

# COLD SOLUTIONS

**ISOPAN SOLUTIONS FOR ENVIRONMENTS  
WITH CONTROLLED TEMPERATURE AND ATMOSPHERE**



## WORLDWIDE LEADERS

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40

YEARS OF EXPERIENCE

4.205

CUSTOMERS PER YEAR

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6

COMPANIES

9

PRODUCTION AND  
COMMERCIAL FACILITIES

629

EMPLOYEES  
THROUGHOUT THE WORLD

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100%

ITALIAN DESIGN

298

MILLION EUROS  
TURNOVER

# MORE VALUE FOR YOUR PROJECT

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## A SOLUTION FOR EVERY NEED

thermal and sound insulation, sturdiness, airtightness, fire resistance; in addition to high technology and creative freedom. With the widest range of insulated panels for walls and roofs, Isopan is able to meet every need: aesthetic, functional and productive for any type of building.



## MORE EFFICIENCY

The competence of a team of constantly updated professionals and highly specialised technicians will guide you in choosing the solution most suited for the thermal insulation of your building.



## GREATER INNOVATION

Proven knowledge of the market, in-depth research on materials, continuous updates on the main trends of the sector and on reference standards allow us to create cutting-edge solutions with an innovative design which combine aesthetics and functionality.



## GREATER QUALITY

The quality certification is Isopan's first commitment towards its customers. We only make use of selected suppliers, capable of assuring materials of proven reliability in full compliance with international regulations.



## GREATER SAFETY

Thanks to their specific technical specifications, Isopan panels contribute to protecting buildings against fire, preventing it from spreading and limiting its extension (passive protection).



## GREATER SUSTAINABILITY

Isopan promotes sustainable construction by providing solutions for building redevelopment, reducing consumption and increasing energy and resource savings. Our panels contribute to obtaining the BREEAM® and LEED certification for buildings and are manufactured in plants powered by renewable energy sources.

# SOLUTIONS FOR ENVIRONMENTS WITH CONTROLLED TEMPERATURE

HYGIENE AND  
ATMOSPHERE  
CONTROL



## CLEAN ROOM

Rooms and partitions subjected to controlled temperatures and atmospheres, characterised by high hygiene, anti-bacterial and surface washing resistance standards.



## FOOD ROOM

Controlled temperature facilities where foodstuff products are stored and processed. Characterised by strict standards of resistance to contamination from fungi, bacteria and micro-organisms and the release of chemical substances on food, they can withstand frequent washing and cleansing.



## CHILL ROOM

Rooms with controlled temperature and atmosphere, suitable for product storage. The temperatures in these environments are generally not below 0°C. Surface washing and cleaning operations can be performed frequently.



## COLD ROOM

Rooms with controlled temperature and atmosphere, suitable for the storage of products that must be kept at even extremely low temperatures. The surfaces of these environments must prevent the proliferation of bacteria, fungi and the action of chemical agents.



LOW  
TEMPERATURE  
ENVIRONMENTS

**Cold Solutions** includes all solutions proposed by Isopan for environments where specific attention is required in terms of temperature control.

Leader in the production of sandwich panels, Isopan has developed a range of technologies, products and accessories suitable for any use. Isopan sandwich panels are manufactured by using continuous line production plants. This translates into optimising the time and costs required for even large orders.

The insulations used for Cold Solutions Isopan products are polyurethane foams with high insulating power; the various formulations that can be used meet the highest quality standards in terms of thermal transmittance and safety in the event of fire.

The large selection of usable metal sheets also allows us to obtain durable products suitable for any type of application, from foodstuff storage rooms to processing rooms and clean rooms. Another key factor is the focus on sustainability, made possible thanks to the implementation of low energy consumption production technologies and the use of renewable energy sources.

Thanks to the **Leaf** Technology, Isopan is able to provide a cutting-edge and environmentally friendly insulating product, with high insulating performance and safe in the event of a fire, without the use of halogenated flame retardants.

**UP TO 20% LESS  
THERMAL DISPERSION**

# Leaf

Thanks to its excellent insulation performance, **LEAF** technology is particularly suitable for **ISO FROZEN** and **ISO FROZEN HT** systems for cold room projects.



**Greater comfort  
less costs**



**Tangible  
sustainability**



**Enhanced safety  
against fire**





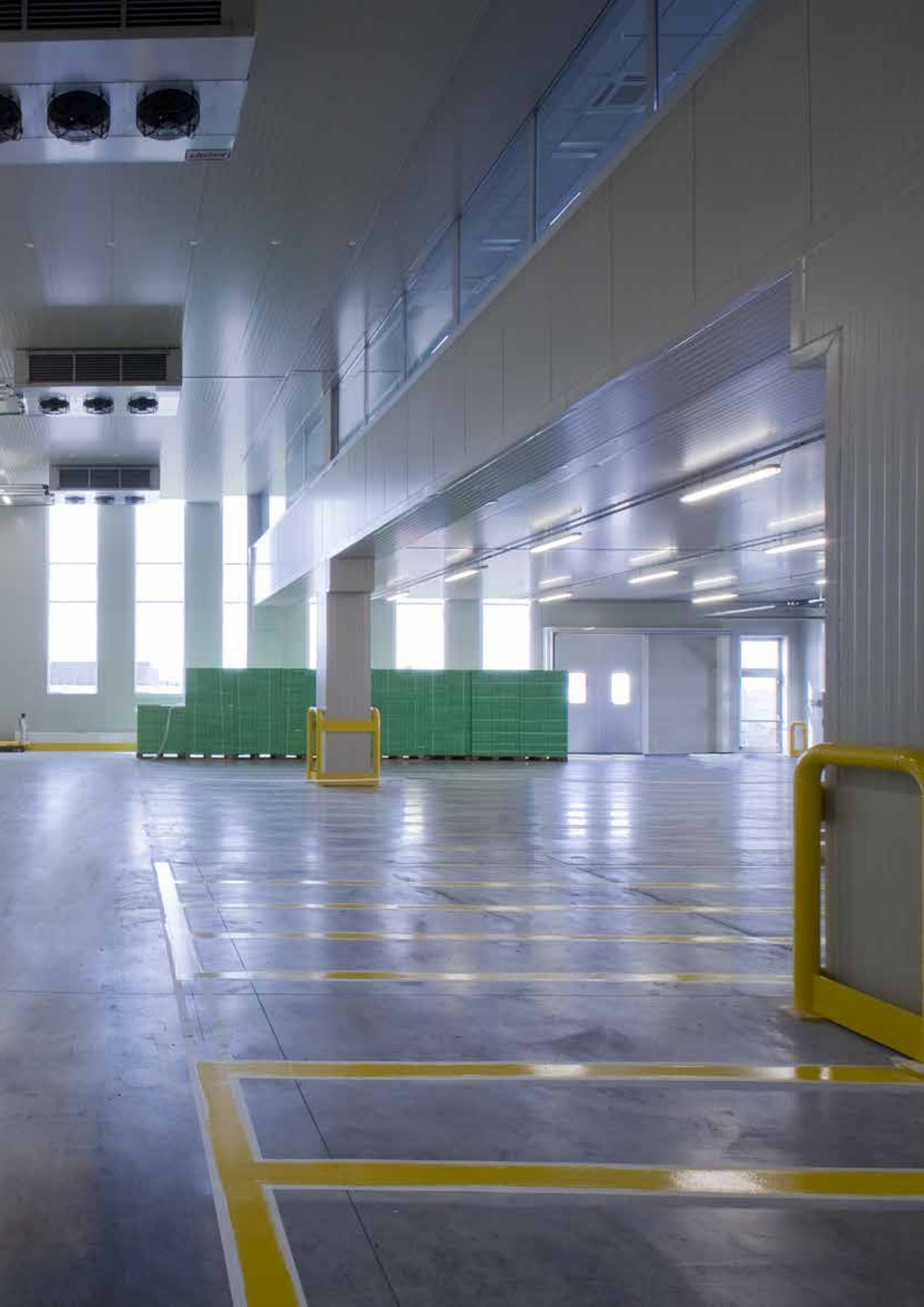
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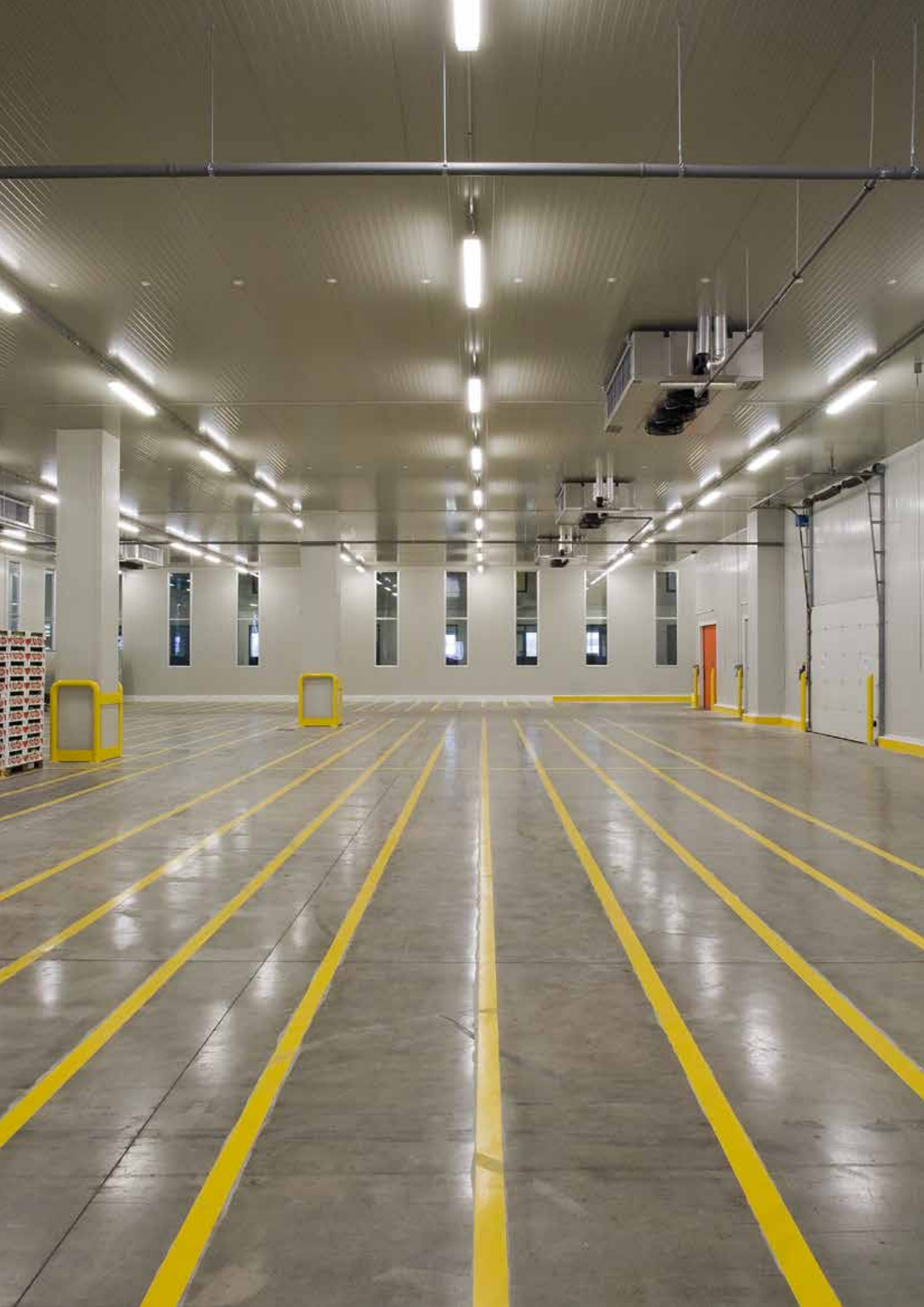
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**ISOPAN**

BUILDING ENVELOPE SOLUTIONS  
by Manni Group

# PRODUCT RANGE



## SANDWICH PANELS



The Isopan Cold Solutions product range includes sandwich panels with a tongue-and-groove labyrinth joint and gasket, with double metal facing and polyurethane foam insulation with a high insulating capacity.



High thermal insulation



Wide range of metal facings



Choice of available thicknesses and profiles



Safety in case of fire



Sustainability and respect for the environment



Certified quality and performance

## PROFILE

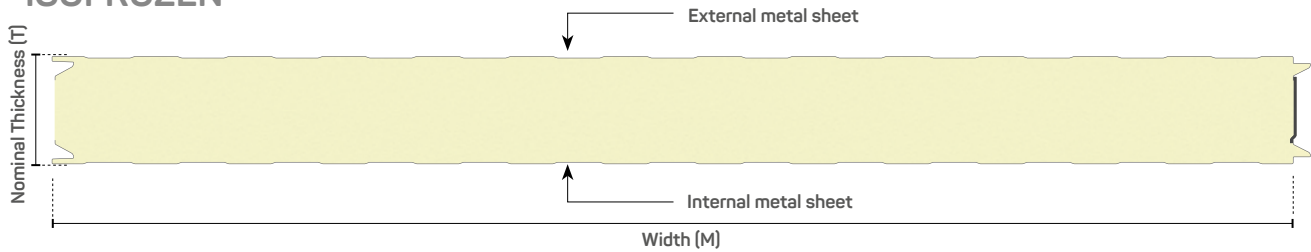
For the Cold Solutions product range, Isopan offers slightly profiled or smooth finishes. In fact, they represent the best solution to correctly clean the walls, greatly simplifying the washing operations to which they can be subjected during their life cycle. This way the probability of surface buildups of dust, liquids and particles, which over time can lead to the proliferation of microorganisms, is minimised.

