice.

The choice of the packaging type - which has to be made by the Customer, according to the need of Product transport, stocking and destination - and all the related responsibilities resulting from that choice are exclusively and totally the customer's responsibility, with express exclusion of any Seller responsibility. The Customer is notified that using wrong or inadequate methods of shipping, transport, stocking, movement or assembly (that must be done strictly according to the movement, stocking, maintenance and assembly regulations as in the attachment

A and C in the general conditions hereby) can cause condensation and oxidation phenomena and it can compromise severely - and sometimes permanently - the Product quality.

To ensure the panel and the prepainted ribbed sheet aesthetical integrity, it is essential that those surfaces, during manufacturing, movement, transport and assembly are protected with a polyethylene sticky film which must be removed by the Customer before assembling the Products, anyway, within 8 (eight) days from the Product delivery. If the Customer does not remove the film within the terms mentioned above, this can cause extreme film stickiness, removal issues, and sometimes unexpected interactions with the organic layer below, compromising the Product quality and aesthetic. The Customer asking or accepting ribbed painted sheet or panel without that protection supply, accepts the responsibility and relieves the Seller for any kind of damage.

If the above-mentioned expedient will not be adopted, the possible protest for affirmed sticky film anomalies and/or consequences directly and/or indirectly imputable to the already-mentioned film will not be accepted by the Seller.

5. TOLERANCES

The customer accepts the tolerances noted on the catalogue and/or on the Seller technical sheets (last edition).

6. WARRANTIES

The Seller guarantees to the Customer the Product compliance to the specifications found in the catalogues and/or in the Seller technical sheets (last version), and also the flawlessness of materials and Product manufacturing, within the tolerances and within the technical specification given by the Customer.

The warranty stated above lasts 12 (twelve) months after the Product delivery date.

Possible protests concerning evident flaws in the Product or shortage must be enrolled (through notified registered mail or early faxed telegram) by the Customer to the Seller within 3 (three) days from the Product delivery. Possible hidden flaws not revealed at the delivery must be reported by the Customer - in the same ways for the evident flaws - within and not after the expiring one year warranty date and, at penalty of forfeiture, within 8 (eight) days from the discovery or from the moment they should have been discovered, using ordinary care.

The protests must be detailed to allow the Seller a prompt and complete check. The Products subject to protest must be kept at Customer disposal exactly how they have been delivered, respecting the "movementation, handling and stocking legislation" found in attachment A of the "General Trade Conditions" hereby and possible particular instruction provided by the Seller.

It is understood that, in any case, the following cases cannot be considered Product flaws:

(i) the presence of possible cutting imperfection with less than 1,5 mm protrusion in relation to the metal support plane.

(ii) the presence - when manufactured with overlapping to allow the element lengthwise overlapping - of expanded material residual on the metal surface after the automatic removal of the insulation (the removal from the naked metal must be completed on the working site during the building and it will be charged to the Customer)

Conditional to the above provisions fulfillment, in case of prompt flaws complaint by the Customer and acknowledgement of those flaws by the Seller, the latter will proceed according to the necessary steps and by its own undisputable choice to (i) freely repair and/or substitute the flawed Products ExWorks (EXW) (Incoterms 2010), or

(ii) to refund the Customer a sum corresponding to the difference between the ordered Product price and the Product price degraded by the flaws (being understood that, in any case, the sum refunded by the Seller to the Customer according to hereby paragraph (ii) can never exceed the flawed product original price).

The repaired or substituted product warranty according to the hereby paragraph will expire at the original intended date set by the original Customer purchase.

Whereas complaints issued by the Customer concerning flawed Products should

reveal themselves false, the Seller will charge the Customer all the costs sustained by the former for reviews, inspections, and possible surveys (also made by third parties).

The warranty mentioned above is the only warranty offered by the Seller to the Customer in relation with the Product sales, it will have validity and it will not be interrupted or extended in any case. No other type of warranty and/or refunding, whether conventional or legal can be requested by the Customer to the Seller. In particular every responsibility of the Seller for direct, indirect, accidental or consequential damages which the Customer may experience from the Product defectiveness and/ or non conformity (as for delays in the delivery) is excluded. The right of refund of these damages, limited by law, is to be considered renounced by the Customer.

The Customer's right to terminate the contract based on possible Product flaws is excluded.

In case of separate deliveries, possible protests, even if promptly made, related to some of the products delivered do not relieve the Seller from the obligation to recall the remaining Products ordered.

As dispensation of what is stated above, no warranty is issued by the Seller for metal layer Products without organic covering, except for the warranty of Product correspondence to the regulation in force; the Seller is then relieved from any responsibility related to the possible (and likely) oxidation phenomena occurring on those Products.

Likewise, no warranty is issued relating to used or second-hand Products, or to Products purchased with the "seen and liked" system, made of available material (whether it is first choice, second choice or junk material) by the Seller's factory and sold at lowered prices.

The warranty described in paragraph 6 automatically expires (and any Product warranty expires as well) in case of:

- (i) use and/or placement of Products declared flawed by the Customer after the notification expiring date or flaw onset, whichever happens first;
- (ii) use of Products not according to the related "performance" features;
- (iii) use, stocking, maintenance, movement or assembly of Products not according to the "movement, use and stocking regulation" as in the attachment A of the General Terms hereby and to the possible specific instruction given by the Seller.
- (iv) Installation with systems or accessories not according to the Seller technical sheets (last edition) or with accessories (for instance: fixing systems, tampons, ribs fixer, ridges, flashings, etc.) which are not provided and/or explicitly approved by the Seller;
- (v) Products on which intervention of any kind has been made by third parties other than the Seller.

Calculated data, table values, material lists, graphics as any other document provided by the Seller to the Customer must be considered as simple orientation elements and do not imply any responsibility of the Seller in the structure or building projects made by the Customer in which the Products will be installed by the Customer. The design, work direction, building test and every other activity related to design and building are exclusive responsibility of the Customer. Products provided by the Seller to the Customer, except when differently stipulated on writing with the Seller, do not contribute in any way to the building structure global or partial stability; therefore they are not suitable to sustain permanent vertical, horizontal or static loads (excluded their own weight or the weight of the possible photovoltaic system installed on them) because their only purpose is covering an existing supporting structure, whose design and implementation must be executed on the sole Customer responsibility.

The Customer acknowledges that the Products are manufactured according to the Italy law, the regulation in force and that they are provided with the certifications shown on the related technical sheet and published on the website www.isopan.com. The Seller does not provide any warranty that the Products fulfill the requirements requested by other regulation different from the Italy and Communitarian ones, neither guarantees in any way the Product compliance to different standards, technical specifications or regulation to those stated in the Product technical sheet. It will be up to the Customer to verify the product conformity to regulations and technical requirements in force in the Countries where he intends to use the Products.

The Seller reserves the right to modify or improve the products if such improvements are considered necessary.

7. PRICES AND PRICE REVISION

The Product prices are Seller Ex Works (Ex Works - Incoterms 2010) - They result from the order confirmation by the Seller and do not include packaging, transport and shipping charges, which are charged completely to the Customer.

In no case prices confirmed by the Seller for an order can be considered binding for future orders.

Calculated prices are based upon costs in force at the date of order confirmation.

The Seller reserves the right to change the Product prices, even after the order confirmation, in case labor and/or raw material price increases more than 2%; in that case, when adjusting the prices in relation with the labor and/or raw material price changes, the Seller must take into account the following percentage:

Product type	Effect of the labor on the Product's price	Effect of the metal' price on the Product's price	Effect of the insulating components' price on the Product's price	Effect of external parameters' cost on the Product's price
Ribbed sheets	10%	90%	-	-
Sandwich-panels	10%	-	30%	60%

When determining labor and raw material cost variation, we will refer to:

- A.N.I.M.A. Table for the labor;
- C.C.I.A.A. Milan list for metals;
- the Seller's supplier certification for insulating components and other raw materials.

For accessories, the revision will be made in a conventional manner applying the possible variations of the official ISTAT life cost index.

If separated deliveries are provided for, the price revision will be applied only to Products delivered after the price change.

That Product price changes will be notified in writing by the Seller to the Customer who at its discretion can rescind the part of the order not yet delivered, BZ notifying it in writing to the Seller (through early faxed notified registered mail), within the next 2 (two) days. Otherwise the order will be delivered.

8. PAYMENTS

Payment terms and conditions concerning each order are stated by the Seller in the pertinent order confirmation. Irrespective of any different indication, payments must be made at the Seller head office.

Money paid when making the order does not represent order acceptance. The Seller will return the money without interests, if the order is not confirmed.

If Product payment is allowed via promissory note or titles (checks, etc.) they must reach the Seller head office before or contextually to the Product collection. In any case, releasing promissory notes or checks is not valid as payment until the whole related sum is collected and does not imply the compliance place relocation or renewal of the original obligation. The Customer will be charged the related banking costs.

The Customer is expressly forbidden to compensate the Product's price charged by the Seller with any amount of money owed to the former for any reason.

Being any other right of the Seller without prejudice according to the law, in case of Product, total or partial, payment delay or omission, the Seller will be allowed, with no notification or notice of default, to suspend all the Product supply or delivery in progress (including Products other than those that caused the Customer default); to hold all the sum of money already received (with the exception of the

ISOPAN S.P.A GENERAL SALES TERMS FOR RIBBED SHEETS, INSULATED METAL PANELS AND ACCESSORIES
THE DOCUMENT HAS BEEN EDITED ACCORDING TO "AIPPEG GENERAL SALES TERMS"

reimbursement of the possible major damage) as penalty and also to declare the Customer loss from the benefit of terms related to the supplies in progress.

Possible complaints and protests, issued by action or exception, do not give the right to suspend the payments.

The bank statement, sent by the Seller, is considered accepted by the Customer if it is not notified within 15 (fifteen) days from delivery.

9. CONTRACT TERMINATION

Besides the cases stated in paragraph 3, the Seller reserves the right to terminate the contract without obligation in case facts or circumstances happens that change markets' stability, currency's value, raw material manufacturing conditions and supplying conditions.

The seller will also have the right to terminate the contract without obligation, in case bill protest or insolvency or extrajudicial process against the Customer should be found.

10. REGULATORY LEGISLATION

What is not expressly ordered by the "General Sales Terms" hereby, will be ruled by the trade legislation provided by articles 1470 and following of the Civil Code, even regarding the Product supply during work.

11. APPLICABLE LAW AND COMPETENT COURT

The General Trade Rules hereby, as any trade contract pledged by them are regulated by the Italian law, with explicit exclusion of the Vienna Agreement of 1980 on international goods trade contract. Every dispute deriving from interpretation, application, execution, resolution of the "General Trade Rules" hereby or of the trade contracts regulated by them, will be transferred exclusively to the competent court where the Seller has the legal head office, even in case of connected lawsuits.



ANNEXE A

Rules on movement, handling and storage of ribbed sheets, insulated metal panels and accessories

1. WRAPPING AND PACKAGING

Paragraph 9.9.1 of Standard UNI 10372:2004 is quoted in its entirety .

To maintain their durability in use, metal components for roofs must not be damaged during storage, transport, movement and laying operations.

It is therefore advisable to provide temporary protection systems for the products relating to the performance required, especially of an aesthetic nature.

During fabrication processes the above materials are generally protected with polythene fi lm (adhesive or simply in contact), or with other solutions.

During subsequent stages precautions must be taken to ensure that the following aspects are guaranteed:

- protection of the surface from abrasion, especially during movement;
- protection of corners and edges against knocks and crushing;
- protection against water or condensed moisture collecting;
- protection of the components which bear the weight of the entire pack, or of superimposed packs, against permanent deformation.

The profiled sheets and panels are generally packaged in packs. The number of sheets in the pack is such as to contain the overall weight of the pack itself within the limits imposed by the available means of lifting and transport.

Generally the materials used for packaging are: timber, expanded plastic materials, cardboard, polythene fi lm (heat-shrink or stretchable) or others; binding is done with bands (never with iron wire) and suitable protection is used (edge protectors etc.). The bands must not be used as slings for lifting.

It is also advisable to provide attachment points for subsequent movement and lifting operations, indicating them appropriately.

The packs of products must therefore always be provided with a support system which is such as to distribute the weight homogeneously and to make it possible to pick up the pack for movement.

By way of example and without limiting effect, the support system may be constituted by joists made of expanded plastic material or dry timber, or alternatively by sheets of composite materials, located at suitable spacing for the characteristics of the product.

The packaging must be appropriately specified at the ordering stage, depending on the modalities of transport (for example cage or crate for transportation which involves transshipment, or transport by train or by sea). A suitable type of packaging will need to be provided depending on the performance which is required of the product.

The making-up of the packages will be performed according to parameters preset by the manufacturer. Any different division of components and/or particular packaging, in relation to specific requirements of the Purchaser, must be agreed at the time of placing the order.

2. TRANSPORT

Paragraph 9.9.2 of Standard UNI 10372:2004 is quoted in its entirety .