To correctly choose the type of profiling, Isopan recommends checking the actual production feasibility at the reference facility.

PROFILE				
	FLAT	BOX	LINED	PLISSÉ
Internal side	●	●		
External side	●	●	●	●

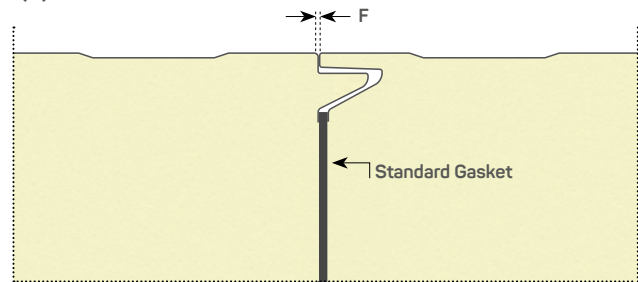
# ISOFROZEN - ISOFROZEN HT

## ISOFROZEN

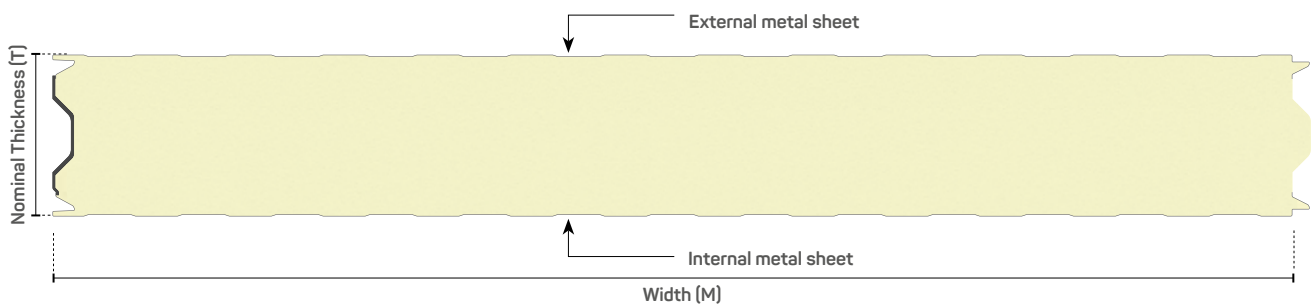


	Larghezza (M)	Nominal Thickness (T) mm						
	mm	80	100	120	150	180	200	240
Isofrozen	1150; 1000*	●	●	●				

\* Larghezza producibile previa approvazione

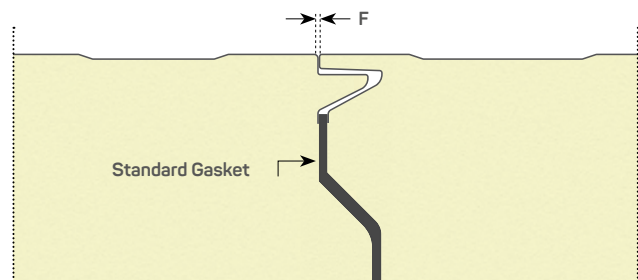


## ISOFROZEN HT



	Width (M)	Nominal Thickness (T) mm						
	mm	80	100	120	150	180	200	240
Isofrozen HT	1150; 1000*			●	●	●	●	●

\* Larghezza producibile previa approvazione



	Thickness Sheets mm	Panel weight Kg/m <sup>2</sup>						
		11,6	12,2	13	14,2	15,6	16,2	18,2
Acciaio	0.5 / 0.5							
Acciaio	0.6 / 0.6	13,1	13,9	14,7	15,9	17,1	17,9	19,7

### Dimensional Tolerances in accordance with EN 14509

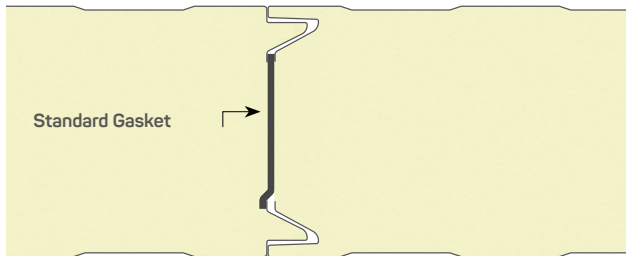
Panel length	L ≤ 3 m ± 5 mm L > 3 m ± 10 mm
Useful width (M)	± 2 mm
Nominal thickness (T)	T ≤ 100 mm ± 2 mm T > 100 mm ± 2 %
Perpendicularity deviation	6 mm
Misalignment of internal metal facings	± 3 mm
Sheet coupling (F)	F = 1 + 3 mm



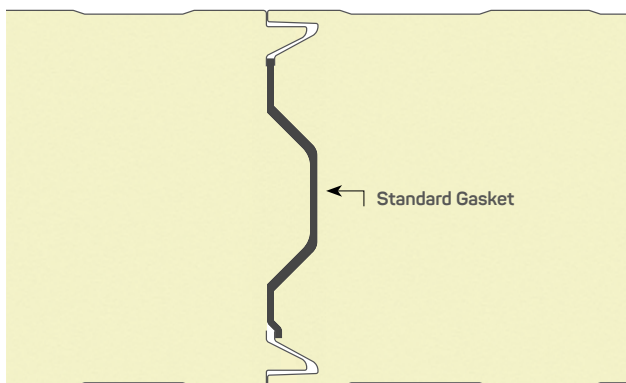
For technical information on panel usage and for the technical specifications of each product, please consult the Technical Manual available on the website [www.isopan.com](http://www.isopan.com).

# Isofrozen & Isofrozen HT DRY JOINT (standard)

## ISOFROZEN



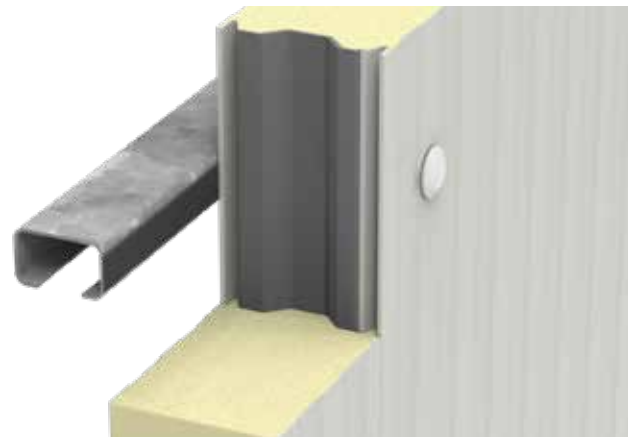
## ISOFROZEN HT



Standard configuration

READY TO USE

Standard



Recommended for rooms with positive temperatures and not below 4°C. In case of rooms with temperatures below 4°C it is appropriate to carry out a thermohygrometric analysis of joint permeability, which might affect the efficiency of the cold room and cause issues of condensation and/or ice formation. The joint geometry is tongue-and-groove interlock and the panel is fitted with standard PU/PE gasket inserted during production, hence no additional on-site work steps are required.

### ISOFROZEN 1150mm, thickness 200mm

AIR PERMEABILITY - POSITIVE PRESSURE	
PA	m <sup>3</sup> / mh
50	0,02
67	0,06
91	0,14
122	0,17
165	0,27
223	0,37
301	0,58
407	0,78
549	0,97
741	1,27
1000	1,60

AIR PERMEABILITY - NEGATIVE PRESSURE	
PA	m <sup>3</sup> / mh
50	0,02
67	0,06
91	0,13
122	0,16
165	0,25
223	0,30
301	0,45
407	0,69
549	0,93
741	1,19
1000	1,53



For technical information on panel usage and for the technical specifications of each product, please consult the Technical Manual available on the website [www.isopan.com](http://www.isopan.com).





# Isofrozen & Isofrozen HT OFF-SITE GASKET

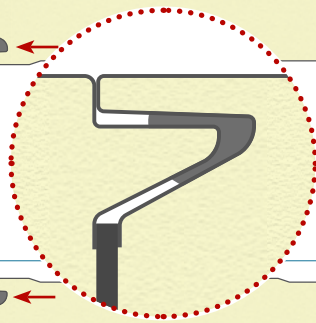
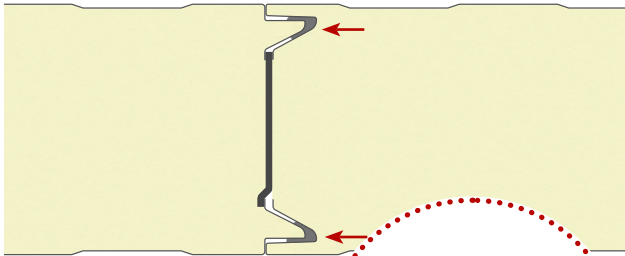
Optional gaskets pre-installed

**READY to USE**

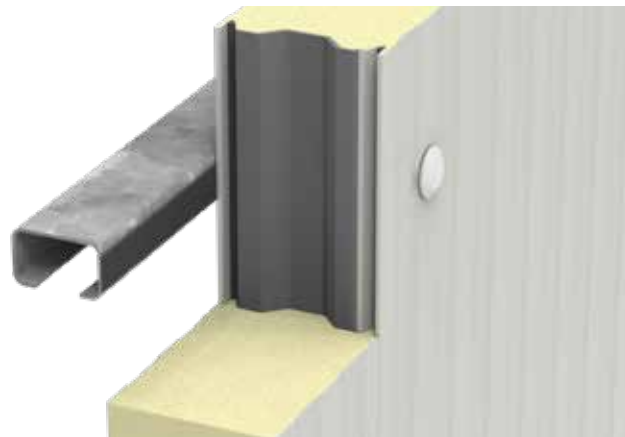
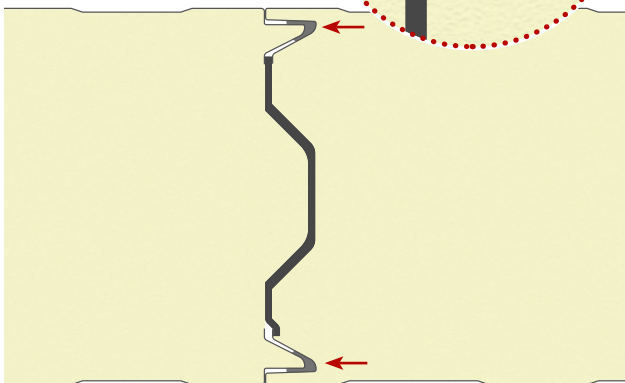
**NEW Solution**

Produced: Isopan Spa- Italy

## ISOFROZEN



## ISOFROZEN HT



System for better air tightness and insulating performance, with optional gaskets **installed by manufacturer (Ready to Use solution)** and other on-site operations are not required. Can be used for any type of application. In case of cold rooms with temperatures below -1°C it is appropriate to carry out a thermohygroscopic analysis of joint permeability, which might affect the efficiency of the cold room and cause issues of condensation and/or ice formation.

ISOFROZEN 1150mm, thickness 200mm

AIR PERMEABILITY - POSITIVE PRESSURE	
PA	m <sup>3</sup> / mh
50	0,00
67	0,01
91	0,01
122	0,03
165	0,04
223	0,11
301	0,18
407	0,28
549	0,32
741	0,41
1000	0,53

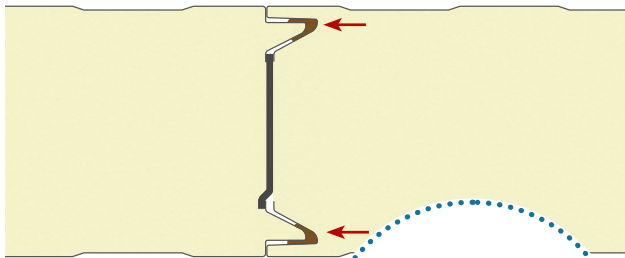
AIR PERMEABILITY - NEGATIVE PRESSURE	
PA	m <sup>3</sup> / mh
50	0,00
67	0,01
91	0,00
122	0,02
165	0,03
223	0,08
301	0,15
407	0,24
549	0,29
741	0,35
1000	0,43



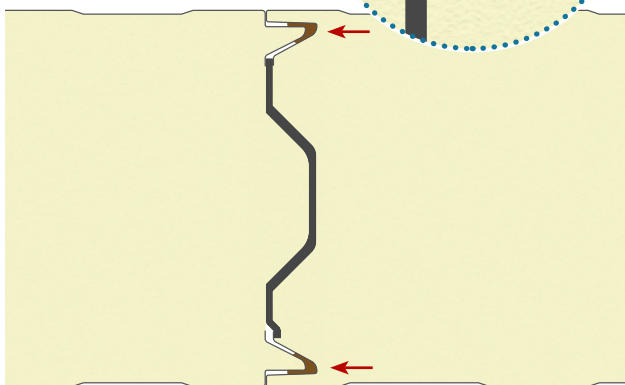
For technical information on panel usage and for the technical specifications of each product, please consult the Technical Manual available on the website [www.isopan.com](http://www.isopan.com).