The packs must be transported with suitable means in such a way that:

- the packs are supported on spacers made of timber or expanded plastic material, located at spacing appropriate to the characteristics of the product;
- the supporting surface is compatible with the shape of the pack (flat if the pack is flat, or if the pack is curved, a support must be created which maintains the same curvature);
- when stacking packs, suitable spacers made of timber or expanded plastic material are always interposed, if not present in the packaging;
- the packs do not overhang by more than 1 metre;
- the points are clearly marked on the packs where slings may be placed for lifting, if these are not otherwise identifiable;
- any other instructions from the manufacturer are observed.

In particular, the packs must be positioned on the flat, and underneath the packs themselves, spacers of timber or expanded plastic material must be placed, of suitable dimensions and in adequate numbers, positioned in perfect vertical alignment.

The packs must be secured by the carrier to the transport vehicle by transverse ties, with straps placed at a maximum spacing of 3 m, and each pack must in any event be provided with no fewer than two transverse ties.

When travelling, the load must always be covered, and above all the side facing in the direction of travel must be made impermeable. Purchasers arranging collection must instruct the drivers on the subject.

The load must be carried on a vehicle bed which is clean and free of obstructions. Vehicles already partly occupied by other materials or with an unsuitable bed are not acceptable for the load.

The goods must be positioned on the vehicles in accordance with the instructions of the carrier, who alone is responsible for the integrity of the load. The carrier must take particular care that the weight bearing on the lowest pack, and also the pressure exercised by the tie-points, do not cause damage, and that the straps do not in any way cause deformation of the product. Special loading conditions can be accepted

only on the written proposal of the Purchaser, who assumes complete responsibility

for them.

3. STORAGE

Paragraph 9.9.3 of Standard UNI 10372:2004 is quoted in its entirety .

The shape of the components has been designed to allow them to be stored by stacking them so as to reduce to a minimum the space occupied in storage and transport; care must however be taken when stacking them so that no damage occurs to the surfaces.

The packs must always be kept raised off the ground, both in the warehouse and, even more so, on site. They must have supports preferably of timber or expanded plastic material with flat surfaces, with a length greater than the width of the sheets and at suitable spacing for the characteristics of the product.

The supporting surface must be compatible with the shape of the packs (flat if the pack is flat, or if the pack is curved, a support must be created which maintains the same curvature).

The packs must be stored in places which are not damp, otherwise condensation will collect on the less well-ventilated internal components. This condensation is particularly aggressive towards metals, and cause the formation of oxidation products (for example white rust on zinc).

The packs must be stored in such a way as to encourage water to drain, especially if it is necessary to store them temporarily in the open air (see illustration).



If storage is not followed shortly by picking the sheets up for laying, it is as well to cover the packs with protective tarpaulins. Attention must be paid to any electrochemical corrosion caused by contact between different metals, including during the period of storage. Generally it is preferable not to stack the packs; if it is considered possible to stack them because of their light weight, spacers of timber or expanded plastic material, with as large a supporting surface as possible, must always be interposed, in suitable numbers and always located in line with the supports of the packs below (see illustration).



The best storage conditions are in closed areas, with light ventilation, free from damp and dust.

In any event, and in particular for storage on site, a suitable, stable support surface must be provided, which will not allow water to collect.

The packs must not be positioned in areas close to manufacturing processes, for example metal cutting, sanding, painting, welding etc., nor in areas where the crossing or parking of operating vehicles could cause damage (collisions, splashing, exhaust gases etc.).

A maximum of three packs may be stacked, with an overall height of approximately 2.6 metres, and in this case the supports must be suitably thickened.

In the event that the materials are covered with protective fi lm, this fi lm must be completely removed at the fitting stage, and at all events not later than sixty days from the date of readiness of the materials. Any further specific instructions from the supplier must be followed.

On the basis of knowledge acquired, in order to maintain the product's original performance, it is advisable, subject to compliance with these rules, not to exceed six months of continuous storage in a closed and ventilated environment, while the period of storage in the open air must never exceed sixty days. The materials must anyway always be protected from direct solar radiation, because this can produce alterations.

In the case of protection by tarpaulins, it is necessary to ensure that they are waterproof, and that there is adequate ventilation to avoid condensation collecting

and pockets of water forming..

4. LIFTING AND HANDLING

Si riporta integralmente (testo in corsivo) il punto 9.9.4 della 4. LIFTING AND HANDLING Paragraph 9.9.4 of Standard UNI 10372:2004 is quoted in its entirety.

The packs must always be lifted by slings positioned at a minimum of two points, separated by a distance not less than half the length of the packs themselves.

Lifting must preferably be carried out using slings woven from synthetic fibre (nylon), of a width not less than 10 cm so that the load on the sling is distributed and does not cause deformation (see illustration)..



Suitable spacers must be used consisting of robust lengths of fl at timber or plastic located above and below the pack, in order to prevent direct contact between the slings and the pack.

These spacers must have a length at least 4 cm greater than the width of the pack, and a width not less than that of the sling. In any event, the lower spacers must have a width sufficient to prevent the weight of the pack from causing permanent deformation to the lower sheets.

Care must be taken to ensure that the slings and the supports cannot move during lifting, and that the manoeuvres are performed gradually and with caution.

When the packs are offloaded onto the roof structure, they must be placed only on surfaces which are suitable for supporting them, both in terms of strength and of support conditions, and also in relation to other work which is in progress. It is advisable always to ask the works manager for authorisation for offloading the packs.

Suitable protective equipment must be used (gloves, safety shoes, overalls etc.) when handling the sheets, in compliance with the applicable regulations.

When an individual sheet needs to be moved, this must always be done without dragging it over the one below. It should be rotated to a vertical position beside the pack and then carried by two or more people depending on its length, keeping it vertical (see illustration).



Gloves and lifting equipment must be clean and of a kind that will not cause damage to the sheets.

The use of fork-lift trucks for moving the sheets is not recommended, as this is likely to cause damage.

Packs offloaded at roof height must be suitably secured to the structure.

ANNEX B

Standards qualitativi delle lamiere grecate e dei pannelli metallici coibentati

Ribbed sheets and insulated metal panels are used for walls, roofs and floors in civil and industrial buildings. The quality standards quoted in the present Annexe must be the subject of prior agreement between Purchaser and Vendor at the time of confirming the order. The aesthetic factor lies outside the intrinsic characteristics of the products and does not constitute a normal supply requirement. The harmonised European product standards, valid for obtaining CE Marking, are UNI EN 14782:2006 and UNI EN 14783:2006 for ribbed sheets, UNI EN 14509:2007 for double-skinned insulated metal panels (with two metal sheets), and ETAG 016 for single-skin insulated metal panels.

Materials	Standard	Reference	Value - notes
1. RIBBED SHEETS			
1.1 Characteristics			
1.1.1 Carbon steel	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 508-1:2002 UNI EN 10326:2004 UNI EN 10327:2004 UNI 10372:2004	3.2 e 4.2 5.1 e 7. 5.1 e 7. 8.1.4	S250GD DM (min. yield stress = 250 N/mm ²) Non-structural steels
1.1.2 Aluminium	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 508-2:2002 UNI 10372:2004 UNI EN 573-3:1996 UNI EN 1396:1998	3.2 e 4.2 8.1.2 3. 5.	Alloys: Vendor's declaration (min. breaking load = 150 MPa)
1.1.3 Stainless steel	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 508-3:2002 UNI 10372:2004 UNI EN 10088-1:2005 UNI EN 10088-2:2005	3.2 e 4.2 8.1.3 4. 6.	Type 1.3401 (AISI 304)
1.1.4 Copper	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 506:2002	3.2 e 3.4	Type: Vendor's declaration (except by specific request of the Purchaser, accepted by the Vendor)
1.1.5 Metal facings	UNI 10372:2004 UNI EN 1172:1998 UNI EN 1173:1998 UNI EN 1412:1998 UNI EN 508-1:2002 UNI EN 10326:2004 UNI EN 10327:2004 UNI 10372:2004	8.1.1 4 – 5 – 9 3. 4. 3.2 e 3.4 7. 7. 8.1.4	Including different facings
1.1.6 Organic facings (preainted and plasticised)	UNI EN 10169-1:2007 UNI ENV 10169-2:2003 UNI EN 10169-3:2006 UNI EN 508-1-2-3:2002 UNI 10372:2004 UNI EN 1396:1998	Annex B 8.1.4.3 6.	
1.1.7 Multi-layer bituminous facings	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 508-1:2002 UNI 10372:2004	Annex A Annex A 3.2.6 8.1.4.4	
1.2 DIMENSION TOLERANCE			
1.2.1 Carbon steel	UNI EN 10143:2006 UNI EN 508-1:2002	Appendix D 3.1	Normal tolerances unless requested otherwise
1.2.2 Aluminium	UNI EN 485-4:1996 UNI EN 508-2:2002	Appendix B	
1.2.3 Stainless steel	UNI EN 10088-2:2005 UNI EN 508-3:2002	6.9 Appendix B	Annex B
1.2.4 Copper	UNI EN 1172:1998 UNI EN 506:2002 UNI EN 1172:1998	6.4 Appendix A	
1.3 REQUIREMENTS			
1.3.1 Performance	UNI EN 14782:2006 UNI EN 14783:2006 D.M. 09.01.1996 D.M. 14.09.2005 Direttiva 89/106/CEE	Parte II 11.2.4.8.1.1 Annex 1	Values declared by the Vendor for the purposes of CE Marking

Materials	Standard	Reference	Value - notes
1.3.2 Test methods (metallic coated tapes)	UNI EN 13523-0÷24		Values declared by the Vendor
1.3.3 Durability	UNI EN 10169-1:2007 ENV 10169-2:2003 UNI EN 10169-3:2006 UNI EN 1396:1998		
1.3.4 FIRE PERFORMANCES	UNI EN 14782:2006 UNI EN 14783:2006 UNI EN 14782:2006	Annex C Annex B Annex B	
1.3.5 Calculation procedures (concentrated loads)			
1.3.6 Inspection and maintenance	UNI 10372:2004 AIPPEG general conditions of sale	Cap. 11 Annex D	
2. INSULATED METAL PANELS (DOUBLE SKINNED)			
2.1 Characteristics			
2.1.1 Rigid metal facings	Valgono gli stessi riferimenti di cui al precedente punto 1.1 (sono escluse le prescrizioni specifiche della UNI EN 14782:2006 e della UNI EN 14783:2006)		
2.1.2 Insulants			
2.1.2.1 Rigid cellular plastics	UNI EN 13165:2006 UNI EN 13164:2006 UNI EN 13172:2003 UNI EN 13162:2003		PUR e PIR Polistirene Valutazione e conformità
2.1.2.2 Mineral fibre			
2.2 DIMENSIONAL TOLERANCES			
2.2.1 Rigid metal facings	The same regulations, references, values and notes apply as in para. 1.2 above		
2.2.2 Pannello	UNI EN 14509:2007	Annex D	
2.2.3 Blisters	Blisters are defined as convex areas with a lack of adhesion between insulation and facing. In the absence of regulations, it is considered on the basis of experience that any blisters up to 5% of the area of the individual panel and with maximum dimensions per blister of 0.2 m2 are to be presumed not to prejudice the functionality of the panel. The above is to be considered valid even for panels where the insulation has the function of transmitting loads.		
2.3 REQUIREMENTS			
2.3.1 Performance	UNI EN 14509:2007 UNI 10372:2004 Direttiva 89/106/CEE	Punti 5 e 6 Punto 8.1.6 Annex 1	Values declared by the Vendor for the purposes of CE Marking
2.3.2 Test methods	UNI EN 14509:2007	Annex A	
2.3.3 Durability	UNI EN 14509:2007	Annex B	
2.3.4 FIRE PERFORMANCES	UNI EN 14509:2007	Annex C	
2.3.5 Calculation procedures	UNI EN 14509:2007	Annex E	
2.3.6 Inspection and maintenance	UNI 10372:2004 AIPPEG general conditions of sale	Cap.11 Annex D	
3. INSULATED METAL PANELS (SINGLE SKINNED)			
3.1 Characteristics			
3.1.1 Rigid metal facings	The same references apply as in para. 1.1 above (excluding the specific prescriptions of UNI EN 14782:2006 and UNI EN 14783:2006)		
3.1.2 Insulants			
3.1.2.1 Rigid cellular plastic	UNI EN 13165:2006 UNI EN 13164:2006 UNI EN 13172:2003		PUR e PIR Polistirene Valutazione e conformità
3.2 DIMENSION TOLERANCE			
3.2.1 Rigid metal facings	Valgono le stesse normative, riferimenti, valori e note di cui al precedente punto 1.2		
3.2.2 Panel	ETAG 016	Parte 1 e 2	Valori dichiarati dalla Venditrice
3.2.3 Blisters	Riferimento Punto 2.2.3		
3.3 REQUIREMENTS			
3.3.1 Performance	UNI 10372:2004 Direttiva 89/106/CEE	Punto 8.1.6 Annex 1	Values declared by the Vendor for the purposes of CE Marking
3.3.2 Other requirements	ETAG 016	Parte 1 e 2	Values declared by the Vendor
3.3.3 Inspection and maintenance	UNI 10372:2004 AIPPEG general conditions of sale	Cap. 11 Annex D	

National and European regulations, as well as the needs of the market, are in a state of continuous evolution. The members of AIPPEG are available to examine requests for products with qualitative standards different from the performance characteristics quoted in the present Annex.