## Isofrozen & Isofrozen HT BITUMINOUS SEAL

### ISOFROZEN

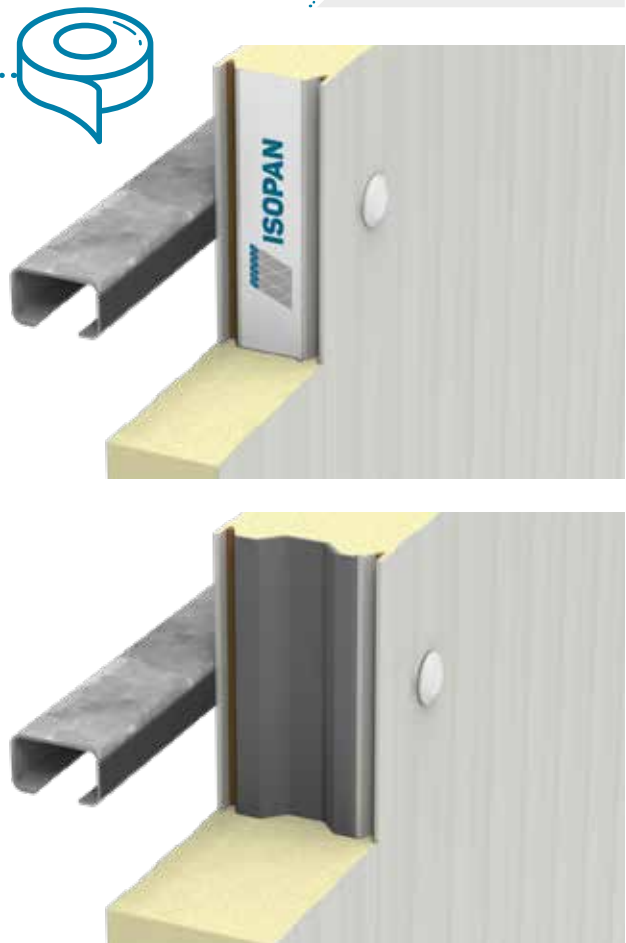


### ISOFROZEN HT



On-site optional gaskets

ON SITE



Recommended for rooms with temperatures not below -1°C. In case of cold rooms with temperatures below -1°C it is appropriate to carry out a thermohygroscopic analysis of joint permeability, which might affect the efficiency of the cold room and cause issues of condensation and/or ice formation. The joint consists of the standard panel configuration to which two bituminous seals are added during assembly in the two female recesses along the entire length, which assure good air tightness between inside and outside, and vice-versa.

#### ISOFROZEN 1150mm, thickness 200mm

AIR PERMEABILITY - POSITIVE PRESSURE	
PA	m <sup>3</sup> / mh
50	0,01
67	0,04
91	0,09
122	0,14
165	0,22
223	0,31
301	0,51
407	0,72
549	0,91
741	1,12
1000	1,32

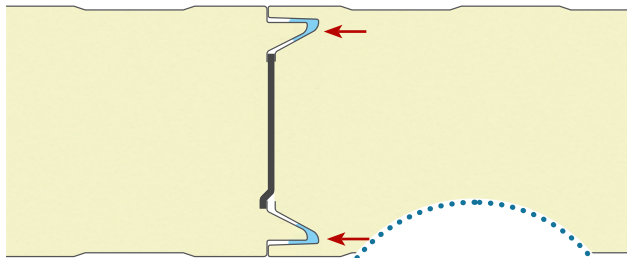
AIR PERMEABILITY - NEGATIVE PRESSURE	
PA	m <sup>3</sup> / mh
50	0,01
67	0,04
91	0,09
122	0,14
165	0,23
223	0,33
301	0,52
407	0,72
549	0,9
741	1,09
1000	1,27



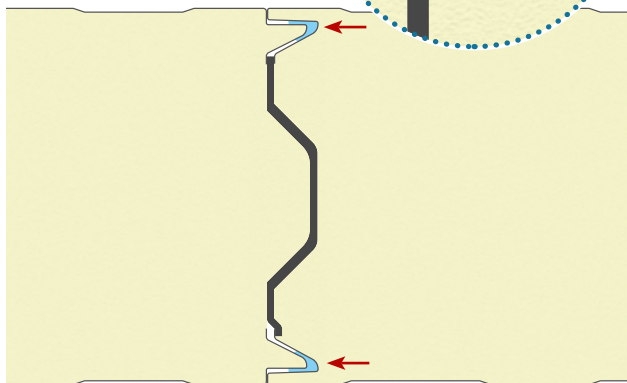
For technical information on panel usage and for the technical specifications of each product, please consult the Technical Manual available on the website [www.isopan.com](http://www.isopan.com).

# Isofrozen & Isofrozen HT THIXOTROPIC SEALANT

## ISOFROZEN

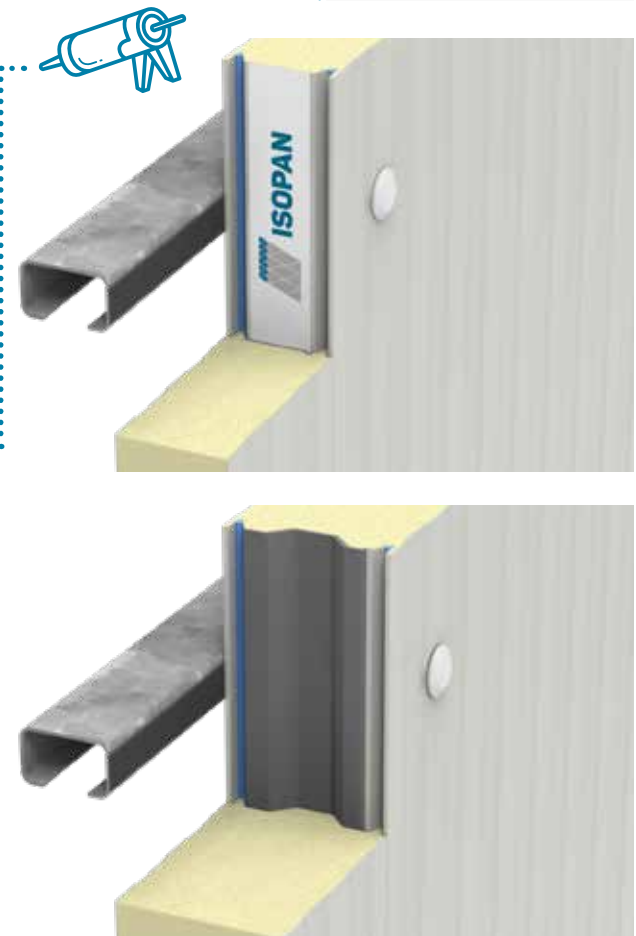


## ISOFROZEN HT



On-site Optional sealant

ON SITE



Recommended for negative temperature rooms; the thixotropic behaviour of the sealant enables a simple and quick assembly with excellent air tightness thanks to the lack of cracks. The sealant is added inside the cavity of the female side, along the entire length of the panel, by using a dosing gun.

### ISOFROZEN 1150mm, thickness 200mm

AIR PERMEABILITY - POSITIVE PRESSURE	
PA	m <sup>3</sup> / mh
50	0,00
67	0,00
91	0,00
122	0,02
165	0,04
223	0,07
301	0,09
407	0,21
549	0,32
741	0,43
1000	0,56

AIR PERMEABILITY - NEGATIVE PRESSURE	
PA	m <sup>3</sup> / mh
50	0,00
67	0,00
91	0,00
122	0,00
165	0,01
223	0,03
301	0,06
407	0,09
549	0,16
741	0,26
1000	0,43

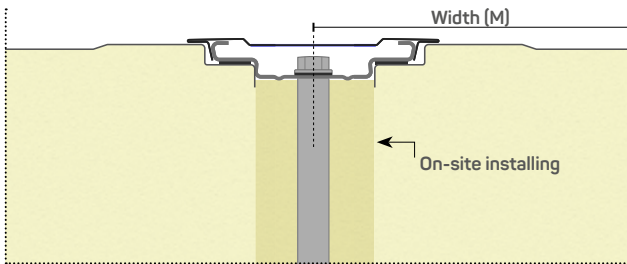
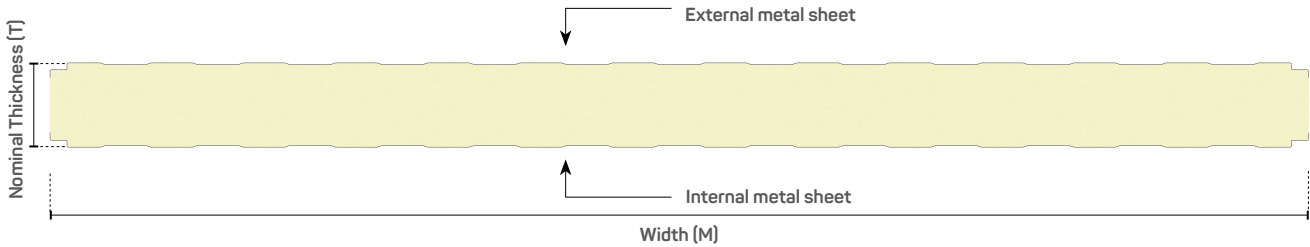


For technical information on panel usage and for the technical specifications of each product, please consult the Technical Manual available on the website [www.isopan.com](http://www.isopan.com).

# Isofrigo INJECTED JOINT

On-site installing joint

ON SITE



Dimensional Tolerances	
in accordance with EN 14509	
Panel length	L ≤ 3 m ± 5 mm L > 3 m ± 10 mm
Useful width (M)	± 2 mm
Nominal thickness (T)	T ≤ 100 mm ± 2 mm T > 100 mm ± 2 %
Perpendicularity deviation	6 mm
Misalignment of internal metal facings	± 3 mm
Sheet coupling (F)	F = 1 + 3 mm

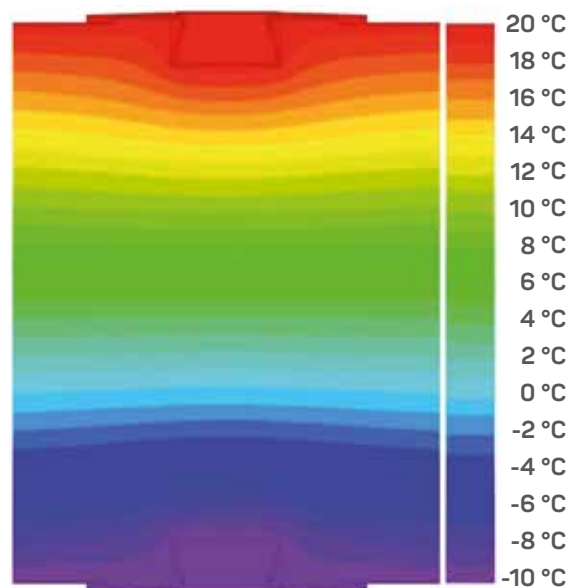
	Width (M)	Nominal Thickness (T) mm						
	mm	80	100	120	150	180	200	240
Isofrigo G.I.	1070; 1225	●	●	●	●	●	●	●

\* Larghezza producibile previa approvazione

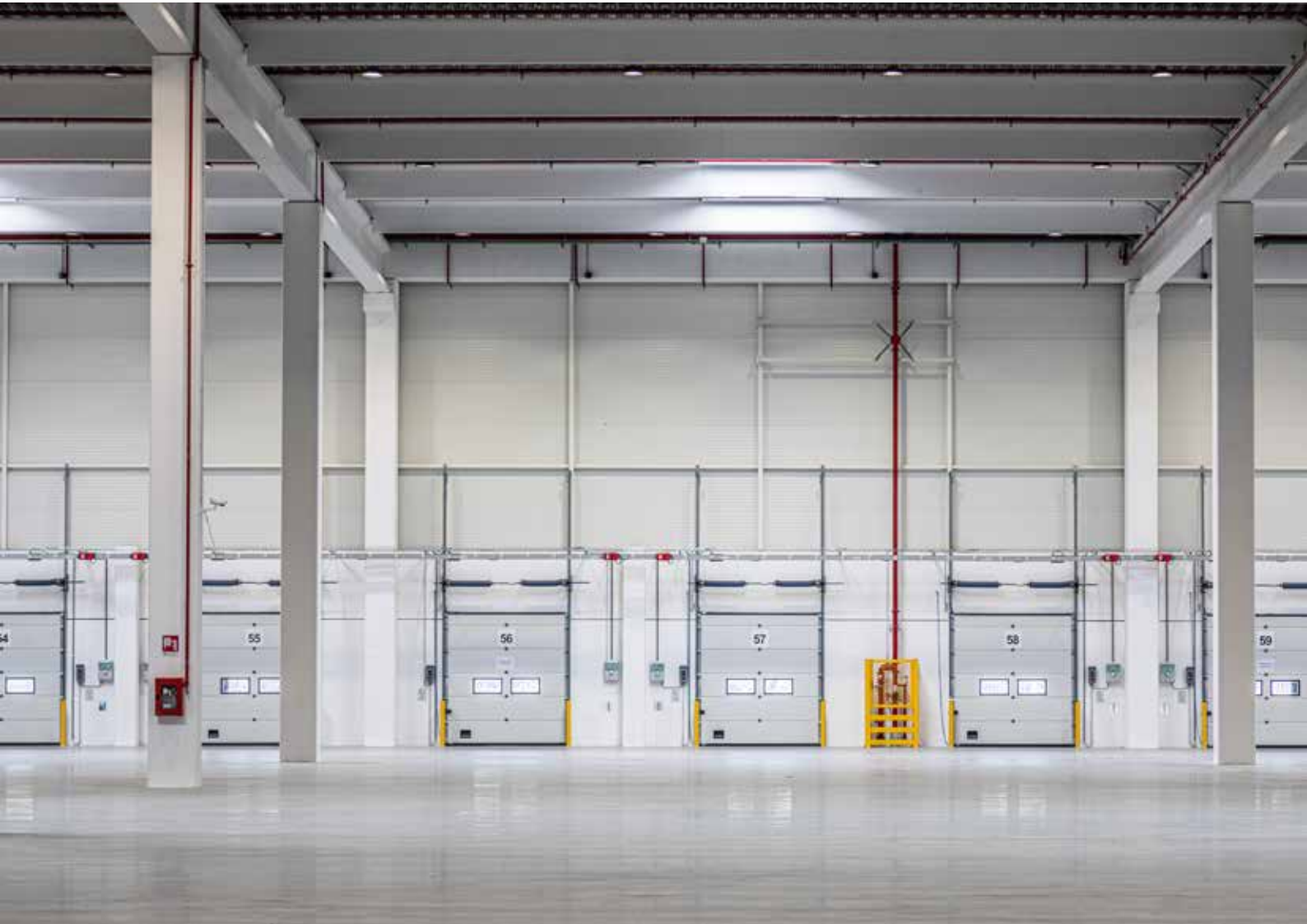
	Thickness Sheets mm	Panel weight Kg/m <sup>2</sup>						
		80	100	120	150	180	200	240
Acciaio	0.5 / 0.5	11,6	12,2	13	14,2	15,6	16,2	18,2
Acciaio	0.6 / 0.6	13,1	13,9	14,7	15,9	17,1	17,9	19,7