ANNEXE C

Recommendations for fitting ribbed sheets and insulated metal panels

1. INTRODUCTION

These recommendations are intended to provide a reference informational support for fitting ribbed sheets and insulated metal panels.

They are however supplementary to Standard UNI 10372:2004 "Discontinuous roofing. Code of practice for design and execution with metal sheets".

Each job must take account of the needs of the specific site, which must be provided with suitable equipment for movement and laying, in accordance with the applicable legislation on safety and accident prevention.

The firm charged with the job of fitting the ribbed sheets/panels, besides knowing the characteristics of the materials used, must employ sufficient skilled manpower for the work on site, ensuring that the work is correctly performed in compliance with the plan specifications.

Failure to observe these recommendations and incorrect execution of the operations on site exonerate the Vendor from all responsibility.

Efficient organisation and a coordinated method of working provide the best conditions for overall working productivity.

Irrespective of the delivery location of the goods, the operations referred to in Annex A, as well as those of unloading and installation, are carried out under the care and responsibility of the Purchaser, unless otherwise agreed. The instructions on the subject provided by the Vendor must be strictly followed.

2. CONSTRUCTION COMPONENTS

Ribbed sheets/panels are used in civil and industrial buildings for the construction of roofs, walls and floors; they are fitted to every kind of supporting structure: metal frameworks, normal reinforced and prestressed concrete, and timber.

The supporting structures and the relative fixing devices as well as the ribbed sheets/panels themselves, must be suitably dimensioned and must satisfy the intended design conditions in respect of safety, stability and functionality. Ribbed sheets and insulated metal panels are quick and easy to install, with the possibility of covering in one stretch the entire length of the slope of a roof, or the entire height of a wall or several spans of the floor. The length of the metal components is conditioned predominantly by transport and handling needs, as well as by the nature of the material used and the production technology.

The supporting surfaces should be compatible with the use and the fixing modalities of the ribbed sheets and insulated metal panels.

The most common types are:

1. ROOFS

- | | |
|-------|--|
| 1.1 | ribbed sheets |
| 1.1.1 | plain ribbed sheets |
| 1.1.2 | sandwich construction executed on site |
| 1.1.3 | deck executed on site |
| 1.2 | monolithic insulated panels |
| 1.2.1 | prefabricated monolithic sandwich |
| 1.2.2 | pre-insulated deck |

2. WALLS

- | | |
|-------|--|
| 2.1 | ribbed sheets |
| 2.1.1 | plain ribbed sheets |
| 2.1.2 | sandwich construction executed on site |
| 2.2 | monolithic insulated panels |
| 2.2.1 | prefabricated monolithic sandwich |

3. FLOORS

- | | |
|-----|--|
| 3.1 | plain sheets |
| 3.2 | sheets with collaborating concrete |
| 3.3 | ribbed sheets with disposable formwork |

The fitting sequence for roofs, walls and floors is different depending on the type involved.

3. PRELIMINARY OPERATIONS

Before undertaking the work of fitting on site, the installer must:

- view the printouts of the plans and study the relative instructions
- check the alignment of the supporting structures for the ribbed sheets/panels
- check that the surfaces of the supporting structures which will be in contact with the ribbed sheets/panels, are compatible with each other or otherwise protected from possible corrosion by electrochemical action
- make sure that there is no interference with aerial electrical lines in the manoeuvring area for the ribbed sheets/panels
- make certain that the work at ground level and at a height is compatible with the other work on site
- check the suitability of the area of the site chosen for the offloading and handling of materials, so that they do not suffer damage.

The installer must carry out all fitting operations in accordance and compliance with all applicable safety regulations. In addition, for lifting, handling and offloading the ribbed sheets/panels at height, see Paragraph 4 of Annex A.

Personnel engaged in fitting must be equipped with footwear with soles that will not damage the external facing. For cutting operations on site, suitable equipment must be used (jigsaw, shears, nibbler etc.). The use of equipment with abrasive discs is not recommended.

For fixing operations it is advisable to use a power screwdriver with torque limiter.

For roofing work in particular, the alignment and overlap of adjoining panels must be perfectly carried out to avoid the formation of condensation

4. COPERTURE

SLOPES

The slope of the roof depends on the environmental conditions, the design solution chosen and the type of roof itself.

For roofs with pitch without intermediate end-to-end joints (i.e. with sheets of a length equal to the length of the roof), the slope to be adopted is usually not less than 7%. For lower slopes the supplier's instructions must be followed.

In cases where there is an end-to-end overlap, the slope must take account of the type of joint and the material used, besides the specific environmental conditions. For deck roofs, the slope may be reduced to the minimum which will allow the water to drain off properly.

FITTING SEQUENCES

These are the essential points for a correct fitting sequence.

A) Plain ribbed sheets and prefabricated monolithic sandwich (types 1.1.1 and 1.2.1)

- Fit the gutters and any under-ridge pieces and connecting flashings.
- Remove any protective film from the roofing panels/sheets and from the accessories.
- Lay the roofing panels/sheets starting from the eaves and from one end of the building, taking care to align and overlap the panels/ sheets correctly and to check that they are perfectly square with respect to the underlying structure.
- Secure the panels/sheets systematically, after checking that they are perfectly lined up. All left-over materials must be promptly removed, with particular attention to metal offcuts.
- Lay subsequent courses of panels/sheets overlapping the eaves course (in the case of a pitch requiring two or more courses). In the case of panels, the insulation must first be removed in the overlap area.
- Fix the panels/sheets at every rib along the lines of the ridge, eaves, valleys and end-to-end overlaps.
- Fit the finishing parts (ridges, cappings and flashings in general) and any corresponding insulation.
- Remove all left-over materials and make a general inspection of the roof, with particular attention to the fixings and the areas connecting with other elements making up the roof.

B) Sandwich construction executed on site (type 1.1.2)

B.1) Sandwich construction with parallel ribbed sheets

- Fit the gutters and any connecting flashings: depending on the plan specifications, this may be done before laying the inner sheet or before laying the outer sheet.
- Remove any protective film from the roofing sheets and from the accessories.
- Lay the inner sheet starting from the eaves and from one end of the building, taking care to align and overlap the sheets correctly and to check that they are perfectly square with respect to the underlying structure.
- Secure the sheets systematically, after checking that they are perfectly lined up. All left-over materials must be promptly removed, with particular attention to metal offcuts.
- Lay subsequent courses of sheets overlapping the eaves course (in the case of a pitch requiring two or more courses).
- Fix the sheets at every rib along the lines of the ridge, eaves, valleys and end-to-end overlaps.
- Fit suitably-sized rigid spacing pieces, positioned as on the plans. In the case of metal spacing pieces, it is advisable to provide a thermal break between these distance pieces and the outer ribbed sheet. If the secondary support structure provides a direct housing for the inner sheet, the rigid spacing pieces mentioned above are superfluous.
- Lay the insulation (taking care to ensure that the thermal insulation is uniform) and any layers which have a specific function (e.g. vapour barriers, separating layers etc.), and any head-end "buffers".

9. Lay the outer sheet, following steps 2–6 of sequence B1.
10. Remove all left-over materials and make a general inspection of the roof, with particular attention to the fixings and the areas connecting with other elements making up the roof.

B.2) Sandwich construction with crossed ribbed sheets

1. Remove any protective film from the roofing sheets and from the accessories.
2. Lay the inner sheets starting from the eaves and from one end of the building, taking care to align and overlap the sheets correctly and to check that they are perfectly square with respect to the underlying structure.
3. Secure the sheets systematically, after checking that they are perfectly lined up. All left-over materials must be promptly removed, with particular attention to metal offcuts.
4. Fit the flashing pieces which connect to the first sheet (under-ridge pieces, connectors, special components).
5. Fit suitably-sized rigid spacing pieces, positioned as on the plans. In the case of metal spacing pieces, it is advisable to provide a thermal break between these distance pieces and the outer ribbed sheet. In the event that the inner sheet consists of continuous metal strips, the spacers are not necessary, but it is always advisable to provide a thermal break.
6. Lay the insulation (taking care to ensure that the thermal insulation is uniform) and any layers which have a specific function (e.g. vapour barriers, separating layers etc.), and any head-end "buffers".
7. Lay the outer sheet, following steps 1–8 of sequence A (Plain ribbed sheet).

C) Deck executed on site (type 1.1.3) and pre-insulated deck (type 1.2.2)

Follow the fitting instructions for the inner sheets in sequence B.1. Carry out the seam fixing along the longitudinal overlaps.

In the case of decks executed on site, the insulation is provided by the insulant applied subsequently.

In the case of pre-insulated decks, temporary local removal of the insulation needs to be carried out before fixing.

The seal is provided by the layers applied subsequently (bituminous sheathing or synthetic membrane etc.).

5. WALLS

FITTING SEQUENCES

The following are the essential points for a correct fitting sequence.

A) Plain ribbed sheets and prefabricated monolithic sandwich (types 2.1.1 and 2.2.1)

1. Fit the base flashing (when specified) at the foot of the wall, aligned with the level of the supporting structure, as well as the flashing which necessarily has to be fitted before the wall (drip above the window-frames, connectors for openings, internal corner connectors etc.), after removing any protective polythene film.
2. Remove any protective film from the wall panels/sheets.
3. Fit the panels/sheets starting from the foot of the wall, taking care that joints are correctly aligned and executed, and checking that the panels are upright.
4. Secure the panels/sheets systematically, after checking that they are perfectly lined up.
5. In the event that the height of the wall or the nature of the material necessitates fitting successive courses of sheets/panels in vertical sequence, the joints must be made in line with a frame element of the structure. The procedure is as follows:
 - flat panel: butt joint, with a suitably-profiled connecting flashing between the panels
 - ribbed panel and ribbed sheet: like flat panel but sealed by means of an overlap.
6. Fit the finishing components (corner strips, perimeter edging, wall-to-roof connectors etc.).
7. Carry out a general inspection and cleaning of the wall, paying particular attention to the fixings and the joints with the door and window frames, and with other components of the wall itself. In the case of walls with horizontally positioned ribbed sheets/panels, refer to the plan specifications.

B) Sandwich construction executed on site (type 2.1.2)

B.1) Sandwich construction with parallel ribbed sheets

1. Fit the base flashing (when specified) and any connecting flashings: depending on the plan specifications, this may be done before fitting the inner sheet or before fitting the outer sheet, after removing any protective polythene film.
2. Remove any protective film from the wall sheets.
3. Fit the sheets starting from the foot of the wall, taking care that joints are correctly aligned and executed, and checking that the panels are upright.
4. Secure the sheets systematically, after checking that they are perfectly lined up.
5. In the event that the height of the wall or the nature of the material necessitates

fitting successive courses of sheets in vertical sequence, the joints must be made by overlapping the sheets in line with a frame member of the structure.

6. Fit suitably-sized rigid spacing pieces, positioned as on the plans. In the case of metal spacing pieces, it is advisable to provide a thermal break between these distance pieces and the outer ribbed sheet. If the secondary support structure provides a direct housing for the inner sheet, the rigid spacing pieces mentioned above are superfluous.

7. Lay the insulation (taking care to ensure that the thermal insulation is uniform) and any layers which have a specific function (e.g. vapour barriers, separating layers etc., according to the particular requirements dictated by the use of the building). This operation must be carried out simultaneously with fitting the inner sheet.

8. Fit the outer sheet, following steps 2–5 of sequence B.1.

9. Fit the finishing components (corner strips, perimeter edging, connectors to the roof and to the walls etc.).

10. Carry out a general inspection and cleaning of the wall, paying particular attention to the fixings and the joints with the door and window frames, and with other components of the wall itself.

B.2) Sandwich construction with crossed ribbed sheets

1. Remove any protective film from the wall sheets and from the accessories.
2. Fit the sheets starting from the foot of the wall, taking care that joints are correctly aligned and executed.
3. Secure the sheets systematically, after checking that they are perfectly lined up.
4. Fit the flashing pieces which connect to the first sheet (connectors, special components etc.).
5. Fit suitably-sized rigid spacing pieces, positioned as on the plans. In the case of metal spacing pieces, it is advisable to provide a thermal break between these distance pieces and the outer ribbed sheet. In the event that the inner sheet consists of continuous metal strips, the spacers are not necessary, but it is always advisable to provide a thermal break.
6. Fit the base flashing (when specified) at the foot of the wall.
7. Fit the insulant (taking care to ensure that the thermal insulation is uniform) and any layers which have a specific function (e.g. vapour barriers, separating layers etc., according to the particular requirements dictated by the use of the building). This operation must be carried out simultaneously with fitting the outer sheet.
8. Fit the outer sheet, following steps 2–5 of sequence B.1.
9. Fit the finishing components (corner strips, perimeter edging, connectors to the roof and to the walls etc.).
10. Carry out a general inspection and cleaning of the wall, paying particular attention to the fixings and the joints with the door and window frames, and with other components of the wall itself.