Particularly recommended for rooms with extreme negative temperatures, which call for stringent requirements in terms of minimising heat bridges and air permeability. The mechanical properties of the Isofrigo G.I. panel configuration are more efficient since the system elements offer better resistance to accidental loads, specifically of axial type, and better bending stiffness.

Trasmittanza Termica Media Giunto [Spessore 200mm]:  
U<sub>f</sub> = 0,119 W/m<sup>2</sup>K



For technical information on panel usage and for the technical specifications of each product, please consult the Technical Manual available on the website [www.isopan.com](http://www.isopan.com).



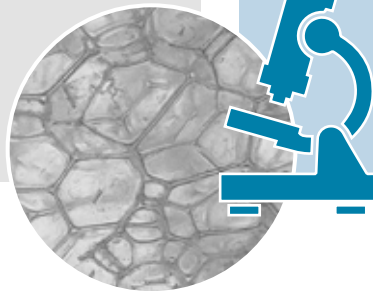
## INSULATION

The insulating core of Isopan panels consists of a layer of polyurethane foam with a variable thickness, capable of providing high thermal performance.

Production technologies enable to use different types of foams, depending on the technical and performance requirements of each application.

### PIR and PU insulations

Standard closed-cell polyurethane foams. Foaming agent used N-pentane (in accordance with the Montreal protocol).



### LEAF insulation

New generation foams, with greater insulating capacity. This can easily result in a reduction of heat dispersion due to the building envelope up to 20%.

#### Isopan PIR or PU insulation

#### HEAT RESISTANCE

#### Isopan LEAF

R	NOMINAL PANEL THICKNESS mm					
	80	100	120	150	180	200
m <sup>2</sup> K/W	3.70	4.55	5.56	6.67	8.33	9.09
m <sup>2</sup> h °C/kcal	4.35	5.26	6.25	7.69	9.09	11.11

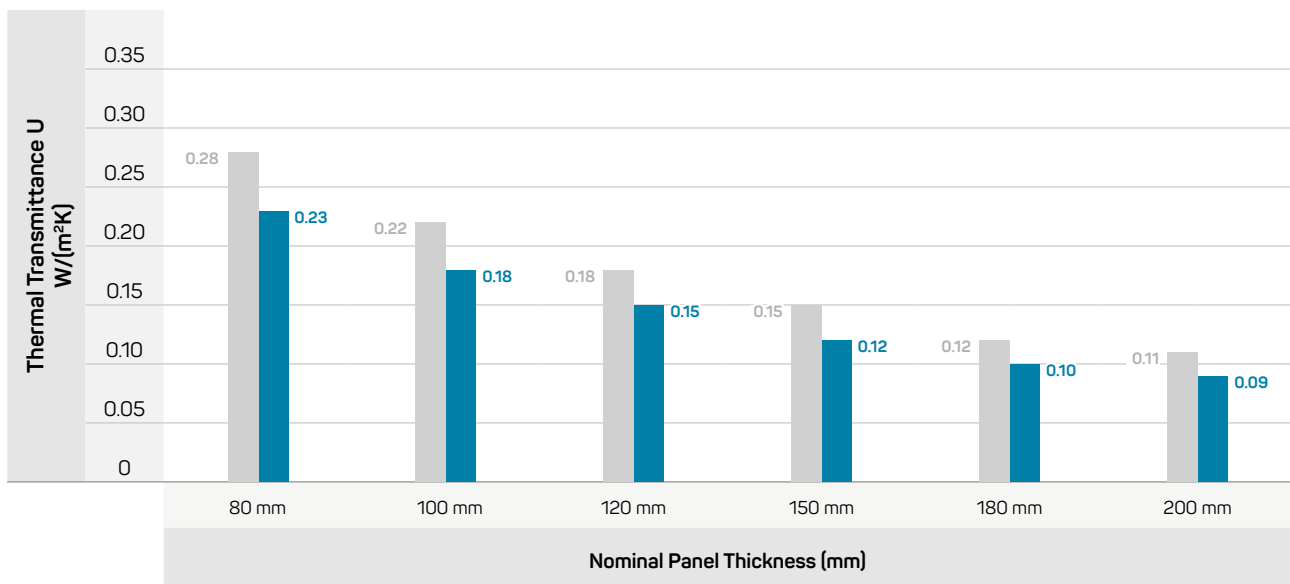
R	NOMINAL PANEL THICKNESS mm					
	80	100	120	150	180	200
m <sup>2</sup> K/W	4.35	5.55	6.67	8.33	10.00	11.11
m <sup>2</sup> h °C/kcal	5.26	6.66	7.69	8.33	12.5	14.28

### THERMAL TRANSMITTANCE

According to the new standard EN 14509 A.10

U	NOMINAL PANEL THICKNESS mm					
	80	100	120	150	180	200
W/m <sup>2</sup> K	0.27	0.22	0.18	0.15	0.12	0.11
kcal/m <sup>2</sup> h °C	0.23	0.19	0.16	0.13	0.11	0.09

U	NOMINAL PANEL THICKNESS mm					
	80	100	120	150	180	200
W/m <sup>2</sup> K	0.23	0.18	0.15	0.12	0.10	0.09
kcal/m <sup>2</sup> h °C	0.19	0.15	0.13	0.10	0.08	0.07







## BEHAVIOUR IN CASE OF FIRE

Isopan has tested all of its products in accordance with the procedures required by the regulations in force concerning Reaction to fire and Fire resistance. For detailed technical information on the certifications obtained and on how to install the products, please contact Isopan.

### REACTION TO FIRE

It refers to how materials behave in case of fire in the actual final application conditions, with specific regard to the degree to which they participate in the fire. Reaction to fire is a passive protection fire safety measure that mainly effects the first stage of fire propagation, with the aim of limiting the ignition of materials and fire propagation (reference standard EN 13501-1).

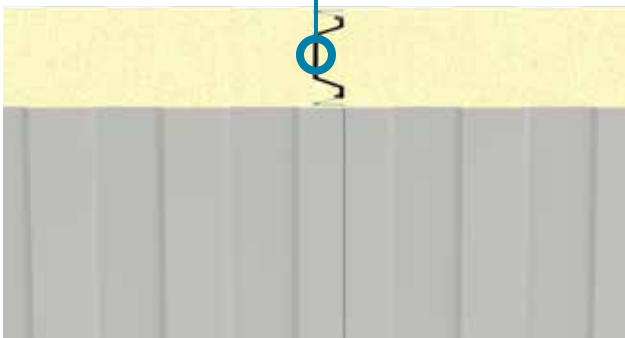
**Products of the ISOFRIGO - ISOFROZEN range, depending on the type of insulation used, have achieved different Reaction to Fire Performance, up to Class B-S1, d0. For information on the certificates obtained, contact Isopan.**

 COMBUSTION CLASSIFICATION	 SMOKE EMISSION	 BURNING DROPLETS	 CLASS OF REACTION TO FIRE
B	S1	d0	B - S1, d0
B	S2	d0	B - S2, d0

### RESISTANCE TO FIRE

It refers to the load-bearing capacity as well as to compartmentalization in the event of fire for structural (e.g. walls, roofs) and non-structural (e.g. doors, partitions) separation elements. Resistance to fire is a fire safety measure to be pursued to assure an adequate level of safety of a construction work in the event of fire (reference standard EN 13501-2).

**RESISTANCE CLASS  
up to EI60\***



\* All certificates obtained are available upon request. For information on certified performance, see the product Technical Manuals.

## CERTIFICATIONS AND PERFORMANCE

### REFERENCE QUALITY AND STANDARDS

Isopan companies are ISO 9001 certified and the technical compliance of the products is assured according to the standards required by the reference markets.



### CERTIFIED PERFORMANCE

On an international level, Isopan can boast numerous certifications that make it a reliable partner.

#### WATER PERMEABILITY

Isopan panels have been tested and certified as required by EN standards 12865:2003 and 14509:2006. All certificates have been obtained through tests carried out at Certified Bodies and internationally recognised.

#### AIR PERMEABILITY

Isopan panels have been tested and certified as required by EN standards 12114:2000, EN 14509:2006 + A.C.2008. All certificates have been obtained through tests carried out at Certified Bodies and internationally recognised.

#### BEHAVIOUR IN CASE OF FIRE

Isopan panels, thanks to their technical specifications, help to protect buildings against fires, limiting their spread and consequent damage to structures. Isopan panels offer the best reaction to fire performance obtainable on the market (tested in accordance with EN standards 14509 and 13501).

### FM APPROVED

FM Approved Certifications represents an important step for Isopan and Isocindu Productions Plants.

With FM Approved, Isopan certify the effectiveness and functionality of Sandwich Panels in highly severe environmental conditions, such as natural disasters and fire, through International and accepted testing procedures.



#### FM STANDARDS ACHIEVED

N° 4471 - Approval Standard for Class 1 Panel Roofs

N° 4880 - Approval Standard for Class 1 Fire Rating of Building Panels or Interior Finish Materials

N° 4881 - Approval Standard for Class 1 Exterior Wall System

### SUSTAINABILITY

Isopan promotes environmental sustainability by adapting to the most recent reference production standards. An example of this is the contribution of Isopan products to obtaining credits for environmental sustainability ratings such as LEED and BREEAM, in addition to the certified Environmental Product Declaration EPD (Environmental Product Declaration).

Isopan is increasingly committed to achieving the most strict requirements in terms of environmental procurement policies (Green Procurement) as a company commitment to the environmental sustainability of its products.

Thanks to the LEAF technology, Isopan is even more effective in regards to sustainability and respecting the environmental, through the use of formulations with high performance in terms of fire behaviour, without using halogenated flame retardants. Furthermore, the excellent insulating performance of LEAF enable to lower energy costs with a consequent reduction in CO2 emissions.





## STATIC FEATURES

The capacity values refer to the panel mounted horizontally and subject to a distributed load, which simulates the effect of wind action. The calculation method used by ISOPAN does not take into account the thermal effects, which must be checked by the designer.

Depending on the weather conditions of the installation site and the colour of the external face, if the designer feels a detailed verification of the stresses caused by thermal actions and long-term effects is necessary, he/she should contact the ISOPAN Technical Office.

The designer is still responsible for checking the fastening systems (Number and positioning). The mechanical properties of the ISOFRIGO GI panel configuration are more efficient since the system elements offer better resistance to accidental loads, specifically of axial type, and better bending stiffness.

Below are some examples of indicative load bearing capacity tables:

### OVERLOADS - SPANS

STEEL SHEETS THICKNESS 0.5 / 0.5 mm - Support 120 mm												
EVENLY DISTRIBUTED LOAD	NOMINAL PANEL THICKNESS mm						NOMINAL PANEL THICKNESS mm					
	MAXIMUM SPAN cm						MAXIMUM SPAN cm					
	80	100	120	150	180	≥ 200	80	100	120	150	180	≥ 200
kg/m <sup>2</sup>												
50	530	630	700	850	890	920	630	740	840	900	930	960
60	490	580	660	750	780	900	570	650	770	870	900	920
80	430	500	580	680	720	840	480	580	670	790	830	850
100	380	450	510	610	700	760	420	510	640	680	710	730
120	340	410	470	560	640	690	380	460	590	590	620	630
140	290	340	430	510	590	640	340	410	530	530	550	560
160	270	320	400	480	550	600	310	380	470	480	490	500
180	270	320	370	440	510	560	290	350	430	435	440	445
200	250	300	350	420	480	520	270	320	400	400	405	410

STEEL SHEETS THICKNESS 0.6 / 0.6 mm - Support 120 mm												
EVENLY DISTRIBUTED LOAD	NOMINAL PANEL THICKNESS mm						NOMINAL PANEL THICKNESS mm					
	MAXIMUM SPAN cm						MAXIMUM SPAN cm					
	80	100	120	150	180	≥ 200	80	100	120	150	180	≥ 200
kg/m <sup>2</sup>												
50	550	650	760	850	960	980	650	760	850	920	940	970
60	510	610	700	820	930	950	580	660	790	880	900	925
80	420	530	610	720	820	890	500	600	660	810	850	860
100	390	470	540	640	730	800	440	530	610	710	720	740
120	350	420	490	580	660	730	390	470	540	620	650	660
140	330	390	450	530	620	660	360	430	500	550	560	560
160	300	360	410	500	570	620	320	390	450	490	500	500
180	300	330	380	460	530	580	290	350	420	440	450	450
200	260	310	360	430	500	550	280	330	390	400	400	400

The indications contained in the tables do not take into account the effects due to thermal load. Furthermore, the indicative values provided cannot replace the design calculations drawn up.

Calculation for static dimensioning carried out according to the contents of Annex E of UNI EN standard 14509. Deflection limit 1/200 ℓ. The values shown in the capacity tables do not take into account the thermal load.

## CLEANING AND HYGIENE

The design of rooms suitable for storage and processing of foodstuffs must allow for their correct and constant sanitation. In fact, cleaning and hygiene are the main activities useful to ensure the safety of the processed product. Insulated panels are an optimal solution for cold room cladding from many points of view.

By carefully selecting the type of metal support or post-installation treatments, it is possible to ensure a substantial improvement in the resistance of the surface to cleaning processes, disinfection, corrosion and to the formation of mould or fungi.

Contact Isopan to discover the types of steel and surface treatments that best suit your needs.



Crucial for foodstuff or pharmaceutical production, but also for mechanical, electronic, automotive and aerospace industries, clean rooms are clean, controlled and sterilised areas with a controlled atmosphere. This means that the air inside them contains a minimal amount of suspended dust microparticles. The facings suitable for these areas must be able to support high standards in terms of cleanliness, hygiene and resistance to bacterial contamination.



The metal facings used by ISOPAN also include the types of steel commonly used in Food Processing chambers, which comply with the strictest hygiene regulations, the absence of substance and particle releases on foodstuffs and resistance to bacteria proliferation.



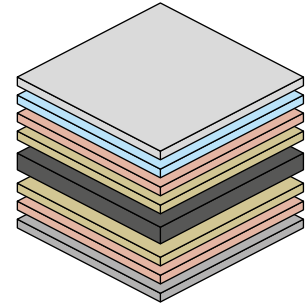
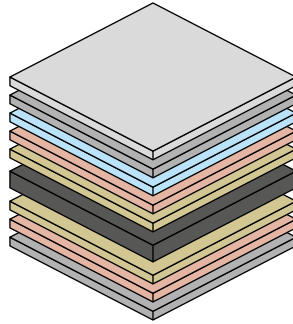
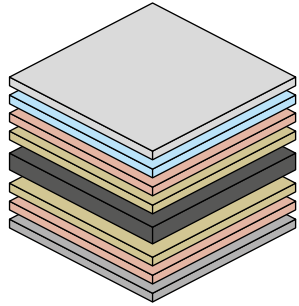
Some treatments of metal surfaces may be applied after installation of the panels on site or to installations already operational and meet all requirements in terms of managing antibacterial effectiveness and hygiene. These systems are ideal for eliminating all pathogens. The technology has antimicrobial effects on all interior surfaces of the rooms where high degrees of sanitation are required.

It also removes air pollutants, odours and VOCs in a continuous and completely safe way. It is often sufficient to cover the ceiling of a room and illuminate it with specific lamps.



# METAL FACINGS

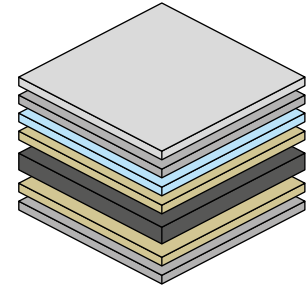
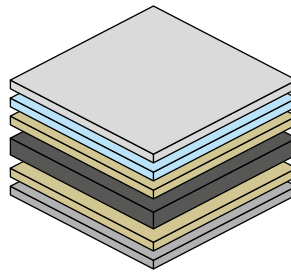
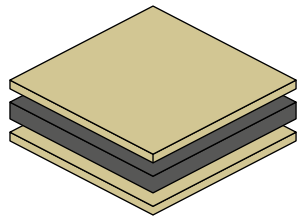
## LAMINATES ON GALVANISED STEEL BASE



	<b>POLYESTER (PE) STANDARD</b>	<b>PET ON BASE PRE-PAINTED STEEL</b>	<b>GALVANISED STEEL ANTIBACTERIAL</b>
Composition	PE Standard	Transparent + PET Film + Polyester paint	PVC Film
Applications	Perimeter walls, partitions and ceilings	Perimeter walls, partitions and ceilings	Perimeter walls (internal side), partitions and false ceilings
Substrate	Hot-dip galvanised steel, S250 GD	Hot-dip galvanised steel, S250 GD	Hot-dip galvanised steel, S250 GD
Thickness	25 my	55 my	25 my
Composition	5 my primer + 20 my top coat	5 my Top Coat + 20 my PE + 30 my PET	100 - 200 my film PVC
Specular Gloss (60°)	30 GU	5 GU	15 - 45 GU
Surface appearance	Smooth	Smooth shiny	Smooth
Resistance to corrosion	● ● ○ ○ ○	● ● ● ● ○	● ● ● ● ○
Resistance to humidity	● ● ● ○ ○	● ● ● ● ○	● ● ● ● ○
Operating temperatures	120° C	80° C	60° C
	<p>Plastic laminates on Stainless steel metal base with polyester paint, with a total paint layer of 25 microns including 5 microns of primer paint and 20 nominal microns of polyester enamel.</p> <p>Its use is strongly recommended for interiors when there is moderate condensation or specific washing of the metal side is required.</p> <p>The stainless steel substrate offers high chemical resistance to aggressive agents and therefore optimal durability. The colours always available in stock are White, grey and Ral 9010. Other colours are available on request.</p> <p>Easy to clean laminate.</p>	<p>Integrated system on a galvanised steel base made of a pre-made 30 my thick PET film on pre-painted base. It is strongly recommended for indoor use, especially when there is moderate condensation or specific washing of the metal side is required. The option of having a wide range of pre-made films, with the assurance of non-toxicity, makes them especially suited for use in the foodstuff sector. The colours always available in stock are White, grey and Ral 9010. Other colours are available on request. Easy to clean laminate.</p>	<p>The sheet has been tested and certified according to standards ISO 22196:2007, ASTM AND 2180-07, JIS Z 2801 and EN 13501-1</p> <p>The antibacterial property develops throughout the thickness of the film coating and its effectiveness is demonstrated against the following types of bacteria: Escherichia Coli; Klebsiella pneumoniae; Staphylococcus aureus; Salmonella typhimurium; Listeria monocytogenes; Legionella pneumophila; Pseudomonas aeruginosa.</p> <p>The sheet features a wide range of colours, with particular attention to pastel shades. The product is certified for foodstuff contact according to standard 2002/72/CE and subsequent updates.</p>
		 	  

The characteristics shown below are to be considered indicative and it is advisable to contact the ISOPAN technical office for further information.

## LAMINATES ON STAINLESS STEEL BASE



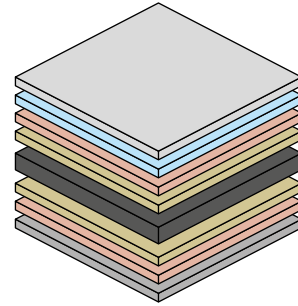
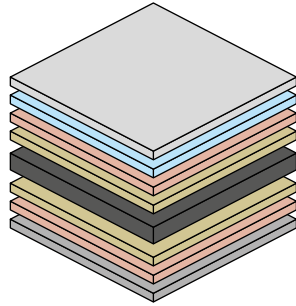
	NATURAL STAINLESS STEEL	POLYESTER (PE) STAINLESS STEEL	PET ON BASE STAINLESS STEEL
Composition	Stainless steel	PS Standard	Transparent + PET Film + Polyester paint
Applications	Perimeter walls, partitions and ceilings	Perimeter walls, partitions and ceilings	Perimeter walls, partitions and ceilings
Substrate	Stainless Steel AISI 304 2B	Stainless Steel AISI 304	Stainless Steel AISI 304
Thickness	-	25 my	55 my
Composition	-	5 my primer + 20 my top coat	5 my Top Coat + 20 my PE + 30 my PET
Specular Gloss (60°)	-	30 GU	5 GU
Surface appearance	Smooth shiny steel	Smooth	Smooth shiny
Resistance to corrosion	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●
Resistance to humidity	● ● ● ● ○	● ● ● ● ○	● ● ● ● ●
Operating temperatures	-	120° C	80° C
	<p>Aisi 304 2B stainless steel sheet with a shiny metallic colour appearance. Its use is recommended for interiors when there is moderate condensation or specific washing of the metal side is required. The stainless steel substrate offers high chemical resistance to aggressive agents and therefore optimal durability. The only available colour depends on the colour of the metal. Easy to clean laminate.</p>	<p>Plastic laminates on Stainless steel metal base with polyester paint, with a total paint layer of 25 microns including 5 microns of primer paint and 20 nominal microns of polyester enamel. Its use is strongly recommended for interiors when there is moderate condensation or specific washing of the metal side is required. The stainless steel substrate offers high chemical resistance to aggressive agents and therefore optimal durability. The colours always available in stock are White, grey and Ral 9010. Other colours are available on request. The organic polyester support must be chosen according to the washing cycles. Easy to clean laminate.</p>	<p>Plastic laminate on a stainless steel base made of a pre-made 30 my thick PET film. Its use is strongly recommended for interiors, specifically for the internal side of the panel when there is strong condensation or specific washing of the metal side is required. The Option of having a wide range of pre-made films, with the assurance of non-toxicity, makes it perfectly suited for use in the foodstuff industry, where occasional contact with food occurs. This is the perfect solution as it is resistant to aggressive agents and durable over time. The colours always available in stock are White, grey and Ral 9010. Other colours are available on request. Easy to clean laminate.</p>

The characteristics shown below are to be considered indicative and it is advisable to contact the ISOPAN technical office for further information.

## PRE-COATED LAMINATES



EN 10169:2010  
CPI-5

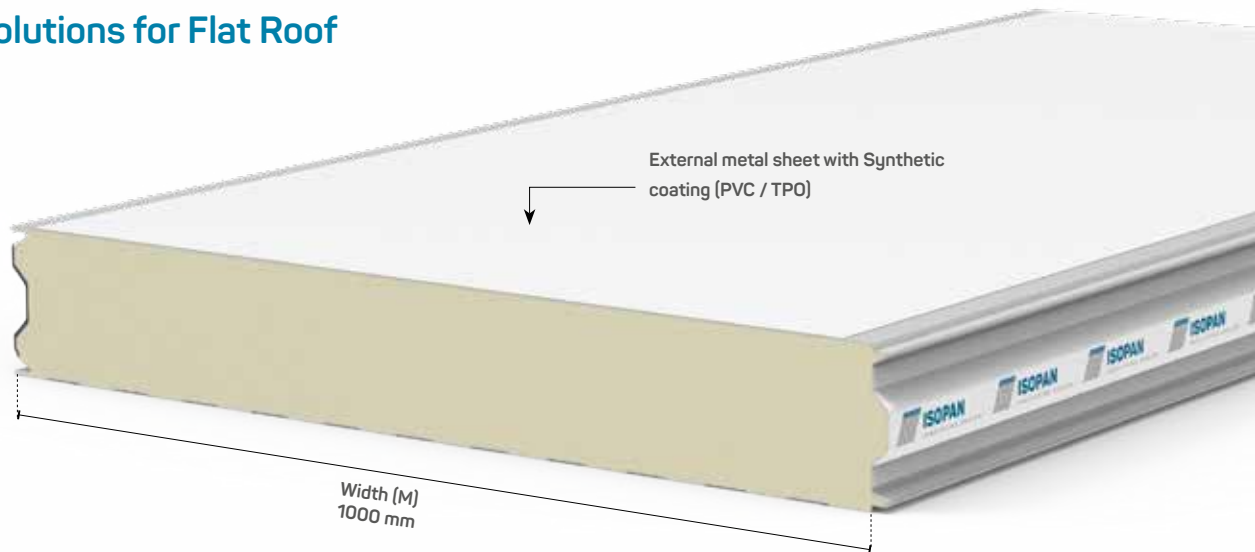


	TOP CLASS	TOP CLASS PLUS
Composition	PVC Film	PVC Film
Applications	Perimeter walls (internal side), partitions and false ceilings	Perimeter walls (internal side), partitions and false ceilings
Substrate	Hot-dip galvanised steel, S250 GD	Hot-dip galvanised steel, S250 GD
Thickness	Minimum 100 my	Minimum 120 my
Composition	100 - 120 my film PVC	120 - 150 my film PVC
Specular Gloss (60°)	8 - 12 GU	8 - 15 GU
Surface appearance	Smooth	Smooth
Resistance to corrosion	●●●○○	●●●●○
Resistance to humidity	●●●○○	●●●●○
Operating temperatures	60° C	60° C
	<p>Plastic laminate on a galvanised steel base made of a pre-made 100-120 my thick PVC film. Its use is strongly recommended for interiors when there is moderate condensation or specific washing of the metal side is required. The option of having a PVC layer ensures non-toxicity, therefore it is recommended for use in the foodstuff industry, where occasional contact with food occurs. The colours always available in stock are White, grey and Ral 9010. Other colours are available on request. Easy to clean laminate.</p>	<p>Plastic laminate on a galvanised steel base made of a pre-made 200 my thick PVC film. Its use is strongly recommended for interiors when there is strong condensation or specific washing of the metal side is required. The option of having a PVC layer ensures non-toxicity, therefore it is recommended for use in the foodstuff industry, where occasional contact with food occurs. The colours always available in stock are White, grey and Ral 9010. Other colours are available on request. Easy to clean laminate.</p>

The characteristics shown below are to be considered indicative and it is advisable to contact the ISOPAN technical office for further information.