6. FLOORS

FITTING SEQUENCES

The following are the essential points for a correct fitting sequence.

A) Plain sheets (type 3.1)

1. Fit any perimeter flashings.
2. Remove any protective film from the floor sheets.
3. Lay the sheets, taking care to butt or overlap them correctly. Check that they are perfectly aligned and square with the underlying structure.
4. Secure the sheets systematically according to the plan specifications, after checking that they are perfectly lined up. Carry out the seam fixing along the longitudinal overlaps. All left-over materials must be removed, with particular attention to metal offcuts.
5. Finish the floor according to the plan specifications, avoiding stressing the floor panels with concentrated loads.

B) Sheets with collaborating concrete (type 3.2)

1. Erect the formwork for containing the poured concrete.
2. Lay the sheets taking care to butt or overlap them correctly. Check that they are perfectly aligned and square with the underlying structure.
3. Secure the sheets systematically according to the plan specifications, after checking that they are perfectly lined up. Carry out the seam fixing along the longitudinal overlaps. Check that the ribbed sheets are free of oxides and oil stains and any other substances which would prevent adhesion to the concrete. All left-over materials must be removed, with particular attention to metal offcuts.
4. To avoid leakage of concrete at end-to-end joints between the ribbed sheets, apply a strip of adhesive sealing tape.
5. Position the welded mesh and/or any reinforcing steel in line with the supports or located by supplementary supports, depending on the plan specifications.
6. Pour the concrete, avoiding accumulations especially in the central area of the span.
7. If the plan specifications require the use of props to break up the spans, these

must obviously be positioned before pouring the concrete, providing the ribbed sheets with any necessary braces against deformation.

C) Ribbed sheets with disposable formwork (type 3.3)

1. Erect the formwork for containing the poured concrete. The fitting instructions for sequence B apply, except for point 5, in which the reinforcing steel is obviously obligatory.

7. FIXING DEVICES

The fixing devices are an essential part of the roofing, wall and floor system. For this reason it is essential to use the fixing devices specified by the manufacturer of the ribbed sheets/panels.

Correct fitting requires the following:

For roofs:

- external facing (types 1.1.1 – 1.1.2 – 1.2.1): a complete set usually made up of screws, caps and the relative sealing gaskets, to be located at the crest of the ridge;
- external facing (types 1.1.2 – 1.1.3 – 1.2.2): screws with any gasket required

For walls:

- external facing (types 2.1.1 -2.1.2 -2.2.1): screws with gasket
- internal facing (type 2.1.2): screws with any gasket required
- prefabricated monolithic panels with "concealed" fixings: specific fixing kit

For floors: screws, nails, washers to be welded on site.

The density and positioning of the fixings depends on the characteristics of the building component, on the type and size of supports, and on the local climatic situation (winds in particular). Refer in any event to the plan specifications.

In the most frequently-occurring situations, the ribbed sheets/panels are fixed by means of screws which are different depending on the type of supporting structure.

1. Fixing to a metal framework:

- self-tapping screws and thread-forming/self-piloting screws (depending on the thickness of the support)
- self-drilling screws
- nails shot from a nail gun (for floors and inner sheets in siting and installation operations sandwich construction)
- threaded hooks with nut (in general for anchorage to tubular components)

2. Fixing to a timber framework:

- woodscrews
- threaded hooks

3. Fixing to reinforced and pre-stressed concrete:

Fixing is to steel or timber support components by the methods listed in paragraphs 1 and 2.

Direct fixing to reinforced and pre-stressed concrete is not recommended.

For deck roofs and for floors, seam fixing must be used, generally by means of rivets, along the longitudinal overlap, at not more than 1000 mm seam fixing centres.

For other roofing and wall components, seam fixing is recommended, depending on the shape of the overlap.

8. FINISHING COMPONENTS

The finishing components are an integral part of the job and make a decisive contribution to determining the project's performance characteristics. The manufacturer of ribbed sheets/panels is generally able to supply the finishing components, which must be used in accordance with the plan and/or supply specifications.

The Purchaser must specify the type and range of finishing components which are of interest, depending on the requirements of the job. The manufacturer of ribbed sheets/panels is responsible for the conformity of materials to the confirmed order, solely and exclusively for those parts directly supplied and correctly used.

The finishing components include variously profiled gaskets, metalwork (ridges, under-ridge pieces, guttering, valleys and downpipes, flashings, drips, corner strips etc., translucent sheets, domes, ventilators, door and window frames and accessory components.

ANNEXE D

Instructions for the inspection and maintenance of roofs and walls in insulated metalpanels and ribbed sheets

All buildings require a periodic systematic inspection and programmed maintenance, in order to ensure that the building will continue to function over time and maintain the required performance.

The checks to be performed at the time of the inspection are intended to be addressed both to the roof and wall components, and to the complementary works (joints, fixing devices, ridges, flashings, snow barriers, gutters, hips etc.), and to any technological equipment present (chimneys, smoke extractors, lightning protection etc.).

1. INSPECTION

1.1 During and immediately after the completion of fitting the insulated metal panels or ribbed sheets, it is the responsibility of the installing firm to arrange the removal of all the materials no longer necessary, including any traces of the temporary protection film. In particular, the firm must take the greatest care in removing metal swarf and abrasive items which have been deposited on the roof.

The work can only be signed off after the building envelope (i.e. the roof and walls, including the finishing components and in particular the gutters) has been adequately cleaned and is free from all extraneous material.

1.2 Inspections must be carried out at regular intervals. The first one must coincide with the signing-off of the works executed or with the corresponding test inspection. The test must be addressed both to the functionality of the specific operations performed (roof and/or walls) and to the building in its entirety according to the plan specifications or as regards compliance with the contractual relationship between the Purchaser and the supplier, general contractor or fitting firms. Inspections must take place at six-monthly intervals (preferably in the spring and autumn of each year).

At the first inspection, to be carried out by the installing firm or by the purchaser/owner according to what is specified in the contract or agreed between the parties, a check must be made to ensure that no extraneous materials or swarf from the work have been abandoned which could give rise to corrosion or damage with respect to the building envelope, or which could impede the correct drainage of rainwater.