# ISOFROZEN WITH PVSTEEL COATING

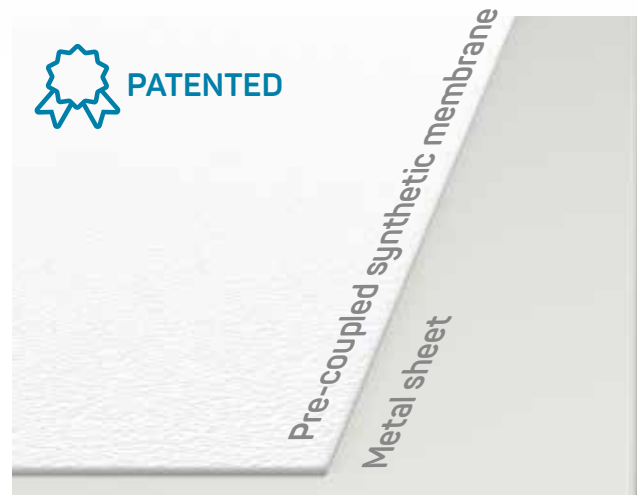
## Solutions for Flat Roof



Cold Solutions Panels can be produced using steels pre-coupled with synthetic membranes, tested and certified according to international standards.

For flat roofing, Isopan offers **ISOFROZEN with PVSTEEL metal coatings, both in PVC and TPO versions**, characterized by the use of a synthetic film on the external face of the panel, which gives resistance to water infiltration, corrosion and action of UV rays.

For information about nominal thickness, products configuration and performances (Fire Resistance, Fire Reaction, mechanical performances and impermeability) please contact Isopan.



**Fire Reaction Class**  
**Up to B-S1, d0**

For further informations, please contact Isopan

**UNIFORM ADHESION BETWEEN SHEET AND MEMBRANE**  
**NO SPOT WELDING**  
**GREATER PERFORMANCE**

Flatness of the roof surface, ensured by the adhesion of the membrane to the metal sheet.

Mechanical and foot traffic resistance of the surface membrane.

Great resistance to water infiltration, thanks to the presence of the sheet under the membrane.

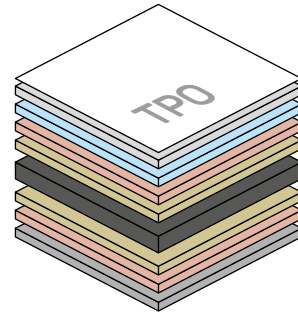
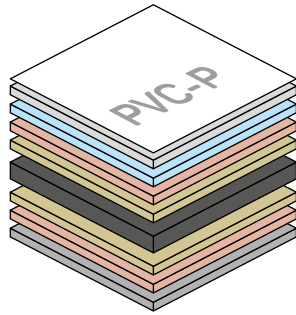
No risk of interstitial humidity between sheet and membrane.

More informations about ISOPAN FLAT ROOF systems, fastenings and accessories are available on FLAT ROOF SOLUTIONS documentation - [isopan.com](http://isopan.com)



# METAL COATING FOR FLAT ROOF

## LAMINATES ON GALVANISED STEEL BASE with SYNTHETIC COATING LAYER



	PVSTEEL - PVC	PVSTEEL - TPO
Composition	Prepainted steel with PVC coating	Prepainted steel with TPO coating
Applications	Flat Roof	Flat Roof
Substrate	Hot-dip galvanised steel, S250 GD	Hot-dip galvanised steel, S250 GD
Steel thickness	0,6 mm	0,6 mm
Synthetic layer thickness	1,2 mm	1,2 mm
Color	White grey	White grey
Surface appearance	Smooth	Smooth
	<p>PVC-P waterproof membranes are products that have been extensively tested and certified according to national and international standards, such as the BBA Certificate. They can last up to 40 years while maintaining excellent hydraulic seal, mechanical and chemical resistance characteristics.</p> <p>PVC-P is supplied with the so-called Solar Shield Technology, a special coating that protects the outer surface of the membrane from UV rays which are largely reflected, better resisting extreme hot-cold cycles, therefore slowing down the ageing process. Surface temperatures remain low. They can be used in any climatic conditions..</p>	<p>TPO (synthetic material also known as polyolefins) waterproof membranes are products that have been extensively tested and certified according to national and international standards, such as the BBA Certificate. They can last up to 30 years while maintaining their functional, physical and chemical characteristics.</p> <p>The membrane is made with a reflective treatment on the external face, to enhance the reflectance and emissivity characteristics. A special coating ("cool pigment") maintains low temperatures on the external surface of the membrane, which is protected from most of the UV rays. The ageing processes due to the extreme hot-cold cycles are therefore slowed down.</p>



The characteristics shown below are to be considered indicative and it is advisable to contact the ISOPAN technical office for further information.







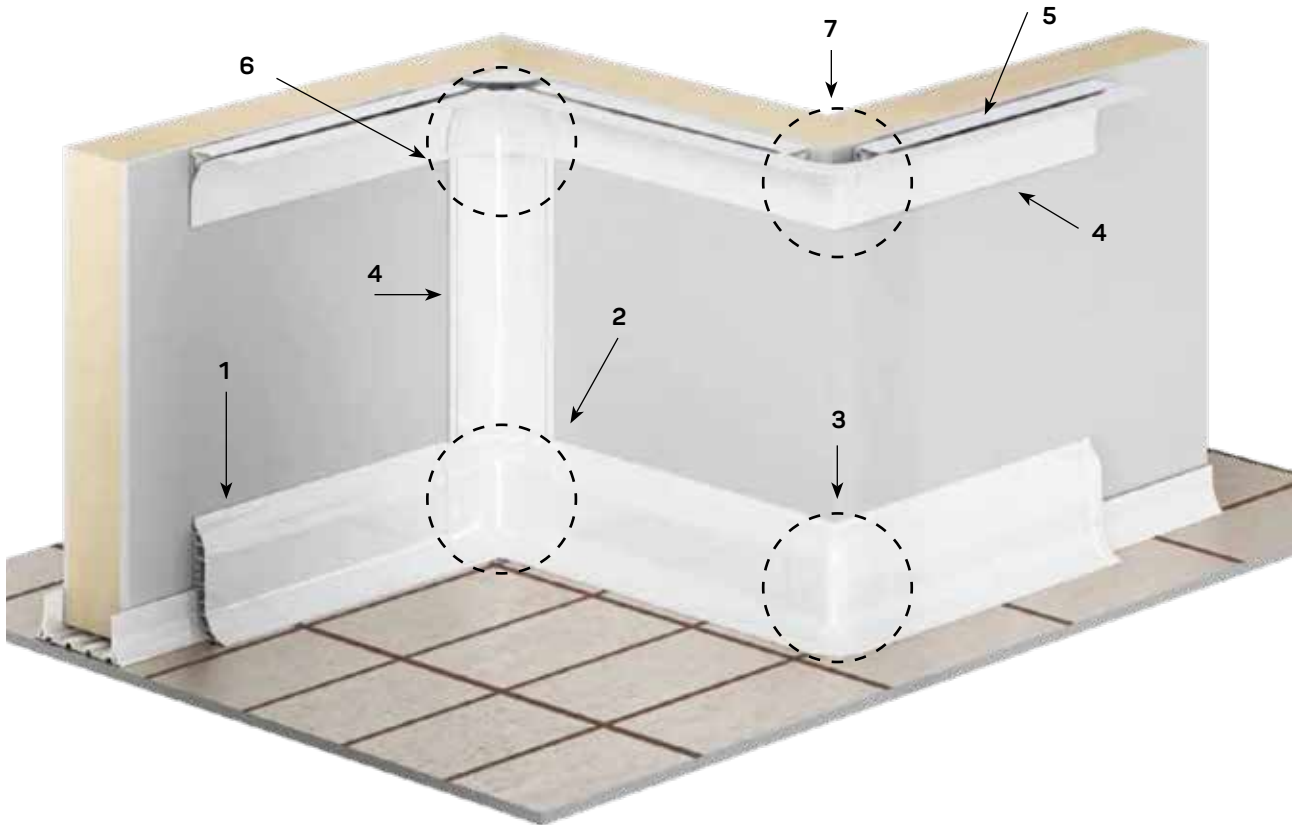
**ISOPAN**

BUILDING ENVELOPE SOLUTIONS  
by Manni Group

# ACCESSORIES AND SOLUTIONS

# FRIGO BASE

Classic hygienic corner with aluminium or PVC support. Fitted with soft flaps to ensure fixing to the walls and prevent the passage of dirt. Perfect combination with the floor skirting.




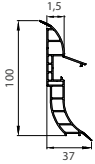
1	2	3
<b>Baseboard Profile</b>	<b>3-ways internal Angle joint</b>	<b>2-ways internal Angle joint</b>
ISO BS 100 + Terminal ISO BS 100 ST ISO BS 100 DT	ISO CU 2 S (3V)	ISO CU 1 S (2V)
		<b>External angle joint</b>
		ISO CA 100 S


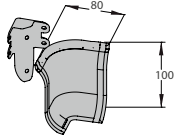

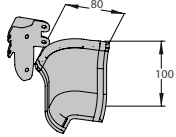
4	5	6	7
<b>Internal gap cover</b>	<b>Gap cover - Fixing bar</b>	<b>3-ways edge</b>	<b>2-ways edge</b>
ISO AO 100 + Terminal ISO AO TL 100	ISO AO - PA 40 / PP 40	ISO CO 100 (3V)	ISO AO CR 100 (2V)
ISO AO 65 + terminal ISO AO TL 65	ISO AO - PA 30 / PP 30	ISO CO 65 (3V)	ISO AO CR 65 (2V)

# FRIGO BASE

## Baseboard Profile

	<b>ISO BS 100</b>	Length: 4000 mm Packaging: 10 pz / box Colour: E F	
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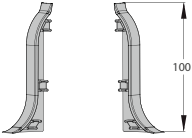
## Internal angle joint: 2-ways (2V) or 3-ways (3V)

	<b>ISO CU 1 S (2V)</b>	Packaging: 50 pz / box Colour: E F	
	<b>ISO CU 2 S (3V)</b>	Packaging: 50 pz / box Colour: E F	



## External angle joint

	<b>ISO CA 100 S</b>	Packaging: 50 pz / box Colour: E F	
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## TERMINALS

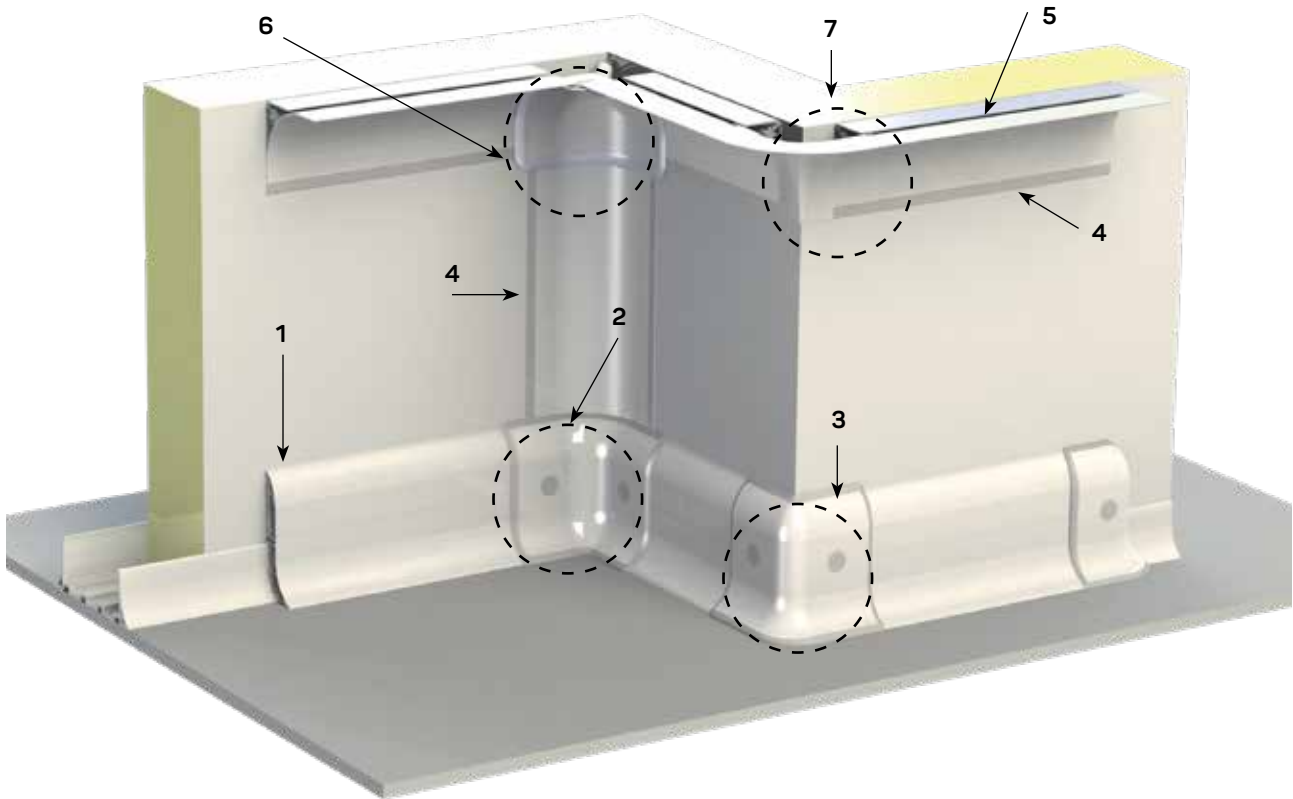
	<b>ISO BS 100 ST</b> <b>ISO BS 100 DT</b>	Packaging: 100 pz / box Colour: E F	
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## Baseboard Profile - junction

	<b>ISO CC 100 + th</b>	Packaging: On request Colour: E F	
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# FRIGO PLUS

New hygienic profile system with a skirting board fitted with a large door to make installation easier.  
 Complete with two-material caps for an airtight seal.  
 Excellent water and dirt sealing.



1	2	3	4	5	6	7
<b>Baseboard Profile</b>	<b>3-ways internal Angle joint</b>	<b>2-ways internal Angle joint</b>	<b>External angle joint</b>			
ISO BH 100 + Terminal ISO CA 100 H D ISO CA 100 H S	ISO CA 100-2 (3V)	ISO CA 100-1 (2V)	ISO CA 100 H			
<b>Internal gap cover</b>	<b>Gap cover - Fixing bar</b>	<b>3-ways edge</b>	<b>2-ways edge</b>			
ISO AO 100 + Terminal ISO AO TL 100	ISO AO - PA 40 / PP 40	ISO CO 100 H (3V)	ISO AO CR 100 (2V)			
ISO AO 65 + terminal ISO AO TL 65	ISO AO - PA 30 / PP 30	ISO CO 65 (3V)	ISO AO CR 65 (2V)			

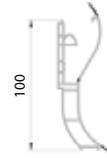
# FRIGO PLUS

## Baseboard Profile



**ISO BH 100**

Length: 4000 mm  
Packaging: 10 pz / box  
Colour: E F



## Internal angle joint: 2-ways (2V) or 3-ways (3V)



**ISO CA 100-1 + th  
(2V)**

Packaging: 50 pz / box  
Colour: E F



**ISO CA 100-2 + th  
(3V)**

Packaging: 50 pz / box  
Colour: E F



## External angle joint



**ISO CA 100 H + th**

Packaging: 50 pz / box  
Colour: E F

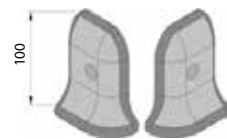


## TERMINALS



**ISO CA 100 H D + th  
ISO CA 100 H S + th**

Packaging: 100 pz / box  
Colour: E F



## SCREW-COVER "TH"



**TH**

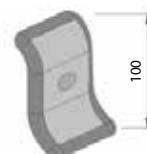
Packaging: 100 pz / box  
Colour: 9002  
9010  
9006  
7040  
7024

## Baseboard Profile - junction



**ISO CC 100  
+ TH**



Packaging: On request  
Colour: E F



# ANGULAR GAP COVER


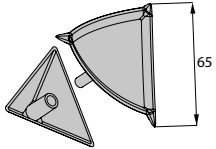

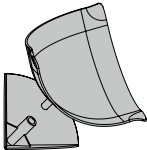



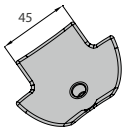
	Cover 65mm	<b>ISO AO 65</b>	Length: Packaging: Colour:	4000 mm 25 pz / box E F	
	Fixing bar	<b>ISO AO - PA 30</b> <b>ISO AO - PP 30 holedi</b>	Length: Packaging: Material:	4000 mm 25 pz / box PP - plastic PA - aluminium	
	Cover 100mm	<b>ISO AO 100</b>	Length: Packaging: Colour:	4000 mm 25 pz / box E F	
	Fixing bar	<b>ISO AO - PA 40</b> <b>ISO AO - PP 40 holedi</b>	Length: Packaging: Material:	4000 mm 25 pz / box PP - plastic PA - aluminium	
	Cover 65mm	<b>ISO AS 65</b>	Length: Packaging: Colour:	4000 mm 25 pz / box E F	
	Fixing bar	<b>ISO AS - PA</b> <b>ISO AS - PP holedi</b>	Length: Packaging: Material:	4000 mm 25 pz / box PP plastico PA alluminio	
	Cover 45mm	<b>ISO AS 45</b>	Length: Packaging: Colour:	4000 mm 50 pz / box E F	
	Fixing bar	<b>ISO AS P 45</b>	Length: Packaging: Colour:	4000 mm 50 pz / box E F	

## TERMINALE


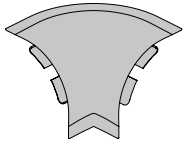

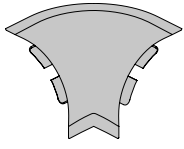
		<b>ISO AO TL 65</b> <b>ISO AO TL 100</b>	Packaging: Colour:	100 pz / box E F	
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# EDGE

## 3-ways edge

	65mm	<b>ISO CO 65 (3V)</b>	Packaging: Colour:	100 pz / box E F	
	100 mm	<b>ISO CO 100 (3V)</b>	Packaging: Colour:	100 pz / box E F	
	100 mm	<b>ISO CO 100 H (3V) + th</b>	Packaging: Colour:	100 pz / box E F	
	45mm	<b>ISO CA 45 (3V) + TM5</b>	Packaging: Colour:	100 pz / box E	

## 2-ways edge

	65mm	<b>ISO A0 CR 65 (2V)</b>	Packaging: Colour:	100 pz / box E F	
	100mm	<b>ISO A0 CR 100 (2V)</b>	Packaging: Colour:	100 pz / box E F	


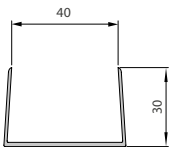

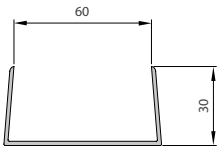
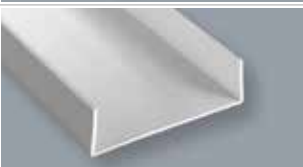
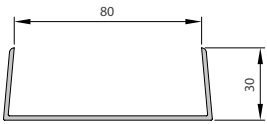

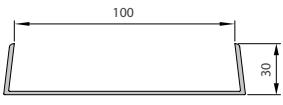
# CHANNELS

Wide choice of corrugated channels with rounded edges and soft flaps to ensure greater grip.


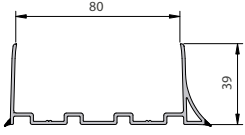

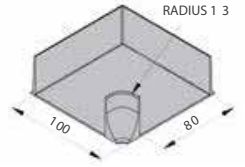

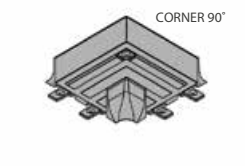

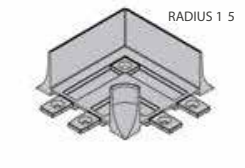

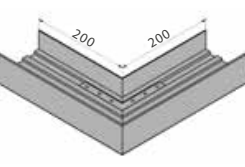

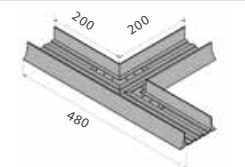
## FRIGO BASE and FRIGO PLUS

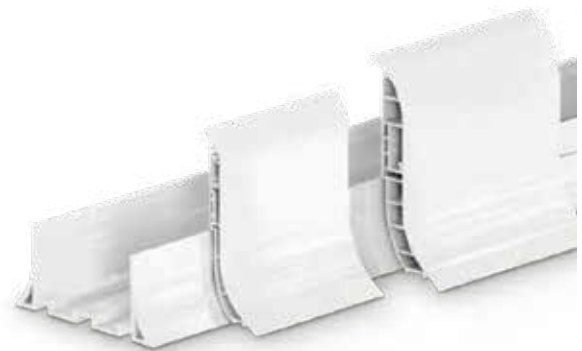
	<b>ISO H 60</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO H 70</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO H 80</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO H 100</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO H 120</b>	Length: Packaging: Colour:	4000 mm 8 pz / box E F	

## Simple channel - universal

	<b>ISO C 40</b>	Length: Packaging: Colour:	4000 mm 8 pz / box E F	
	<b>ISO C 60</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO C 80</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO C 100</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	



	<p><b>ISO L 80</b></p>	<p>Length: Packaging: Colour:</p>	<p>4000 mm 8 pz / box E F</p>	
	<p><b>ISO L 80 R13 + I80</b></p>	<p>Packaging: Packaging: Colour:</p>	<p>24 pz / box 48 pz / box E F</p>	
	<p><b>ISO HA 80 ISO HA 100</b></p>	<p>Packaging: Packaging: Colour:</p>	<p>24 pz / box 48 pz / box E F</p>	
	<p><b>ISO HA 60 R15 ISO HA 80 R15 ISO HA 100 R15</b></p>	<p>Packaging: Packaging: Colour:</p>	<p>24 pz / box 48 pz / box E F</p>	
	<p><b>ISO HL 60 ISO HL 70 ISO HL 120</b></p>	<p>Packaging: Colour:</p>	<p>On request E F</p>	
	<p><b>ISO HT 60 ISO HT 70 ISO HT 80 ISO HT 100 ISO HT 120</b></p>	<p>Packaging: Colour:</p>	<p>On request E F</p>	

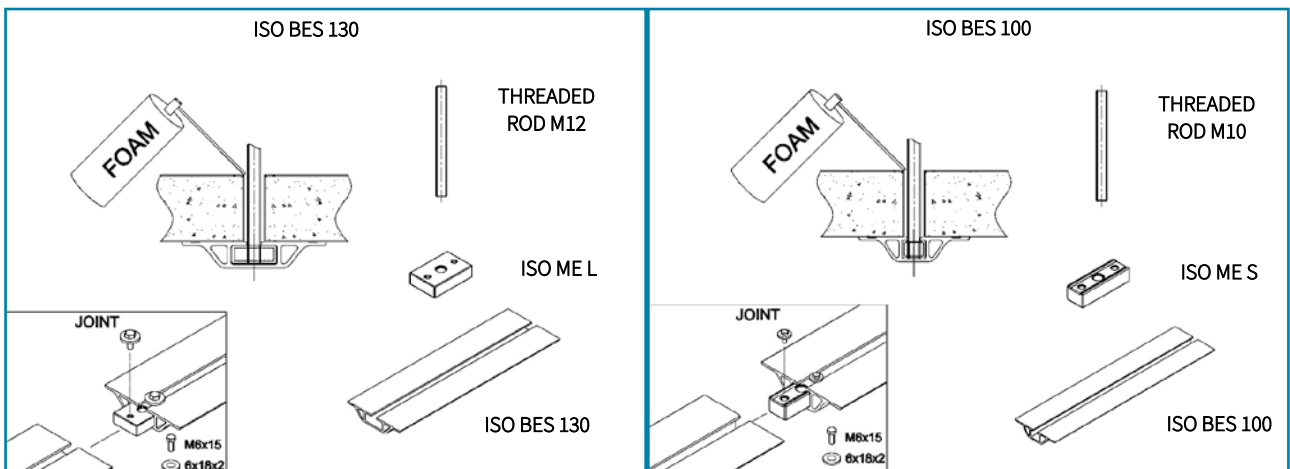
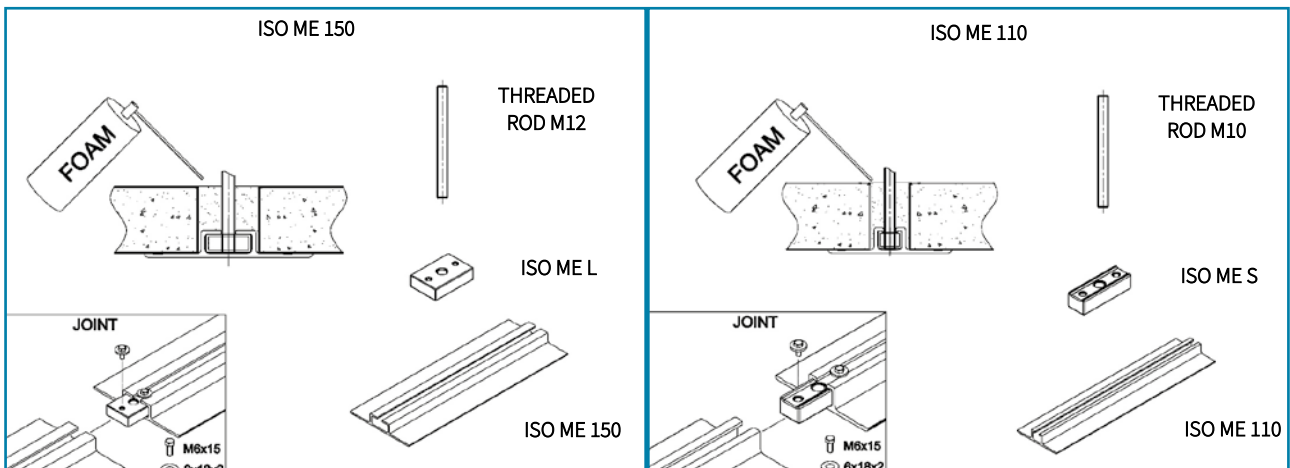
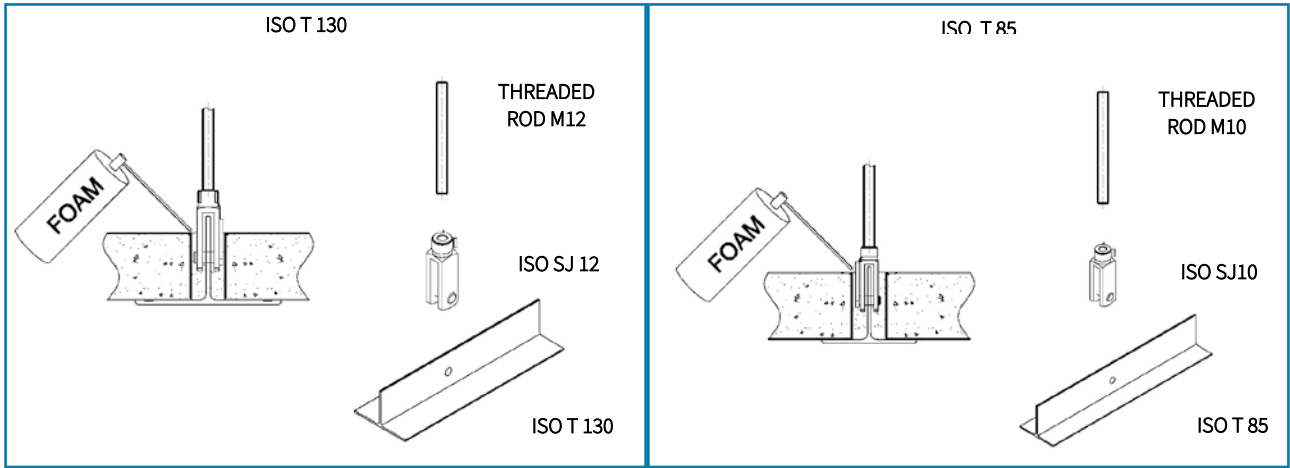