It is in any event necessary to check that an accumulation of undesirable substances cannot be produced, such as dust, sand, leaves etc. It is also desirable for the purchaser/owner to be notified of potential weak points (such as lack of surface protection) over the entire building envelope, which could be sources of corrosion (for example by electrochemical action), with consequent premature deterioration also as regards the appearance of the building (rust stains, for example).

A comment should also be made on the location of the building: the purchaser/owner should be told about the type of atmosphere on the site, in relation to possible sources of accelerated corrosion (such as smoke) caused by adjacent buildings. The existing type of atmosphere should be known before purchasing the materials.

Subsequent inspections consist of a check on the general condition of the building envelope: state of conservation (i.e. durability) and functionality both of the ribbed sheets and/or insulated metal panels and of all the finishing and complementary components, including ridges, flashings, gutters, tightness of the fixings and any sealing which could

have an effect on the building envelope. The progress of ageing should be monitored, both physiological and pathological, so that any necessary ordinary and extraordinary maintenance can be scheduled.

At the same time, the efficiency of the system for draining rainwater, and of the other technological equipment should be checked.

2. MAINTENANCE

2.1 The building envelope, like any other product, must be periodically checked so as to detect in good time any problems which are about to occur and be able to deal with them promptly, thus reducing maintenance work to a minimum.

Maintenance operations must also be addressed to the principal finishing components (for example, anchoring devices and the interface with the supporting framework, and the secondary ones (for example rainwater downpipe inlets) which could compromise the overall functionality of the building envelope.

2.2 Programmed ordinary maintenance must be established and carried out by the owner, on items and at intervals which depend on the results of the inspections as well as on the general condition of the building and the existing environmental situation, as well as the conditions of use. It is in any event aimed at maintaining and adjusting to the functional needs of the fabric.

It may be sufficient to carry out regular cleaning of the surface of the roof and walls. Localised repairs may be necessary due to breakages, scratches and damage. Any dirt stains indicate the evaporation of liquids which have run down the surfaces. During maintenance, therefore, besides removing the stains, it is necessary to eliminate the cause of water collecting (such as movement of the gutters in which it runs, settlement of the framework or distortion of the ridges, flashing etc.).

2.3 If the results of the inspections establish that there are conservation problems at work, an extraordinary maintenance operation must be performed by the owner

and at his/her expense, with the aim of restoring the initial conditions.

These operations are intended to address the premature occurrence of problems of corrosion of the metal components, not envisaged at the design stage. These problems can arise from a general situation of the fabric being compromised by finishing works not meeting expectations in terms of durability, or from factors not pertaining to the works, such as flooding, ageing, condensation, electrochemical incompatibility, new sources of pollution, change of use etc.

The present Instructions govern the contractual relations between the Vendor party and the Purchasing party (addressee of the invoice).

Failure to carry out or incorrect execution of inspection and maintenance operations exonerates the Vendor from all responsibility in the period between the despatch of the materials and the time limit for their presumed involvement under the terms of the applicable legislation (Article 1495 of the Civil Code, and Legislative Decree no. 24 of 2 February 2002).

The Purchasing party undertakes on its own account to adopt and to see that third parties concerned adopt the present Instructions, to the extent that they are limited to the obligations on the part of the Vendor provided by the applicable legislation (regarding instructions, limitations and expiry).

'Third parties concerned and involved by the Purchaser' is to be understood as meaning: trading companies, construction firms, fitting operators, contracting and commissioning organisations, and owners of the premises and subsequent owners who may take part in the transfer of ownership.

The commitment to inspection and maintenance is undertaken by the Purchasing party in relation to the Vendor party. The Purchasing party is to transmit the present commitment in its turn when it in its turn becomes a vendor, and so forth in succession as far as the owner of the premises.

For validation of the inspection and maintenance operations, the owner must in any event sign the acceptance of the commitment, on its own responsibility and at its own expense, to carry out inspection and maintenance operations. These operations are to be recorded in chronological order in a suitable register with all the technical checks noted, and with the description of the ordinary maintenance jobs and

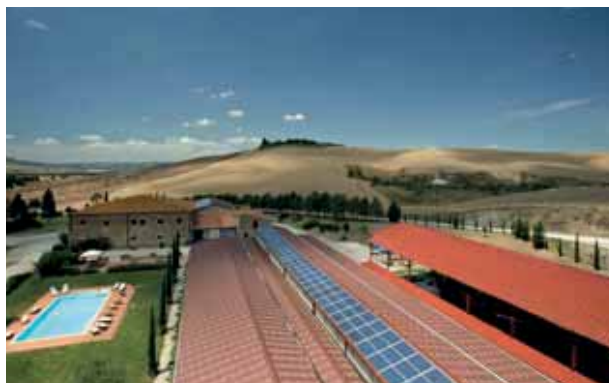
any extraordinary maintenance jobs performed.

This register is to be set up on the initiative of the owner, and maintained and updated by the owner or by the building administrator under delegation from the owner. The register must be available and consultable as a document recording the proper management of the premises, always within the context of the Vendor's relevant legal conditions.

The register must contain a record of the supply of the insulated metal panels and ribbed sheets, stating the name of the supplier, the details of the order confirmation, the type and characteristics of the materials (including catalogue references), the date of delivery to the site and the relative transport documents, and the subsequent chronology of the installation.

The names and addresses must also be entered in the register of: the designer, the works manager, the site safety manager, the tester, the main contractor and the fitting contractor (or the individual operators).

The identifiability and traceability of the supplies must thus be ensured for the entire duration of the validity of the present Instructions, which will terminate with the cessation of the relationship with the company producing the insulated metal panels or the ribbed sheets, with respect to its possible involvement under the terms of the law.



Siena - Italy



Verona - Italy



Mantova - Italy



Lodi - Italy



Mantova - Italy



Treviso - Italy



Verona - Italy



Verona - Italy

Case History



Verona - Italy



Milano - Italy



Verona - Italy



Padova - Italy



Verona - Italy



Asti - Italy



Verona - Italy



Milano - Italy



Imola - Italy



Messina - Italy



Verona - Italy



Tarragona - Spain



Valencia - Spain



Barcelona - Spain



Saragoza - Spgna



Leiria - Portugal

Case History



Querétaro - Mexico



Querétaro - Mexico



Querétaro - Mexico



Mexico City - Mexico



Querétaro - Mexico



Ljubljana - Slovenia



Querétaro - Mexico



Bucarest - Romania



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MANNI
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INSULATING DESIGN

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