# T-SUSPENSION

Profiles: T - Omega for suspended roof. Made of white painted aluminium, fire resistant and equipped with steel nuts covered in plastic that act as thermal break.  
2 solutions available, one light and one heavy.

	<b>ISO T 85</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO T 130</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO ME 110</b>	Length: Packaging: Colour:	4000 mm 5 pz / box E F	
	<b>ISO ME 150</b>	Length: Packaging: Colour:	4000 mm 2 pz / box E F	
	<b>ISO BES 100</b>	Length: Packaging: Colour:	4000 mm 5 pz / box E F	
	<b>ISO BES 130</b>	Length: Packaging: Colour:	4000 mm 3 pz / box E F	
	<b>ISO ME S</b>	Packaging: Colour:	25 pz / box E	
	<b>ISO ME L</b>	Packaging: Colour:	50 pz / box E	
	<b>ISO SJ8 ISO SJ10 ISO SJ12</b>	Packaging: Materiale	50 pz / box Metallo	


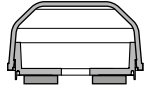

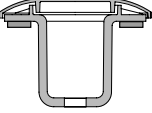
# T-SUSPENSION

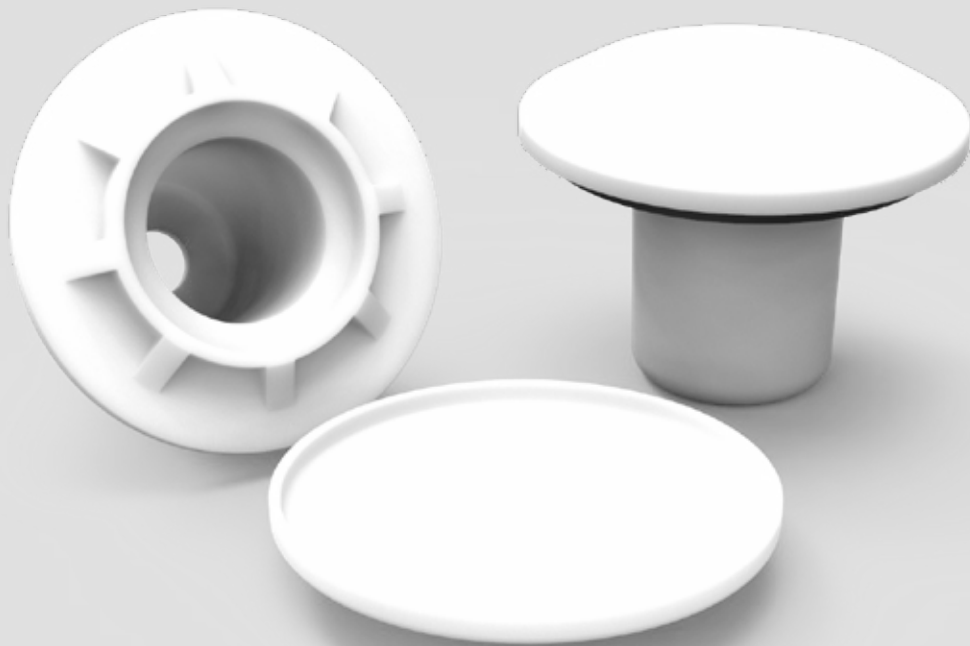


# T-SUSPENSION

SPAN SUPPORTS	Moment of inertia	Allowable Deflexion [L/200]	q
m	mm <sup>4</sup>	mm	Kg/m
<b>ISO T 130</b>			
0,5	434775	2,5	850
1	434775	5	425
1,5	434775	7,5	283
2	434775	10	149
2,5	434775	12,5	76
<b>ISO ME 110</b>			
0,5	24230	2,5	355
1	24230	5	66
1,5	24230	7,5	20
<b>ISO ME 150</b>			
0,5	49726	2,5	656
1	49726	5	136
1,5	49726	7,5	40
2	49726	10	17
<b>ISO BES 100</b>			
0,5	31359	2,5	457
1	31359	5	86
1,5	31359	7,5	25
2	31359	10	11
<b>ISO BES 130</b>			
0,5	69075	2,5	996
1	69075	5	189
1,5	69075	7,5	56
2	69075	10	24

# ANCHORING

	<p>ISO WLR ISO WLRX</p>	<p>Packaging: Colour:</p>	<p>100 pz / box E F</p>	
	<p>ISO WLAX</p>	<p>Packaging: Colour:</p>	<p>100 pz / box E F</p>	













# THE GROUP NUMBERS

“Transitioning towards a sustainable economy in the Industry 4.0 era entails significant changes. Today’s challenge is to combine the speed of digital evolution and the attention to environmental impacts with long-term goals.”

Enrico Frizzera, CEO Manni Group

■ Houston

▲ Guanajuato

Operational companies

14

Countries served

78

Customers

10.200

Investments 2018

12,3 milioni

Turnover in Euro

630,4 milioni

Employees

1.127

Tons/year of CO<sub>2</sub>e avoided

approx. 32 thousand

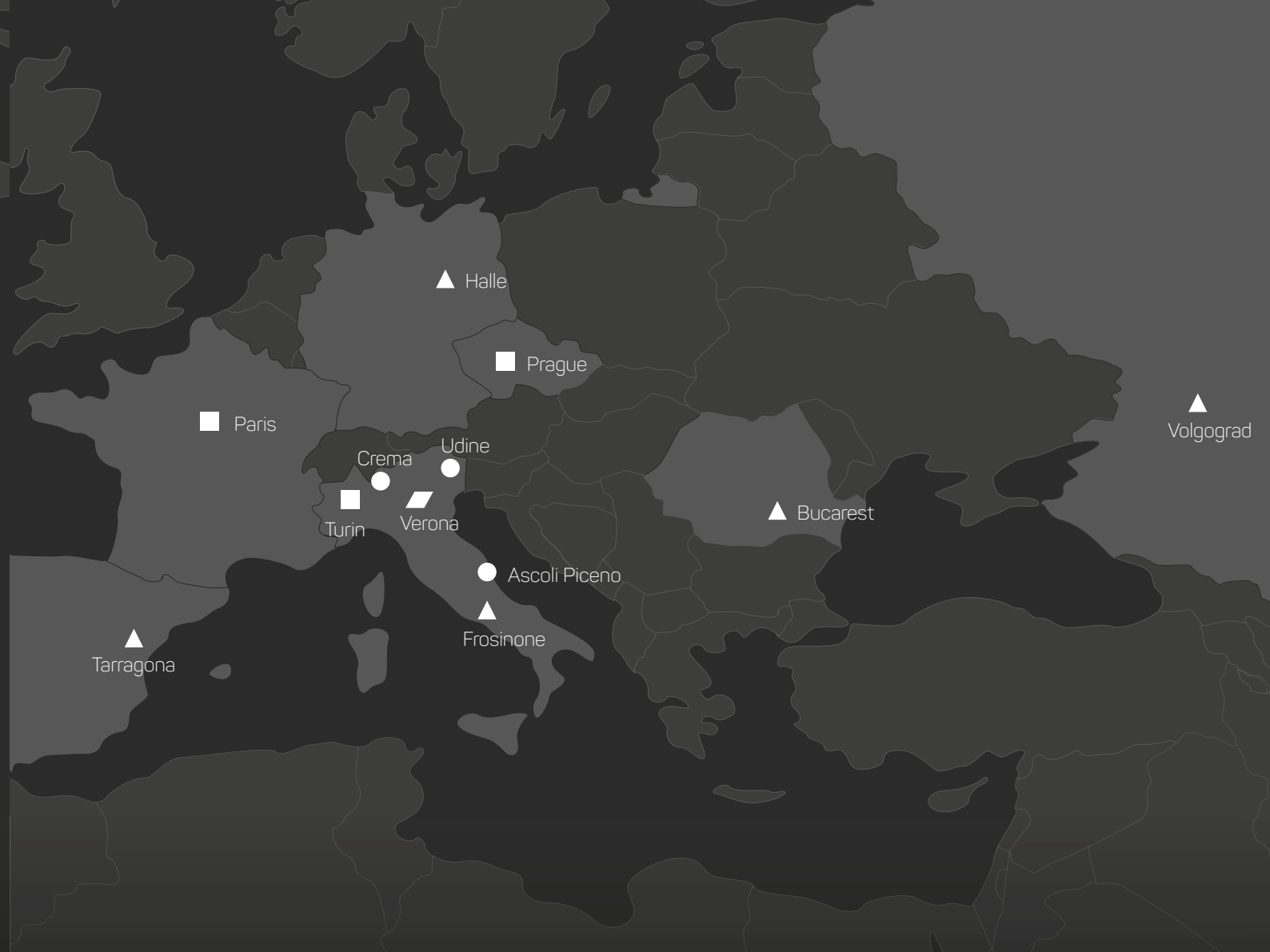
Result of Manni Energy 2018 activity

Square metres/year of panels sold

approx. 15 million

Tons/year of steel purchased

approx. 450 thousand




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## MANNI GROUP

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Headquarters  
Verona office

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## STEEL

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● MANNI SIPRE  
Mozzecane VR  
Div. 1: sheets  
Div. 2: laminates and pipes  
Div. 7: beams

Crema CR  
Div. 8: beams  
Div. 9: commercial

Monteprandone AP  
Div. 6: beams

Campoformido UD  
Div. 3 beams

● MANNI INOX  
Verona  
Div. via Righi  
Div. Via Torricelli

● MANNI GREEN TECH  
Verona  
  
Houston (TX)  
Manni Green Tech USA

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## RENEWABLE ENERGIES AND SERVICES

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▤ MANNI ENERGY  
Verona

▤ MANNI STORE  
Turin

▤ MANNI IMMOBILIA  
Verona

▤ ICOM ENGINEERING  
Verona

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## PANELS

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▲ ISOPAN  
DIV. Trevenzuolo VR  
  
Div. Patrica FR

Tarragona, Spain  
Isopan Iberica

Bucarest, Romania  
Isopan Est

Halle, Germany  
Isopan Deutschland

Volgograd, Russia  
Isopan Rus

Guanajuato, Mexico  
Isocindu

Paris, France  
Isopan France

Prague, Czech Republic  
Isopan Manni Group CZ

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[www.isopan.com](http://www.isopan.com)



**ITALY**

**Registered and Administrative HQ**  
Verona | Italy

**Isopan Spa**  
Verona | Italy  
Frosinone | Italy

**WORLD**

**ISOPAN IBERICA**  
Tarragona | Spain

**ISOPAN EST**  
Bucharest | Romania

**ISOPAN DEUTSCHLAND**  
Halle (Saale) | Germany

**ISOPAN RUS**  
Volgograd | Russia

**ISOCINDU**  
Silao | Mexico

**SALES COMPANIES**

**ISOPAN FRANCE**  
Paris | France

**ISOPAN MANNI GROUP CZ**  
Praha | Czech Republic